3 Competition Eligibility and Inspection (I)

3.1 Team Eligibility Rules

I101 ***Teams must be registered with *FIRST*.** Teams must be "competition ready" in order to compete in *FIRST* Tech Challenge official events and earn MATCH points or be eligible for judged awards.

A. North America - competition ready requirements:
   i. complete annual registration process through the FIRST dashboard
   ii. pay annual registration fee
   iii. 2 adults must be assigned in the Lead Coach 1/Lead Coach 2 roles and have passed Youth Protection Program (YPP) screening, and
   iv. complete any additional Youth Protection screening requirements (may vary from region to region.
   v. register all youth team members on the FIRST dashboard
B. outside North America - competition ready requirements:
   i. complete annual registration process through the FIRST dashboard and
   ii. complete any additional requirements by the local FIRST Program Delivery Partner with regards to program fees, registrations and youth protection screening.

> The local Program Delivery Partner may, in rare cases, make exceptions for delayed payment on a case-by-case basis. Teams who have not paid annual registration fees will not earn any official season record and will not be allowed to advance.

I102 ***Check-in at the event on time.** Teams must check-in by the check-in deadline listed on the public event schedule or as instructed by the Event Director per E105. Check-in must be completed by a team adult and at least one STUDENT must be present at the venue before check-in can be completed.

Additional check-in requirements will vary by region but may require one or more of the following items:

A. A current, completed team roster from the team's FIRST dashboard as specified by the local Program Delivery Partner,
B. local Program Delivery Partner team member registration or consent forms (varies by region),
C. a ROBOT built to play the current season's game if they intend to participate in MATCHES, and
D. printed team PORTFOLIO (optional, see section 6 Awards (A))

> All teams, regardless of how "ready" they think they are, are encouraged to participate in ROBOT MATCHES and judging. Teams are encouraged to reach out to their Program Delivery Partner and other teams to request help getting their ROBOT ready to compete before attending an event.

I103 ***A responsible adult must be present for the whole event.** At least 1, preferably 2, adult(s) responsible for the STUDENT team members must be present at all times during the event. Adults attending *FIRST* Tech Challenge events are expected to follow the same competition manual rules which dictate behavioral norms as youth participants while also following the *FIRST* Code of Conduct. Responsible adults must be listed on the team roster.

3.2 Awards Eligibility Rules

To be eligible for team judged awards a team must attend their assigned structured interview time (A203). For some awards submitting a PORTFOLIO as requested by the Event Director (A202) is also a required prerequisite. Complete details and rules about *FIRST* Tech Challenge awards can be found in section 6 Awards (A).

3.3 MATCH Eligibility Rules

This section describes the rules governing MATCH participation. A team has participated in a MATCH if any member of their DRIVE TEAM is in the ALLIANCE AREA, with or without the ROBOT on the FIELD, at the start of the MATCH.

This section describes the rules and requirements for team participation in MATCH play. ROBOTS are required to pass ROBOT inspections before being allowed to compete. These inspections are to help ensure that all section 12 ROBOT Construction Rules (R) are satisfied.

At each event, the Lead ROBOT INSPECTOR (LRI) has final authority on the legality of any COMPONENT, MECHANISM, or ROBOT. INSPECTORS may re-inspect ROBOTS at any time to ensure compliance with the rules. Teams are expected to consult with INSPECTORS or the LRI if they have any questions regarding the legality of a ROBOT or about how to make a ROBOT legal.

The inspection process may progress in blocks, i.e., it may pause for a team to make a correction or participate in a scheduled Practice MATCH. The process may employ various INSPECTORS throughout the process based on availability. At the team's discretion, they may request a different INSPECTOR or invite the LRI to participate in their ROBOT'S inspection.

> ROBOTS are permitted to participate in scheduled Practice MATCHES prior to passing inspection. However, the FTA, LRI, or Head REFEREE may determine at any time that the ROBOT is unsafe and may prohibit further participation in Practice MATCHES until the condition is corrected and/or the ROBOT passes inspection.

Events may assign specific inspection time slots for teams to better facilitate a quick and orderly inspection process. Teams should plan to report to their assigned inspection times fully ready to complete inspection.

Prior to the start of a MATCH, any ROBOT which is unable or ineligible to participate in that MATCH, as determined by the team, *FIRST* Technical Advisor (FTA), LRI, or Head REFEREE, is DISABLED and can be removed from the FIELD with permission of the Head REFEREE or FTA. A team whose ROBOT is DISABLED or not present is eligible to receive Qualification MATCH Points or Playoff MATCH points provided that its ROBOT has passed inspection, per I302, and as long as at least one STUDENT DRIVE TEAM member is present in the ALLIANCE AREA.

> An Inspection Checklist (*link coming soon*) is available to help teams self-inspect their ROBOT before their event. Teams are strongly encouraged to self-inspect prior to their event.

I301 ***It is your team's ROBOT.*** The ROBOT and its MAJOR MECHANISMS must be built by the *FIRST* Tech Challenge team that has registered for the event and intends to use the ROBOT to participate in MATCHES or as part of judged awards.

A MAJOR MECHANISM is a group of COMPONENTS and/or MECHANISMS assembled together to address at least 1 game challenge: ROBOT movement, SCORING ELEMENT manipulation, FIELD element manipulation, or performance of a scorable task without the assistance of another ROBOT.

This rule requires that the ROBOT and its MAJOR MECHANISMS were built by its team but is not intended to prohibit or discourage assistance from other teams (e.g., fabricating elements, supporting construction, writing software, developing game strategy, contributing COMPONENTS, and/or MECHANISMS).

Examples that would generally not be considered MAJOR MECHANISMS, and thus are not subject to this rule include, but are not limited to, the following:
A. a gearbox assembly,
B. a COMPONENT or MECHANISM that is part of a MAJOR MECHANISM, or
C. COTS items.

The intent of this rule is that a team's ROBOT is a product that's representative of the current team members' experience and is intended to discourage complete solutions which are provided wholly by outside organizations or companies. Also see R301.

I302 ***Enter only 1 ROBOT.** Each team may only inspect and play MATCHES with 1 ROBOT at a *FIRST* Tech Challenge event. Each *FIRST* Tech Challenge team may only participate in 1 concurrent event at a time.

Violation: VERBAL WARNING. RED CARD if not corrected.

The intent of this rule is to use tournament resources responsibly by not requiring volunteers to inspect multiple ROBOTS and to prevent loopholes around having multiple inspected ROBOTS that can be switched out between MATCHES.

This rule does not prohibit teams from bringing other ROBOTS or robot-like assemblies into the venue for other purposes such as awards presentations or pit displays.

It is expected that teams will update, make changes and even build multiple ROBOTS in the course of a season, this rule only applies to bringing multiple different ROBOTS to a single event to play MATCHES.

I303 ***Get inspected before playing a Qualification/Playoff MATCH.** A team is only permitted to participate in a Qualification or Playoff MATCH and receive RANKING POINTS if their ROBOT has passed an initial, complete inspection. INSPECTORS are available to help, but teams are expected to ensure their ROBOT and other supporting equipment are within the rules at all times when competing.

Violation: If prior to the start of the MATCH, the team is DISQUALIFIED and not eligible to participate in the MATCH. If after the start of the MATCH, the team receives a RED CARD for that MATCH.

I304 ***Bring the complete ROBOT and supporting equipment to inspection.** At the time of inspection, the OPERATOR CONSOLE and the ROBOT with battery must be presented with all MECHANISMS (including all COMPONENTS of each MECHANISM), configurations, and decorations that will be used on the ROBOT in MATCHES without re-inspection per I305.

A. ROBOTS are allowed to play MATCHES with a subset of the mechanisms that were present during inspection. Only mechanisms that were present during inspection may be added, removed, or reconfigured between MATCHES. The ROBOT should be assembled in a typical configuration used for MATCH play when reporting for inspection. ROBOT and all mechanisms must be inspected in every STARTING CONFIGURATION.
B. If MECHANISMS are swapped out between MATCHES, the reconfigured ROBOT must still meet all rules.

C. The total of all electronics (motors, servos, Android Devices, etc.) used to build all mechanisms and base ROBOT, whether they are used on the ROBOT at the same time or not, may not exceed the constraints specified in section 12 ROBOT Construction Rules (R).

I305 ***Unless the change is listed below, any change to a ROBOT must get re-inspected.** A ROBOT may play MATCHES with a subset of the MECHANISMS that were present during inspection provided the reconfigured ROBOT still complies with all ROBOT construction rules. Only MECHANISMS that were present during the inspection may be added, removed, or reconfigured between MATCHES without re-inspection per this rule. If a ROBOT is modified after its most recently passed inspection, it must be re-inspected before the ROBOT is eligible to participate in a MATCH.

Exceptions are listed below (unless they result in a significant change to the ROBOT'S size, legality, or safety).

A. addition, relocation, or removal of fasteners (e.g., cable ties, tape, and rivets),
B. addition, relocation, or removal of labeling or marking,
C. addition, relocation, or replacement of the team SIGN,
D. revision of ROBOT code,
E. replacement of a COMPONENT with an identical COMPONENT,
F. replacement of a MECHANISM with an identical MECHANISM (size, weight, material), and
G. additions, removals, or reconfiguration of ROBOT with a subset of MECHANISMS already inspected per I304

Violation: ROBOT must be inspected before participating in a MATCH or the team will receive a RED CARD.

I306 ***Do not exploit re-inspection.** Teams may not use the re-inspection process in I305 to circumvent any other rules.

I307 ***ROBOTS may be powered on for inspection, as needed.** Teams are allowed to power up and enable their ROBOT as part of the inspection process.

> While in general it is good practice to keep a ROBOT powered off and in a configuration which minimizes stored energy whenever possible (e.g., springs relaxed), teams are allowed to power up and enable their robot as part of the inspection process. Team members should let INSPECTORS know if the ROBOT must be powered on and/or enabled to meet any inspection criteria.
>
> Team members should also inform INSPECTORS if the ROBOT in its inspection configuration has any stored energy (e.g., springs stretched) and collaborate with each other to ensure a safe inspection experience.

I308 ***STUDENTS must be present during the inspection process.** At least 1 STUDENT team member must accompany the ROBOT for any inspection efforts.

> Exceptions may be made for major conflicts, e.g., religious holidays, major testing, transportation issues.

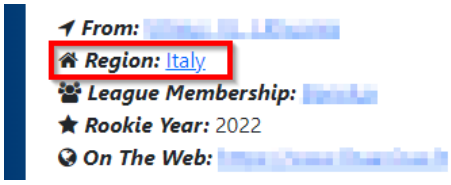
Violation: Inspection will not continue until a STUDENT is present.

4 Advancement

Teams are only eligible to advance from events within their home region. Teams may be invited to compete at tournaments outside of their home region; however, they do so for the opportunity of additional gameplay and to compete with other teams from outside of their area and are not advancement eligible from these out-of-region events.

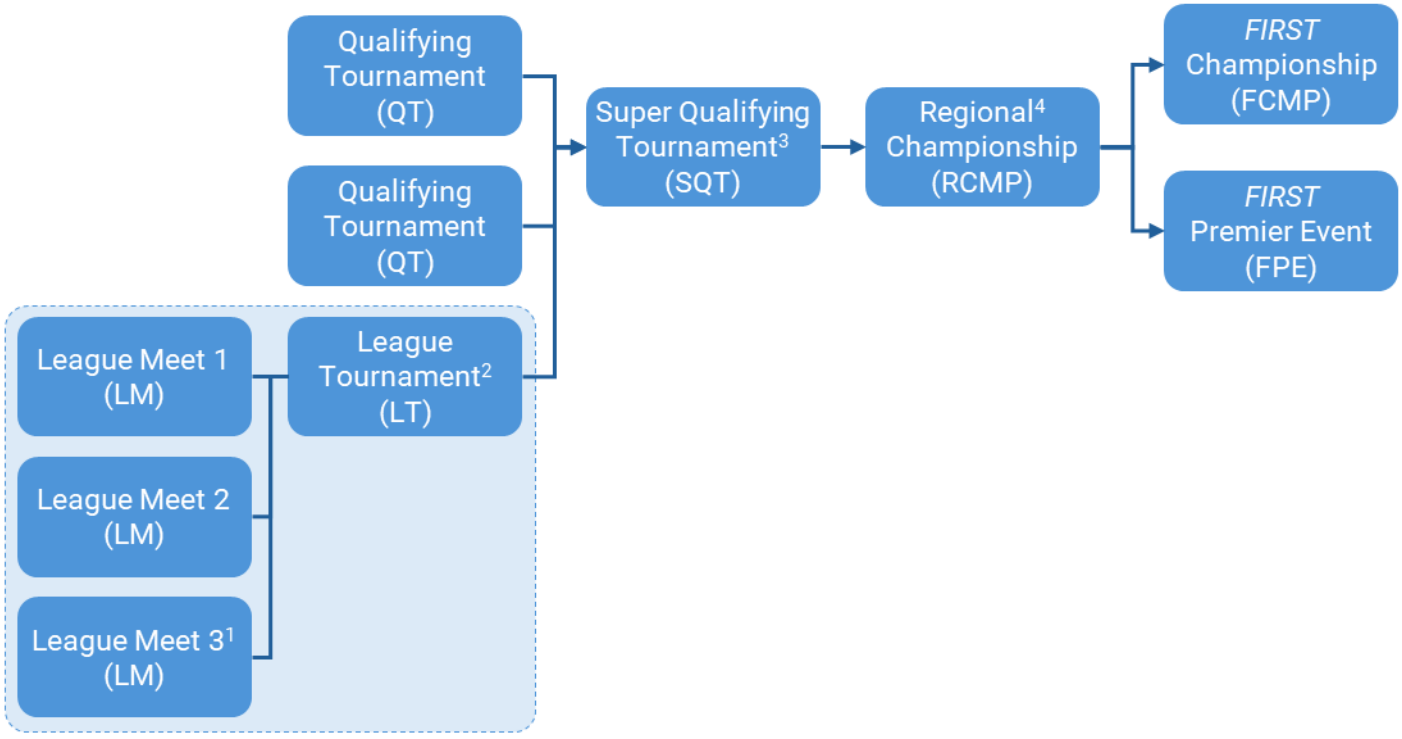
Teams can check what region they are assigned to on the FTC-Events page by looking up their team number. Teams in regions that do not have a local Program Delivery Partner, or who are geographically isolated within their home region can work with *FIRST* by emailing customerservice@firstinspires.org to get reassigned to another more accessible region once per season for advancement.

Figure 4-1: Region assignment display on FTC-Events page



FIRST Tech Challenge tournament progression is shown in Figure 4-2. Teams can advance from any of their first three entry-level events: Qualifying Tournaments (QT) and League Tournaments (LT). Teams may only participate in one league per season. See section 14 League Play Tournaments (L) for more details on League Tournaments. Teams may participate in more than 3 entry-level events but are not eligible to advance from them.

Figure 4-2: Tournament Advancement Structure



[1,3] *Optional Events, not offered in all regions*

[2] *All teams within a League play in the League Tournament*

[4] *Highest level of play within FIRST Tech Challenge Region. Can also be called State, Region, or Country Championship*

Teams may advance from their region's Qualifying Tournaments or League Tournament to either a Super Qualifying Tournament (SQT) or directly to a Regional Championship (RCMP). Super Qualifying Tournaments (SQT) are an optional advancement level often used in large regions which need more levels of competition. A team may only participate in one Super Qualifying Tournament(SQT).

The local Program Delivery Partner determines the advancement numbers from each tournament in their region, up to a Regional Championship. *FIRST* Staff determine the advancement from each Regional Championship to the *FIRST* Championship and *FIRST* Premier Events.

4.1 Advancement Points Calculation

For each advancing event, teams will be ranked based on the advancement points they earn through their overall performance at that individual event. The top ranked teams not already advanced will qualify for the next level of play, up to the total allocated advancement spots for that event. Advancement points are awarded to teams based on Table 4-1 below.

Table 4-1: Advancement Point Assignment

Category	Advancement Points Earned
Qualification Phase Performance	Normal distribution of points from 16 to 2 across the highest ranked team to the lowest based on the equation in section 4.1.1 Qualification Phase Performance. (This will result in a minimum of 2 points and a maximum of 16 points being awarded for qualification phase performance.)
ALLIANCE lead	Equal to 21 minus the ALLIANCE lead number (e.g., 18 points for ALLIANCE #3 lead)
Draft Order Acceptance	Equal to 21 minus the Draft Order Acceptance number (e.g., 18 points for the team which accepts the third draft position)
Playoff Advancement	40 points for 1st Place (Winners) 20 points for 2nd Place (Finalists) 10 points for 3rd Place 5 points for 4th Place (See Section 13.8 Dual Division Events for modifications to this section)
Team Judged Awards	60 points for Inspire Award 1st Place 30 points for Inspire Award 2nd Place 15 points for Inspire Award 3rd Place 12 points for all other 1st Place Awards 6 points for all other 2nd Place Awards 3 points for all other 3rd Place Awards (See A211 for a list of points-eligible awards)

If there is a tie in the point totals between teams, the higher ranked team will be determined using the following additional sorting criteria in Table 4-2.

Table 4-2 Advancement Sorting Criteria Including Tiebreakers

Order Sort	Criteria
1st	Total Advancement Points (as calculated in Table 4-1)
2nd	Judged Team Award Points
3rd	Playoff Advancement Points
4th	ALLIANCE Selection Results Points (ALLIANCE lead or Draft Order Acceptance)
5th	Qualification Phase Performance Points
6th	Average Qualification MATCH Points (excluding FOULS)
7th	Average Qualification AUTO Points
8th	Highest individual Qualification MATCH Points (excluding FOULS)
9th	Second Highest individual Qualification MATCH Points (excluding FOULS)
10th	Random Selection by Event Management System

4.1.1 Qualification Phase Performance

The calculation of Qualification Phase Performance points is done using the equation below. This equation is an inverse error function which utilizes the following variables:

- **R** – the qualification rank of the team at the event at the conclusion of Qualification MATCHES (as reported by the Event Management Software and defined in Section 13.6.3 Qualification Ranking)
- **N** – the number of *FIRST* Tech Challenge teams participating in the Qualification rounds at the event
- **Alpha (α)** – a static value (1.07) used to standardize the distribution of points at events

$$\boldsymbol{QualificationPoints}(\boldsymbol{R},\boldsymbol{N},\boldsymbol{\alpha}) = \left\lceil \boldsymbol{InvERF}\left(\frac{\boldsymbol{N}-2\boldsymbol{R}+2}{\boldsymbol{\alpha N}}\right)\left(\frac{7}{\boldsymbol{InvERF}\left(\frac{1}{\boldsymbol{\alpha}}\right)}\right)+9 \right\rceil$$

This formula generates an approximately normal distribution of Qualification Phase Performance points at an event, based on rank, with most teams getting a moderate number of points, and fewer teams getting the highest or lowest numbers of points available.

Table 4-3 displays sample Qualification Phase Performance points for variously ranked teams at a 28-team event. The system will automatically generate the appropriate points for each team based on their rank and the number of teams at the event.

Table 4-3 Sample Qualification Round Point Assignments

Rank	1	2	3	4	…	12	13	14	…	25	26	27	28
Points	16	15	14	14	…	10	10	10	…	6	5	5	4

4.1.2 ALLIANCE Selection Results

This attribute measures both individual team Qualification round seeding performance and recognition by peers.

ALLIANCE leads are recognized based on their Qualification phase seeding rank. This rank is a result of the rules of the game, which typically incorporate several team performance attributes, and are designed to eliminate ties in rank. ALLIANCE partners are rewarded based on peer recognition. To be invited to join an ALLIANCE, a team's peers have decided that the team has attributes that are desirable. Giving points for ALLIANCE selection also supports come-from-behind teams. A team taking several MATCHES to optimize their performance may be recognized as a late bloomer by a top seeded team, even if that performance isn't reflected in the rankings because of poor performance in early MATCHES. These points also have the potential to recognize teams employing a unique strategy with their ROBOT. Teams with unique or divergent ROBOT capabilities that complement the strengths of other ALLIANCE members may be selected to fill a strategic niche.

Note also that ALLIANCE leads are given the same number of points as the team drafted in the same sequence. For example, the team who accepts the pick from the 3rd ALLIANCE lead receives the same number of points as the 3rd ALLIANCE lead. Numerical analysis supports the idea that ALLIANCE leads are about as strong in ROBOT performance as equivalently drafted teams. An additional minor benefit to this system is that it allows teams who would traditionally not be a top ranked team the opportunity to be an ALLIANCE lead.

4.1.3 Playoff Performance

This attribute measures team performance as part of an ALLIANCE.

Teams earn points based on how far they progress into the Playoffs. Points are given to all teams within the ALLIANCE as described in Table 4-1.

See Section 13.7.2 Playoff MATCH Bracket for more details on the number of ALLIANCES that are formed for the Playoffs and an example of the Playoff MATCH bracket.

4.1.4 Team Judged Awards

This attribute measures team performance with respect to team awards judged at the event.

The points earned for team awards in this system are not intended to capture the full value of the award to the team winning the award, or to represent the full value of the award to *FIRST*. In many ways, the team's experience in being selected for awards, especially the Inspire Award, is beyond measure, and could not be fully captured in its entirety by any points-based system. Points are being assigned to awards in this system only to help teams recognize that *FIRST* continues to be "More than Robots®," and to assist in elevating award-winning teams above non-award-winning teams in the ranking system.

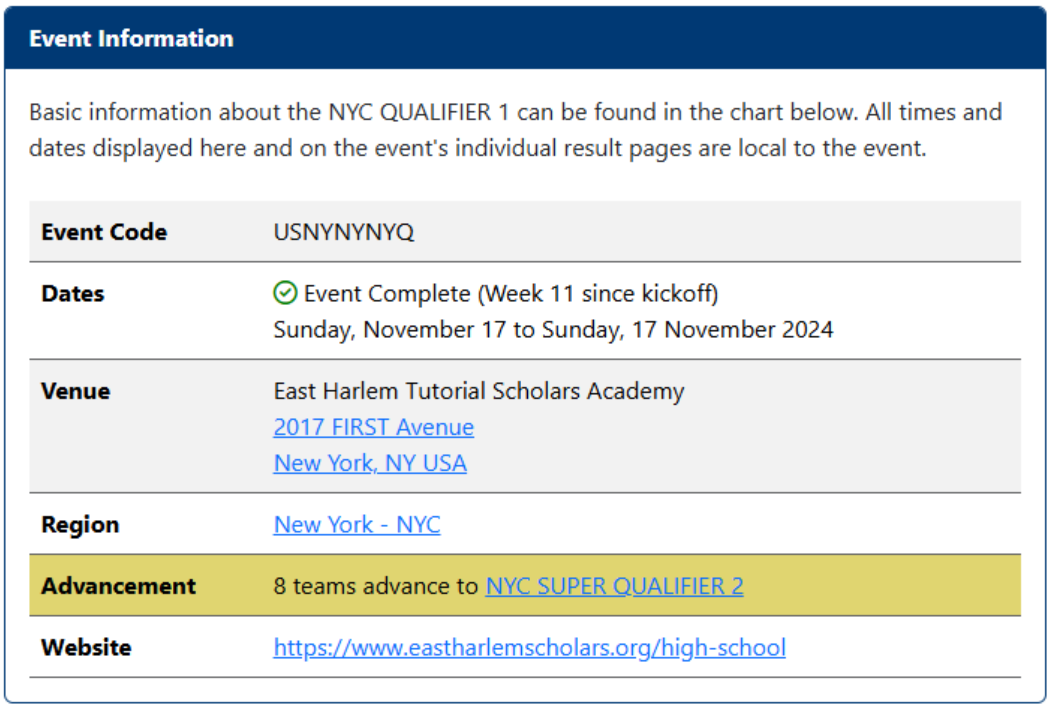
Teams only get points for team awards judged at the event. If an award is not judged, is not for a team (e.g., the Dean's List Award), or is not judged at the event (e.g., Safety Animation Award), no points are earned.

Points for awards not given at the event are not assigned to any team. See A211 for the list of points-eligible awards.

4.2 Advancement Distribution by Region

Advancement within a region is determined by the Program Delivery Partner and minimum advancement numbers should be made publicly accessible to participating teams as early as possible before the event, and no later than when ALLIANCE selection begins. Advancement information may be published on the FTC-Events page as shown in Figure 4-3.

Figure 4-3 Event Advancement Information as shown on the ftc-events.firstinspires.org/ page



Advancement to the *FIRST* Championship and *FIRST* Premier Events is determined by *FIRST* Headquarters based on a number of factors including:

- Number of teams registered within the region before the cutoff date (this season November 17th)
  - Regions who meet minimum registration requirements
  - Total number of teams within the region
- New developing regions with a Program Delivery Partner
- Global and regional representation

Regional allocations of advancement slots information will be published on the FTC-Events page starting in early December. Regionally allocated slots which are not secured by the event deadline will be returned to *FIRST* HQ or Premier Event Host for reallocation which may include reallocation to a new region or waitlist team invitation.