Judge and Judge Advisor Manual
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Thank you for taking the time to volunteer for a FIRST® Tech Challenge event. FIRST® and FIRST® Tech Challenge rely heavily on volunteers to ensure events run smoothly and are a fun experience for teams and their families, which could not happen without people like you. With over 6,500 teams competing yearly, your dedication and commitment are essential to the success of each event and the FIRST Tech Challenge program. Thank you for your time and effort in supporting the mission of FIRST!

Revision History

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<th>Date</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>10/19/2020</td>
<td>Initial Release</td>
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<tr>
<td>1.1</td>
<td>11/16/2020</td>
<td>Update to Judging Feedback Process, pgs 8, 18, 29; Added language regarding Bias, pg 12; Added language regarding second interviews, pg 13; Added language regarding Engineering Portfolio, pg 15</td>
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Introduction

What is FIRST® Tech Challenge?
FIRST® Tech Challenge is a student-centered program that focuses on giving students a unique and stimulating experience. Each year, teams engage in a new game where they design, build, test, and program autonomous and driver operated robots that must perform a series of tasks. To learn more about FIRST® Tech Challenge and other FIRST® Programs, visit www.firstinspires.org.

Gracious Professionalism®

FIRST® uses this term to describe our programs’ intent.

Gracious Professionalism® is a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.

Watch Dr. Woodie Flowers explain Gracious Professionalism in this short video.

Learn more about the roles of volunteers on our Volunteer Resources page, “Volunteer Role Descriptions”.

Job Description

- **Physical/Technical Requirements:**
  - Technical – Medium to High
  - Physical – Medium
  - Administrative – Medium
  - Communication – High

- **Time commitment for a Judge**
  - About 4 hours of training before the event.
  - At least one full day for the event, about 10 hours.
    - Larger events could span multiple days. Be sure to check with your Volunteer Coordinator or Tournament Director for more information about the hours needed for the role.

- **Time commitment for a Judge Advisor**
  - About 8 hours of training before the event for the Judge Advisor role including participation in monthly FIRST Judge Advisor discussion calls.
  - About 8 hours of planning for the event
  - About 2 hours training the Judging team.
  - At least one full day for the event, about 12 hours.
    - Larger events could span multiple days. Be sure to check with your Volunteer Coordinator or Tournament Director for more information about the hours needed for the role.

- **Proper Dress:**
  - Judges and Judge Advisors sometimes receive a shirt to wear during the competition. Check with the Volunteer Coordinator or the Tournament Director before the event to ask if a shirt is provided.
  - Wear comfortable shoes. Judges spend most of the day walking between the Pit area, the Competition Fields, and the Judges Deliberation Room.
    - Open toe and open back shoes are not allowed in the Pit Area or Competition Area.
  - ANSI Z87.1 Certified safety glasses must be worn in the Competition Area and in the Pit Area.

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Volunteer Training and Certification
If you have applied for a role but have not received access to the training, please email FTCTrainingSupport@firstinspires.org.

Judges and Judge Advisors should read this manual before the event. They should speak to the Tournament Director or Affiliate Partner to check for additional requirements, such as meetings before the event. The estimated training time is one hour.

Volunteer Minimum Age Requirement
FIRST requires that FIRST Event volunteers be at least 13 years old, however, the Regional Planning Committee can increase the age requirement as needed. Adult volunteers cannot have children with them while volunteering nor be responsible for supervising children at the event. Children under the minimum age are welcome at FIRST Competitions with suitable supervision by someone other than a volunteer.

Volunteer Judge Minimum Age Requirement
The minimum age allowed for Judges is 21. Students who have been a part of a FIRST team must be at least 3 years removed from the team before they can serve as a Judge at an Official FIRST Tech Challenge Tournament. This is because young people who have recently been a student on a team often lack the perspective and life experience required to make decisions that adhere to the award requirements.

Key Volunteer Role Minimum Age Requirement
Volunteers must be at least 21 years old before they can serve in a Key Volunteer Role for the FIRST Tech Challenge. Key Volunteer positions include: Volunteer Coordinator, Head Referee, Judge Advisor, Field Manager, Field Technical Advisor, Lead Hardware Inspector, Lead Software Inspector, and Lead Scorekeeper.

Bring a Friend!
Volunteers are a huge part of the FIRST Tech Challenge Program inspiring students to seek out careers in science, technology, engineering, and math (STEM). FIRST Tech Challenge needs your help in recruiting new volunteers to keep our programs thriving for future generations! If you have a friend or co-worker you think would be interested in volunteering at an event, there are just a few easy steps to help get them involved!

1. Check out our full list of volunteer opportunities online!
2. Have them apply for the Event in the Volunteer Registration System. Volunteers must be screened before volunteering.
3. Have them contact Firsttechchallenge@firstinspires.org with any questions they may have.

If they are concerned about jumping in headfirst, no worries! Job shadowing at a FIRST Tech Challenge Event is a great way to get a taste of what a full day’s worth of competition looks like. New volunteers can discover ways they can fit their personal skills into a volunteer position!

FIRST Tech Challenge Philosophy of Judging
FIRST recognizes both on-field performance, and the characteristics that help FIRST achieve its mission to change the culture by inspiring young people. Competition Awards are earned by teams for their ability to play the game, while Judged Awards celebrate teams for their off-field performance.

FIRST Tech Challenge awards fall into two general categories: Machine, Creativity, and Innovation (MCI), and Team Attributes (TA). MCI awards recognize the technical accomplishments of teams in the planning, design,
construction, operation, and control of their robots. The Think Award, Design Award, Collins Aerospace Innovate Award, and the Control Award presented by Arm, Inc are all MCI Awards. TA awards recognize teams who have developed strong partnerships with their community. This includes recruiting members, fund-raising, and the teams outreach efforts to spread FIRST’s message about the benefits that can come from the study of math, science, and technology. The Connect Award, and the Motivate Award are both TA awards.

The Inspire Award falls into a special category, as it recognizes teams who excel in both MCI and TA accomplishments. Teams must be nominated by the Judges in both MCI and TA categories to be considered for the Inspire Award.

The quality of experience between Judges and students is an important ingredient of FIRST. The awards are a method FIRST uses to inspire students and open their eyes to the future that awaits them if they continue their studies. The awards help promote a positive student interaction with Judges who are successful professionals and can recognize their achievements and encourage them to continue learning.

All award winners chosen by the Judges are recognized as being fine examples of the award guidelines, not necessarily the “best” team. This idea will help with deliberations, and encourage collaboration in the award selection process.

It is important to note that the goal of Judging is to recognize students for their achievements, rather than penalize them for missing components. The disqualification of Engineering Portfolios for formatting issues, for the omission of a section, or for a perceived lack of clarity is not in line with the philosophy of celebration and recognition.

Teams are recognized at the awards ceremony. Each winner must display role model behavior and show Gracious Professionalism to everyone they meet at the event.

Award scripts are written for the positive qualities the team displays, and do not recognize the hardships that a team may have overcome. The message to the audience about each award winner should be an uplifting one.

### A Note About Event Types

#### Traditional Events

A traditional FIRST Tech Challenge event is typically held in a school or college gymnasium, where Teams use Robots to compete in the current seasons game challenge. Teams participating in traditional events compete with alliance partners in a head to head style of competition on the official FIRST Tech Challenge Playing Field. Teams compete in a series of Matches that determine their ranking at a traditional tournament. The size of a traditional event can range anywhere from 8 Teams to over 50 Teams competing in one place. Traditional events are generally scheduled by the local program delivery partner, and are run by many volunteers including referees, judges, scorekeepers, queuers, and other key volunteers. Traditional events consist of Robot inspections, Robot competitions, judging interviews (for most competitions), and an overall celebration of Teams and their accomplishments.

#### REMOTE Events

REMOTE events were developed to mimic traditional FIRST Tech Challenge events, while practicing social distancing guidelines. Since Teams are not able to gather and compete in the traditional head-to-head competition format, the season’s official full Playing Field has been adapted to allow Teams to play as a single Team. REMOTE Teams may order an official half version of this seasons field, or compete using a modified version of the field, which will be released at kickoff on 9/12/2020. Teams will still sign up for events and will be provided a window to submit their own Match scores, which will determine their rankings. Unlike traditional events, the scoring of the official Matches is done by the Team, rather than an event volunteer. Teams will
participate in judging interviews via video conference. In this guide, instructions for how Judging processes differ for REMOTE events will be indicated by the use of the word REMOTE.

Overview of Responsibilities - Judges

Judge
The primary role of a Judge is to interview teams, and to decide which teams deserve an award based on team interviews, the robot, match play, and the engineering portfolio. Judges are paired in groups of 2-3 to interview a set number of teams before the competition begins as well as interviews in the pit area.

During the event, Judges will:
- Conducat team interviews.
- Review team engineering portfolios.
- Update Judging Feedback Request form (if submitted)
- Watch Competition matches (at Traditional events).
- Decide the 3 top ranked teams for each Judged award.
- Come to consensus with other Judges on the recipient of each award.
- Share their notes on top ranked and Award-winning teams with the Judge Advisor and other Judges for use in Award Ceremony script.

This guide will walk through in detail all the responsibilities a Judge will have to prepare them for competition day.

Judge Match Observer – Traditional Events Only
Most of the Judges will be assigned to Award Panels and will not have much time to see the teams and robots in action. Some Judges will be asked to serve as Judge Match Observers. Their role is to watch the teams Gracious Professionalism®, the action on the field, and collect data on the quality of the robot performance in the competition. These Observers will keep notes on each team during a match, collecting observations about:

Gracious Professionalism®:
- How the team responds to wins or losses
- How the team interacts with their alliance partner.
- How the team interacts with the event volunteers.
- How the team interacts with other teams.
- How the team members interact with one another.
- How the team approaches their conversation with the Head Referee in the Question Box.

Robot and Match Play:
- Autonomous Operation
- Robots reliability during the match.
- Team Strategy
- Overabundance or absence of penalties

Many of the awards that are discussed during deliberations have qualities that need to be seen during the competition. The Judge Match Observer will be able to see all the teams more than once and collect
information on each. We recommend having a Match Observer sheet for each team to help keep organized. The Match Observers will be involved in the deliberations by providing much-needed feedback to the other Judges about the team, the team strategy, the team’s interactions with others, and the operational qualities of the robots. A match observer sheet can be found in Appendix I.

- REMOTE Events will not include Match Observation

**Judge Advisor Assistant**

The Judge Advisor Assistant is responsible for helping the Judge Advisor throughout the event, providing computer support (word processing), and performing other duties as assigned. The Judge Assistant is not a Judge and does not interview teams or take part in award deliberation or recipient selection process. The Judge Assistant is responsible for setting up the Judge’s room on the evening before or morning of the event. They are also responsible for breaking it down after the Judges have reached their decisions.

The Judge Advisor Assistant should be chosen for their discretion as well as organizational abilities, as they will hear and see the overall Judging process and must be able to keep the discussions confidential.

**At the event, the Judge Assistant will:**

- Act as timekeeper for Judge interviews.
- Help to coordinate team queuing
- Update Judges on any schedule changes that occur throughout the day.

Occasionally, the Judge Advisor Assistant may be a volunteer who is interested in becoming a Judge Advisor. The position can also be used as a way for a volunteer to shadow the Judge Advisor, learn about how this position works, and get a better understanding of the responsibilities involved.

**Pre-Event Day Responsibilities – Judges, Match Observers, Judge Assistant**

Before the event, Judges have a little homework.

- Read the Judges portion of this training manual, and the referenced Appendix resources.
- Watch the training videos.
- Take and pass the certification test.
- Review the game summary.
- Watch the Game Animation
- Call in to monthly Judging calls.
  - Judges will receive a schedule of calls by email.

It is strongly suggested that Judges take part in monthly discussion calls. These calls are for Judges in multiple regions to share tips and best practices with one another, to ask questions, and to build a sense of community and consistency across all regions.

**Event Day Responsibilities – Judge Advisors, Judges, Match Observers**

**Morning Meeting**

At a Traditional Event, Judges should plan to arrive at least one hour before the start of the event. A morning meeting is held before any judging takes place. This gives the Judge Advisor the opportunity to discuss the flow of the day, provide training where necessary, and provide the event day schedule. It’s also a great opportunity for the Judges to see the event layout and where the interviews and deliberations will take place.

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At a REMOTE Event, this meeting will be held virtually, and may be scheduled up to a week before the Judging Event takes place.

The Judge Advisor will ask Judges about any conflict of interest they have with a team. Conflicts of interest can cause teams to feel the process isn’t fair, and we strive to avoid any perception of unfairness at FIRST Tech Challenge events. For more information about Conflict of Interest, please visit Appendix F.

**Formal Team Interviews**

The formal interviews are a way for the Judges to evaluate teams for every award category. The formal interview is where each team will get to speak with a panel of 2-3 Judges, talk about their robot, their journey, and have the Judges ask questions. Teams should arrive to the interview with their robot and their engineering portfolio, unless their portfolio has been collected at check in. The Judges will keep the portfolio and the Control Award Submission Form and return the engineering portfolio later in the day.

- For REMOTE Events, teams will upload their Engineering Portfolio, their Control Award Submission Form (optional), and their Judging Feedback Request Form (optional) prior to the event. The Tournament Director or Program Delivery Partner will provide Judges and Judge Advisors with access to content that teams have uploaded.

Judging can be a nerve-wracking experience for some students. They might have pressure to do well from their coaches, parents, teammates, and themselves.

One of your roles will be to create an environment where the students have fun and feel comfortable.

You can start the judging session on a positive note, by smiling, welcoming the team to the judging session, and introducing yourself. Always be polite and respectful and strive to make the experience pleasant for the students. We want teams to leave the judging session feeling valued and celebrated for their accomplishments.

**New this year:** Teams will receive 5 minutes for their uninterrupted presentation. Consistency is important across events, and we ask judges to please stop the team presentation at the end of 5 minutes and begin to ask teams their questions.

FIRST Tech Challenge teams can present, without interruption for the first 5 minutes of their interview. Please jot down your questions and ask them at the end of the 5 minutes. It is important for all teams to have a consistent experience. We ask that Judges begin to ask their questions at the five-minute mark, and not allow teams to present for longer than five minutes. We want to reinforce the importance of a concise pitch that presents the most excellent qualities of a team.

Some teams will not come to judging with a prepared presentation. If a team does not have a presentation, it is fine for the Judges to begin with questions.

When you’re asking questions, avoid technical jargon and instead allow the students to show their knowledge to you. Students may not understand your question, they may misinterpret what you’ve asked, or they might take a question you ask too literally. If you don’t understand their answer, or if their answer doesn’t seem connected to the question you asked, ask the student to explain. Be ready to rephrase the question or ask some follow up questions.
REMOTE Interviewing requires some additional considerations, which could include making sure the students are comfortable on the video platform, and encouraging the use of hand signals for both Judges and Students who want to contribute, but would prefer to not interrupt.

None of the FIRST Tech Challenge judged awards are related in any way to classroom performance. Grade Point Average can be a sensitive subject for some students, and we ask that Judges avoid asking about it, or talking about it with students.

Teams look up to Judges as role models. They are proud of the work they’ve done, and they are eager to share their experiences with you. Let them go into detail whenever possible and be patient if they don’t get right to the point.

Occasionally you may meet an over-involved coach. When necessary, please remind coaches the students must answer the questions. Coaches may, at some events, watch the judges’ interview, but they cannot participate.

Some teams may need an interpreter or translator. In instances where the team coach is the only person available who can act as an interpreter or translator, the coach can take part in the interview in the role of interpreter only.

If taking notes during the interview, please be careful with what you write. Many people can read upside down, and a team will quickly notice if you have written something that is not celebratory, helpful, or useful. Remember, our goal is to inspire the students, and not discourage them.

Please see Appendix B for some sample questions

Understanding Differences
Each student is special and unique, with different strengths, challenges, social skills, and learning abilities.

Some differences may be misinterpreted. Please be mindful that your first perception may be off. For example, a student who is quiet or has limited social skills may have extensive knowledge to share. You may also notice cultural differences. Remember that some cultures expect eye contact, while others may find eye contact to be disrespectful. Always be positive, flexible, and patient.

A few differences that you may encounter include students with limited social skills, who have difficulty expressing thoughts verbally, who shout out blunt or inappropriate comments, or may distance themselves physically from the team. Some of these challenges may be neurological in nature. Differences between a student who isn’t able to do something as compared to a refusal to do something can show up in a way that is not familiar to you.

A student may have an intense interest in a specific topic or area. For example, they may not be able to see the big robot picture, but may have an extensive knowledge about programming, or the mechanical build.

As a Judge, you’ll need to adjust your expectations. Many students with high abilities may take longer to process and answer questions; many may get left behind compared with a student who reacts more quickly.

When evaluating teams who seem “too rehearsed,” think about how an adult might prepare for a big presentation at work. Some team members may memorize facts and examples. Since teams work for weeks or months to get ready for tournaments, the teams often practice until it’s perfect. Seeming rehearsed is not necessarily a sign of an over-involved adult. If you’re not sure of the team’s true understanding, ask follow-up questions for explanation of their thought processes, or go into more detail.

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Autism Awareness
As a FIRST Tech Challenge Judge, you should be aware that youth on the autism spectrum often take part in FIRST programs.

Autism spectrum disorders relate to communication, social interaction, and restrictive or repetitive behaviors and interests.

People with autism may have difficulty understanding language gestures or social cues; difficulty engaging in back-and-forth conversations or interactions; intense interest in unusual topics or objects, an intense concentration on favorite activities; good rote learning and long-term memory skills, a desire to adhere to the rules; ability to understand and retain concrete concepts and patterns, often with strong interest or ability in math and technology; difficulty managing transitions, changes in routine, stress, and frustration. On the more severe end of the spectrum, people with autism may have limited to no speech or limited to no eye contact.

As a Judge, be prepared to include students with many types of special needs, including those who are on the autism spectrum. You may find you need to use direct concrete phrases and break down questions or instructions into fewer steps. Give the student extra time to respond and be aware that students who have autism sometimes have outbursts or unexplained behavior, which could be directed at judges or even teammates.

Understanding Bias
We strongly encourage our Judge and Judge Advisor volunteers to complete the Strategies for Inspiring Success For All modules on Schoology to develop a better understanding of invisible biases. While these resources are designed for coaches and mentors, the concepts can be applied to all volunteer roles.

Pit Interviews
Pit Interviews are another time that Judges interface with the teams of students is while the game is being played. Judges will often go out in pairs or groups to gather more information about specific teams. It is also common for judges to go out into the pits to talk with teams in a more informal setting.

The teams are often competing in a match while you are looking for them. If they are not in the pits, they might be in the queue or at a practice field. Be patient with the teams and try to come back in a few minutes. You can also go find them in the queue or practice field if needed or make an appointment with the team to visit them in the pits.

A few pointers about pit interviews:

- Judge notes and discussions about teams are confidential. Students are curious and often will innocently want to see what Judges are writing. Keep Judges notes hidden by using a cover sheet and keep conversations about teams limited in the pit area.
- Students may want to know how they are doing on Judging. They also may ask how they compare to another team. Please do not try to answer questions like this. It is a no-win situation! The best answer is “We are evaluating all teams and gathering information. We appreciate you for being a part of FIRST”. That is a nice non-answer.
- Be careful about discussing specifics about teams in the pits. It can be difficult to have a private conversation. If you need to discuss anything about a team, find a space where you will not be overheard such as the judging deliberation room.
- Judges must be in a minimum of two to visit teams in the pits and may never visit teams without another judge present. Judges who are a part of a team MUST remove their judging attire before visiting their team. If a team parent, coach, or mentor is serving in the role of judge, and their team wins an award, the judge MUST remove their judging attire before joining their team to accept the award.
Perception is important, and teams should be treated fairly and believe they are treated fairly at events. The integrity of the judging process is important to FIRST, to our volunteers, and to our teams.

**Second Interviews for REMOTE Judging**
At Remote Judging Events, second interviews with teams are scheduled in advance. Each team receives a second interview, and the Judging Panels are rearranged to form Award Specific panels. These panels will likely include a technical judge, to review teams nominated in MCI Award categories, and a non technical judge, to review teams nominated in TA Award categories.

**Award Requirements**

Each FIRST Tech Challenge Award has a set of requirements that a team must meet to be considered for them. The Engineering Portfolio, the team interview, and other information learned from pit interviews help judges to learn which teams best meet the criteria for any given award. In the section below, you will find the information teams receive about award requirements, taken from Section 9 of Game Manual Part 1.

**Judging & Award Criteria**

**Engineering Notebook**

**Overview**
This section describes the engineering notebook.

**What is an Engineering Notebook?**
One of the goals of FIRST and FIRST Tech Challenge is to recognize the engineering design process and “the journey” that a team makes in the phases of creating their robot, including:

- Problem Definition
- Information Gathering
- Brainstorming Solutions
- Concept Design
- System Level Design
- Testing
- Design Improvement
- Production
- Promotion
- Budgeting
- Planning
- Outreach

Throughout the process of building and designing a Robot, Teams will draw ideas on paper, encounter obstacles, and learn valuable lessons. This is where teams will use an engineering notebook. These notebooks follow the Team from kickoff throughout the competitions.

The Engineering Notebook is an optional item but is a fundamental source of information for the team to use to be able to create the Engineering Portfolio.

Judges may ask the team for their engineering notebook to better understand the journey, design, and Team and to get more details and background than would be in the team’s Engineering Portfolio.

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The engineering notebook is the documentation repository of the Team, outreach and fund-raising efforts, Team plans, and the Robot design. This documentation can include sketches, discussions and team meetings, design evolution, processes, obstacles, and each Team member’s thoughts throughout the journey for the entire season.

In the FIRST Tech Challenge, engineering notebooks can include business planning, outreach goals and achievement, and a Team’s insights into what it is to be a FIRST Tech Challenge Team.

**A new notebook must be created for each new season.** Teams may consider their new season as beginning after their final event for the previous season.

**Engineering Notebook Formats**
Teams may choose to record their season with either handwritten or electronic documents. There is no distinction made between handwritten and electronic engineering notebooks during judging; each format is equally acceptable.

- **Electronic:** Teams may choose to use electronic programs to create their engineering notebook.
- **Handwritten:** Teams can choose to add handwritten text, drawings, or cad drawings, but recognize that the team may need to scan (or take a picture) of each page.

For judging at a **REMOTE** Event, Teams should create a single file that is a sharable, non-editable version (such as a PDF) of their engineering notebook. Teams may be asked to upload their engineering notebook in the **REMOTE** Event Hub after the initial team interview is completed.

For judging purposes at a Traditional event, Teams should have a physical copy of their Engineering Notebook available in the team’s pit area for Judges to look at as needed.

**Engineering Notebook Requirements**

1. The Team number must appear on the outside front cover of the engineering notebook. **Engineering notebooks will not be considered without this information.**

**Engineering Notebook Recommendations**

- We strongly recommend that a one-page Summary be included in the notebook near the front that connects the information from the Engineering Portfolio to the relevant section or pages in the Engineering Notebook. This will help the judges quickly find additional information relevant to the specific award(s).

- The engineering notebook could include:
  
  a. Engineering content that includes the Robot design processes.

A Team number on outside front cover makes it easy for Judges to know who created the Engineering Notebook they are reviewing. This is a required component of the Engineering Notebook.
b. Team information that includes information about the Team and outreach activities.
c. A Team plan. This could be a business plan, a fund-raising plan, a strategic plan, a sustainability plan, or a skills development plan.

**Engineering Notebook Examples**
Scanned copies of engineering notebook examples are posted on the FIRST website. Teams are encouraged to look over these as great examples of what the judges will look for when reading through the engineering notebooks.

**Engineering Portfolio**

**Overview**
This section describes the requirements for creating the engineering portfolio, including formatting guidelines.

**What is an Engineering Portfolio?**
An Engineering Portfolio is a short and concise summary of the team’s Engineering Notebook.

Whereas the engineering notebook is a complete documentation of the Team, outreach and fund-raising efforts, Team plans, and the Robot design. The Engineering Portfolio should include sketches, discussions and team meetings, design evolution, processes, obstacles, goals and plans to learn new skills, and each Team member’s concise thoughts throughout the journey for the season, the Engineering Portfolio is like the Team’s CV or Resume.

**Engineering Portfolio Formats**
Teams may choose to document their summary portfolio with either handwritten or electronic documents. There is no distinction made between handwritten and electronic engineering portfolios during judging; each format is equally acceptable.

- **Electronic:** Teams may choose to use any electronic programs to create their engineering portfolio.
  - For REMOTE Event judging, Teams must create a single PDF file of their engineering Portfolio.
  - For Traditional Events, Teams must print their Engineering Portfolio.

- **Handwritten:** Teams can choose to create a handwritten version.
  - For REMOTE Judging Events, this is discouraged due to difficulties in scanning into a readable, sharable, online version.

**Engineering Portfolio Requirements**

1. In order to be considered for Judged Awards, a team must submit an Engineering Portfolio.
2. The total number of pages for an Engineering Portfolio must not exceed 15 8.5 by 11 sized pages. The Control Award Submission Form is not a part of the Engineering Portfolio, and does not count in this total.
3. The submitted portfolio must be in PDF format.
4. The Team number must appear on the top of the front page of the engineering portfolio. **Engineering portfolios will not be considered without this Team number**.

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information.

**Engineering Portfolio Recommendations**

1. We strongly recommend the Team number is at the top of each page.

   - The Engineering Portfolio could include:
     
     a. Summary of the Engineering content that includes the *Robot* design processes.
     
     b. Summary of the Team information that includes information about the Team and outreach activities.
     
     c. Summary of the Team plan and information about the Team overall. The Team plan could be a business plan, a fund-raising plan, a strategic plan, a sustainability plan, or a plan for the development of new skills.

Teams can use the [Self-Assessment](#) sheet (coming soon!) as a way to be sure their Engineering Portfolio provides answers for each of the requirements for specific awards.

**Judging the Engineering Portfolio**

Judges review the engineering portfolio after the interview. Taking 1-3 minutes after the interview can provide a quick idea about the content in the portfolio.

**Engineering Portfolio Requirements by Award**

The chart below provides a quick outline of the engineering portfolio requirements by award:

<table>
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<th>Engineering Portfolio Requirements by Award</th>
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<tr>
<td><strong>Inspire Award</strong></td>
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<tr>
<td>Team must submit an engineering Portfolio. The engineering portfolio must include summary information about the Robot design, information about the Team, and a Team plan. The entire engineering portfolio must be high quality, thoughtful, thorough, concise, and well-organized. The team should have an engineering notebook available for the judges to review that provides the detailed information to support the information in the Portfolio.</td>
</tr>
<tr>
<td><strong>Think Award</strong></td>
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<tr>
<td>Engineering Portfolio must have engineering content. The engineering content could include entries describing examples of the underlying science, mathematics, and game strategies in a summary fashion.</td>
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<tr>
<td>The engineering Portfolio must provide examples that show the Team has a clear understanding of the engineering design process including examples of lessons learned.</td>
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<td>The portfolio should inspire the judges to want to see the detailed engineering content in the Engineering Notebook.</td>
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<td>Portfolio format is less important but enables the judges to understand the team’s design maturity, organizational capabilities, and overall team structure.</td>
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<tr>
<td>Portfolio could reference specific experiences and lessons learned but should capture the summary of the current status of the Team and their robot design.</td>
</tr>
<tr>
<td>Portfolio could also summarize experiences and lessons learned</td>
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It is a good idea to connect the Award criteria to specific content in your Engineering Portfolio!
from outreach with concise tables of outcomes
- Portfolio could also summarize how they acquired new mentors and/or acquired new knowledge and expertise from their mentors
- Portfolio could contain summary of overall Team Plan.
- Portfolio could contain information about the plans to develop skills for team members.
- Portfolio could be organized in a logical manner.

**Connect Award**

- Team must submit an engineering portfolio.
- Portfolio must include a Team plan that covers the Team’s goals for the development of team member skills, and the steps the team has or will take to reach those goals. Examples of what the plan could include are timelines, outreach to science, engineering, and math communities, and training courses.
- Portfolio must include a summary of how they acquired new mentors or acquired new knowledge and expertise from their mentors. Working with Mentors from the FIRST Mentor Network is an acceptable way to learn from Mentors.

**Collins Aerospace Innovate Award**

- Team must submit an engineering portfolio.
- The engineering portfolio must include examples of the team’s engineering content that illustrate how the Team arrived at their design solution.
- The portfolio should inspire the judges to want to see the detailed engineering content in the Engineering Notebook.

**Control Award, sponsored by Arm, Inc.**

- The Team must submit an engineering portfolio. The engineering portfolio must include engineering content that documents the control components.
- The Team must submit a Control Award submission form as a separate document. Teams should identify the control aspects of their robot that they are most proud of, and should not exceed 2 pages.

**Motivate Award**

- Team must submit an engineering portfolio.
- The engineering portfolio must include a Team organization plan, which could describe their future goals and the steps they will take to reach those goals. Examples of what the plan could include are team identity, fund-raising goals, sustainability goals, timelines, outreach, finances, and community service goals.
- The Team is an ambassador for FIRST programs.
- Team can explain the individual contributions of each team member, and how these apply to the overall success of the team.

**Design Award**

- Team must submit an engineering portfolio that includes examples of Robot CAD images or detailed Robot design drawings.
- The portfolio should inspire the judges to want to see the detailed design content and design journey in the Engineering Notebook.
When judging the engineering portfolio, judges should be sure that the basic engineering portfolio requirements are met (see above). After the minimal requirements are met, content is more important than the layout of the portfolio. Sometimes when judging the engineering portfolio, it’s easy to focus only on the nuances of formatting and layout. The judges reviewing the portfolio should not disqualify an engineering portfolio simply for formatting or layout issues.

**Engineering Notebook Examples**

Scanned copies of award-winning engineering notebook examples are posted on the FIRST website. Teams are encouraged to look over these as great examples of what the judges will look for when reading through the engineering notebooks.

**Feedback to Teams**

Teams who wish to receive feedback from Judges Must submit a completed Judging Feedback Request form. Judges will conduct the team interview, review the documentation submitted by the team, and complete the Judges portion of the feedback form. The Judges must complete their portion of the Feedback Form immediately following their interview with the team. After the event, the Lead Coach/Mentor 1 for the team will receive a Judging Feedback Form which has been completed by the event Judges via email.

**Award Categories**

Each award listed below has a list of non-negotiable requirements. Please note that each award has a set of required criteria. Gracious Professionalism® is listed as the first criteria for every award. This is a mandatory requirement for every FIRST Tech Challenge award. Teams who behave in an ungracious way are not eligible for consideration for any award at the event.

**Inspire Award**

This judged award is given to the team that best embodies the ‘challenge’ of the FIRST Tech Challenge program. The Team that receives this award is a strong ambassador for FIRST programs and a role model FIRST Team. This Team is a top contender for many other judged awards and is a gracious competitor. The Inspire Award winner is an inspiration to other Teams, acting with Gracious Professionalism® both on and off the playing field. This Team shares their experiences, enthusiasm and knowledge with other team, sponsors, their community, and the Judges. Working as a unit, this Team will have showed success in performing the task of designing and building a Robot.

Required criteria for the Inspire Award:

- **Team** shows respect and Gracious Professionalism® to everyone they meet at a FIRST Tech Challenge event.
- **Team** is a strong contender for several other judged awards. The Inspire Award celebrates the strongest qualities of all the judged awards.
- The **Team** is an ambassador for FIRST programs. They demonstrate and document their work in their community.
- **Team** is positive and inclusive, and each team member contributes to the success of the **Team**.
- **Team** must submit an engineering portfolio. The engineering portfolio must include engineering

New This Season: When a component is called a “requirement" we use the word “Must”, and a notebook cannot be considered without it. When a component is called a “recommendation" we use the word “Should". These are suggestions to teams and are not obligatory.

The Inspire Award celebrates a **Team** that, in the opinion of the Judges, is a strong contender in many Award categories. The reliability of the **Robot** during the **Robot** competition is one aspect of this award, but it does not carry more weight than any requirement.
content, team information and a team plan. The entire engineering portfolio must be high quality and well-organized.

- **Robot** design is creative and innovative, and the **Robot** performs reliably on the field. The **Team** communicates clearly about their **Robot** design and strategy to the judges.
- **Team** interview session is professional and engaging.

**Think Award**
Removing engineering obstacles through creative thinking.

This judged award is given to the **Team** that best reflects the journey the **Team** took as they experienced the engineering design process during the build season. The engineering content within the portfolio is the key reference for Judges to help identify the most deserving **Team**. The **Team**’s engineering content must focus on the design and build stage of the **Team**’s **Robot**.

Additional detailed information that is helpful for the Judges would be in the team’s Engineering Notebook and would include descriptions of the underlying science and mathematics of the **Robot** design and game strategies, the designs, redesigns, successes, and opportunities for improvement. A **Team** is not a candidate for this award if their portfolio does not include engineering content.

Required criteria for the Think Award:

- **Team** shows respect and **Gracious Professionalism®** to everyone they meet at a **FIRST** Tech Challenge event.
- Engineering Portfolio must have engineering content. The engineering content could include entries describing examples of the underlying science, mathematics, and game strategies in a summary fashion.
- The engineering Portfolio must provide examples that show the **Team** has a clear understanding of the engineering design process including examples of lessons learned.
- The portfolio should inspire the judges to want to see the detailed engineering content in the Engineering Notebook.
- Portfolio format is less important but enables the judges to understand the team’s design maturity, organizational capabilities, and overall team structure.
- Portfolio could reference specific experiences and lessons learned but should capture the summary of the current status of the Team and their robot design.
- Portfolio could also summarize experiences and lessons learned from outreach with concise tables of outcomes

Strongly suggested criteria for the Think Award:

- **Teams** should flag or provide a reference to 6 to 8 pages of the Engineering Notebook(s) to support the engineering content included in the Engineering Portfolio.

**Connect Award**
Connecting the dots between community, **FIRST**, and the diversity of the engineering world.

This judged award is given to the **Team** that most connects with their local science, technology, engineering, and math (STEM) community. A true **FIRST** team is more than a sum of its parts and recognizes that engaging their local STEM community plays an essential part in their success. The recipient of this award is recognized for helping the community understand **FIRST**, the **FIRST** Tech Challenge, and the **Team** itself. The **Team** that
wins the Connect Award actively seeks and recruits engineers and explores the opportunities available in the world of engineering, science, and technology. This Team has a clear Team plan and has identified steps to achieve their goals.

Required criteria for the Connect Award:

- **Team shows respect and Gracious Professionalism® to everyone they meet at a FIRST Tech Challenge event.**
- **Team** must submit an engineering portfolio.
- Portfolio must include a Team plan that covers the Team’s goals for the development of team member skills, and the steps the team has taken or will take to reach those goals. Examples of what the plan could include are timelines, outreach to science, engineering, and math communities, and training courses.
- Portfolio must include a summary of how the team acquired new mentors or acquired new knowledge and expertise from a mentor. Working with Mentors from FIRST’s Mentor Matching site is an acceptable way to learn from Mentors.

Strongly suggested criteria for the Connect Award:

- **Team** provides clear examples of developing in person or virtual connections with individuals in the engineering, science, or technology community.
- **Team** actively engages with the engineering community to help them understand FIRST, the FIRST Tech Challenge, and the team itself.

**Collins Aerospace Innovate Award**
Bringing great ideas from concept to reality.

The Collins Aerospace Innovate Award celebrates a Team that thinks outside the box and has the ingenuity, creativity, and inventiveness to make their designs come to life. This judged award is given to the Team that has the most innovative and creative Robot design solution to any specific components in the FIRST Tech Challenge game. Elements of this award include elegant design, robustness, and ‘out of the box’ thinking related to design. This award may address the design of the whole Robot or of a sub-assembly attached to the Robot. The creative component must work consistently, but a Robot does not have to work all the time during Matches to be considered for this award. The Team’s engineering portfolio must include a summary of the design of the component or components and the Team’s Robot to be eligible for this award. Entries must describe how the Team arrived at their solution.

Required criteria for the Collins Aerospace Innovate Award:

- **Team shows respect and Gracious Professionalism® to everyone they meet at a FIRST Tech Challenge event.**
- **Team** must submit an engineering portfolio.
- The engineering portfolio must include examples of the team’s engineering content that illustrate how the Team arrived at their design solution.
- **Robot** or robot sub-assembly must be creative, elegant, and unique in its design.
- Creative component must be stable, robust, and work reliably.
Control Award, sponsored by Arm Inc.
Mastering robot intelligence.

The Control Award celebrates a Team that uses sensors and software to increase the Robot’s functionality in the field. This award is given to the Team that demonstrates innovative thinking to solve game challenges such as autonomous operation, improving mechanical systems with intelligent control, or using sensors to achieve better results. The control component should work consistently in the field. The Team’s engineering portfolio must contain a summary of the software, sensors, and mechanical control, but would likely not include copies of the code itself.

Required criteria for the Control Award, sponsored by Arm, Inc.:

- Team shows respect and Gracious Professionalism® to everyone they meet at a FIRST Tech Challenge event.
- Team must apply for the Control Award by filling out the Control Award Submission Form, located in Appendix E. The Control Award Submission Form should not exceed 2 pages.
- The team must submit an engineering portfolio. The engineering portfolio must include engineering content that documents the control components.
- Control components must enhance the functionality of the Robot on the playing field.

Strongly suggested criteria for the Control Award, sponsored by Arm, Inc.:

- Advanced software techniques and algorithms are encouraged.
- Control components should work reliably.
- Additional detailed information can be included in the Team’s Engineering Notebook
- Learnings from the team about what they tried and what didn’t work with regards to sensors, hardware, algorithms, and code

The Control Award is different from other awards because Team must apply for this Award. A Team applying for this award must turn in their Control Award Submission Form to the Judges at the event. This award focuses on a Team’s ability to program a robot that can reliably and efficiently carry out tasks during Match play, in a way that improves their ability to score during a match.

The Judges should look for:

- What sensors and hardware the Team is using on the Robot; what worked, what didn’t, and why.
- What algorithm or code the team has programmed their Robot with; what worked, what didn’t, and why.
- The Judges should pay attention to the program and design process. The design process is more critical than the code itself.

Teams must fill out and turn in the Control Award Submission Form to be considered for the Control Award. A Control Award binder or notebook is not an acceptable submission. Additional Control information should be located in the engineering notebook.

Gracious Professionalism® - “Doing your best work while treating others with respect and kindness - It’s what makes FIRST, first.”
**Motivate Award**

Sparkling others to embrace the culture of FIRST!

This *Team* embraces the culture of FIRST and clearly shows what it means to be a team. This judged award celebrates the *Team* that represents the essence of the FIRST Tech Challenge competition through Gracious Professionalism and general enthusiasm for the overall philosophy of FIRST and what it means to be a FIRST Tech Challenge Team. This is a *Team* who makes a collective effort to make FIRST known throughout their school and community, and sparks others to embrace the culture of FIRST.

Required criteria for the Motivate Award:

- *Team* shows respect and *Gracious Professionalism®* to everyone they meet at a FIRST Tech Challenge event.
- *Team* must submit an [engineering portfolio](#). The engineering portfolio must include a *Team* organization plan, which could describe their future goals and the steps they will take to reach those goals. Examples of what the plan could include are team identity, fund-raising goals, sustainability goals, timelines, outreach, finances, and community service goals.
- The *Team* is an ambassador for FIRST programs.
- *Team* can explain the individual contributions of each team member, and how these apply to the overall success of the team.

Strongly suggested criteria for the Motivate Award:

- Team as a whole takes part in their presentation, and actively engage with the Judges.
- *Team* shows a creative approach to materials that market their *Team* and FIRST.
- Team can clearly show the successful recruitment of people who were not already active within the STEM community.
- Team could also summarize experiences and lessons learned from outreach.

**Design Award**

Industrial design at its best.

This judged award recognizes design elements of the *Robot* that are both functional and aesthetic. The Design Award is presented to *Teams* that incorporate industrial design elements into their solution. These design elements could simplify the *Robot*’s appearance by giving it a clean look, be decorative in nature, or otherwise express the creativity of the *Team*. The *Robot* should be durable, efficiently designed, and effectively address the game challenge.

Required criteria for the Design Award:

- *Team* shows respect and *Gracious Professionalism®* to everyone they meet at a FIRST Tech Challenge event.
- *Team* must submit an [engineering portfolio](#) with an engineering content which could be CAD images or robot drawings of the Team’s overall design and/or components.
- *Team* also documents and implements strong industrial design principles, striking a balance between form, function, and aesthetics.

Strongly suggested criteria for the Design Award:
• *Robot* distinguishes itself from others by its aesthetic and functional design.
• Basis for the design is well considered (that is inspiration, function, etc.).
• *Robot* design is effective and consistent with *Team* plan and strategy.

**Promote Award (Optional)**
This judged award is optional and may not be given at all tournaments. Your Judge Advisor will have information about the judging for this award.

The Promote Award is given to the *Team* that is most successful in creating a compelling video message for the public designed to change our culture and celebrate science, technology, engineering, and math. *Teams* must submit a one-minute long public service announcement (PSA) video based on the PSA subject for the season.

*Team* may win the Promote Award only once at a Championship level event and only once at a qualifying level event.

PSA Subject for 2020-2021 Season:

“Why does FIRST Tech Challenge work?”

Required criteria for the Promote Award:

- **Video must meet the following criteria:**
  - Video must follow *FIRST* branding and design standards.
  - Video cannot be longer than 60 seconds.
  - Video must be of a high quality, as submissions may be used later to promote *FIRST*.
  - *Team* must have rights to music used in the video.
  - Music and permissions must be listed in video credits.
  - Video must have strong production value.
  - Video must be submitted by the deadline given by the Tournament Director.
- *Team* must present a thoughtful and impactful video which appeals to the public.
- Creativity in interpreting the yearly theme is required.
- Follow video award submission guidelines.

**Compass Award (Optional)**
A beacon and leader in the journey of the *FIRST* Tech Challenge.

This judged award is optional and may not be given at all tournaments. Your Judge Advisor will have information about the Judging for this Award.

The Compass Award recognizes an adult coach or mentor who has given outstanding guidance and support to a *Team* throughout the year and demonstrates to the *Team* what it means to be a Gracious Professional. The winner of the Compass Award will be chosen from candidates nominated by *FIRST* Tech Challenge student *Team* members, via a 40-60 second video submission. The video must highlight how their mentor has helped them become an inspirational *Team*. We want to hear what sets the mentor apart.

Required criteria for the Compass Award:

- **Video must meet the following criteria:**
  - Video must follow *FIRST* branding and design standards.
- Video cannot be longer than 60 seconds.
- Video must be of a high quality, as submissions may be used later to promote FIRST.
- Team must have permission from the copyright owners for music used in the video.
- Music and permissions must be listed in video credits.
- Video must be submitted by the deadline given by the Tournament Director.

  - Video highlights the mentor’s contribution to the Team and demonstrates what sets the mentor apart.
  - Follow video award submission guidelines.

**Judges’ Award**

This award is optional and may not be given at all tournaments. Your Judge Advisor will have information about the judging for this award.

During the competition, the judging panel may meet a Team whose unique efforts, performance, or dynamics merit recognition, but doesn’t fit into any of the existing award categories. To recognize these unique Team, FIRST offers a customizable Judges Award. The judging panel may select a Team to be honored, as well as the name of the Judges Award. The Judges Award recognizes a Team for their outstanding efforts but does not factor into the Advancement Criteria.

**Winning Alliance Award**

This award will be given to the winning Alliance represented in the final Match.

**Finalist Alliance Award**

This award will be given to the finalist Alliance represented in the final Match.

**Dean’s List Award**

The Dean’s List Award recognizes leadership and dedication of FIRST’s most outstanding secondary school students. This award is generally outside of the scope of the judge’s role at an event but is referenced here for your information. To learn more about the Dean’s List Award, please visit Appendix K.

**Gracious Professionalism and Award Eligibility**

If a Judge or Judge Advisor sees a team’s ungracious behavior or receives information about team behavior, the Judge must note relevant details and pass that information to the Judge Advisor. The Judge Advisor must investigate and should talk to the team mentor and remind him or her the team could be disqualified for awards based on their ungracious behavior. Judges are gatherers of information and we don’t intend for Judges to take the responsibility for rules enforcement.

Do not automatically disqualify a team for an award for ungracious behavior without talking to the team mentor first. If a team reports to a Judge that another team is displaying ungracious behavior, the Judge Advisor should alert the Tournament Director or Program Delivery Partner to investigate the report and talk to the team mentor. If a team repeatedly displays ungracious behavior after being warned, the Judge Advisor may disqualify the team from award eligibility and alert the Head Referee. The Head Referee has the authority to issue a red or yellow card for egregious behavior; sometimes, ungracious behavior may be extreme enough to be considered egregious. The Head Referee is the final authority at an event in deciding whether a card will be issued.

**Observation**

Once the formal team interviews have been completed, the Judges need to see the robots in action at a Traditional Event. The Judges responsible for reviewing the Control award must visit the competition area to watch the matches.
For REMOTE Events, the judges will watch a team submitted video that displays the control function they have described in the Control Award Submission Form.

**Initial Deliberations**

Once the formal team interviews have been completed, it is time for the Judges to gather in the deliberation room and make some initial award decisions. This early round of deliberations will help the Judges start to pare down the top contenders based on their interview alone. The Judges will still need to later observe matches, and interview teams in the Pits if they can. Each Judge panel will recommend a team for each award, except for the Inspire Award. Initial deliberations must not include any recommendations for the Inspire Award.

The Judge Advisor is responsible for ensuring the Inspire Award is the last award decided. The team that wins this award is nominated for multiple award categories and will rise to the top of the list.

**The process for handling Judge Deliberations is as follows:**

- For each award, the Judge Advisor will create a separate list on a whiteboard or oversized pad the entire judging panel can see.
- For each award, each panel will give their top 2 teams. Smaller events may need the top 3. Do this for all awards except for the Inspire Award. The Inspire Award nominees are handled differently.
- Judges may only nominate teams who have met the required award criteria.

**A few tips on creating the Award Candidates list:**

- Panels are not required to nominate teams for each award. If they don’t believe they would be ready to make a strong case for a team to win an award, then not putting the team on the nominee list saves processing time for everyone. This is especially true for events that are hosting more than 20 teams.
- Include brief notes on why each team is on the Award list.
- If the team is very strong in all categories, then they should be nominated for all categories. No team is submitted directly to the Inspire category.
- Judges are encouraged to look for the best in all the teams they interview. Judges should not focus on the slickest presentation. Substance counts.
- Judges should be mindful of the fact that they are reviewing teams with a variety of resources. Judges should always consider what a team does with the resources they have. Some teams are highly resourced, in mentors, local support, and expertise and others are not. Pay particular attention to teams who have done more with less.
- Remember that every award category includes a list of requirements. All teams in consideration for Judged Awards must meet the requirements. This is not optional or negotiable.
- If there are no teams that meet the basic criteria for an award category, no team should be nominated for the category.

**Hard Luck Stories**

Awards should not be given based on a hard luck situation. For every hard luck story uncovered by the Judges, there are many more that are not uncovered. All awards should be granted based on something positive and uplifting. Rather than rewarding a team for the hardships they had; reward them for their perseverance, determination, or unique problem-solving skills. The goal is to present each award winner to the audience as exhibiting role-model FIRST behavior, rather than presenting them as a victim of circumstance.

**How to Advocate for the teams you nominate for an award**

Judges can become emotionally invested in the success of teams they have met. It is not uncommon to hear comments such as, “This team was great; they’ve just got to win an award!” FIRST recruits technical and business professionals as Judges to bring different perspectives into the judging process. Judges should keep an open mind and attitude towards all teams who are deserving a given award. Arriving at consensus on a
single winner can become an emotional and difficult task. FIRST asks that all Judges advocate graciously and compromise readily. If the teams in contention reasonably meet the guidelines for an award, Judges should also consider where the award will have the greatest impact on the team. Remember, our goal is to inspire.

**Award Panels**
After the first round of deliberations are complete, the Judge Advisor will work with the Judges to decide Specialized Award Panels. Judges will be assigned to a panel for each award, including Judges Awards, and for match observation.

**Pit Interviews and Match Observation**
Once the first round of deliberations is complete, it’s time to gather more information about the teams. After the Judges have been reorganized into Award panels the Judges should visit the pits and the competition area to talk with the teams and watch matches.

The Judges should visit as many teams as possible, as time allows. Having the Judges interview many teams can provide an opportunity for a team to present information they might not have shared in their interview.

**Instructions for individual panels**
Judges assigned to specific awards interview the nominees for their award in the pits. Judges should ask various questions about the team, and not necessarily focus on only the award the team is being considered for. Before moving to pit interviews, it can be helpful for Judges to spend a few minutes reviewing the engineering portfolios of the teams on their list and create questions for each team.

**Think Award Judges**
Think Award Judges review the engineering portfolios for the teams that have been nominated by the Interview panel Judges. They review the portfolios for content first, and only if there are multiple excellent portfolios should they request copies of specific components of the Engineering Notebook.

**Control Award, sponsored by Arm, Inc. Judges**
Control Award judges review the control award sheets for the teams that have been nominated by the Interview panel Judges. They review the sheet for sensor use, creativity, and how the code the team has described is effective in the robot game. Control Award judges also watch matches played by the Control Award nominees, to ensure their code is effective, and works as described.

- In REMOTE Events, Judges watch the video link that the team has provided, which displays their Control component in use.

**Judges Choice Award Judges**
Teams who have not been nominated for any awards should be interviewed by the Judges Award panel(s). The Judges Award panel looks for interesting stories, unique robot design, extraordinary Gracious Professionalism, teamwork, collaboration, and other outstanding team qualities.
**Match Observation**
Match observers are generally assigned to a field, and have Match Observer tracking sheets for each team. They watch the teams in the match, and add their comments to their tracking sheet. Match observers look for robot performance, strategies, how a team responds to wins and losses, an abundance or absence of penalties, how a team collaborates with their alliance partner, and other on field behaviors.

For **REMOTE** Events, there are no match observers.

**Final Deliberations**
Once the Judges have had the chance to interview teams, see match play, review the engineering portfolios, and visit the teams, the Judges must come together and decide the winners of each award. Judges will meet in the deliberation room to go through the teams that were nominated during the first deliberations to pick the finalists and winners for each award. The goal is to remove all but 6 teams from the list, and rank the top 6 contenders for each award.

As each Award panel creates their list for the top six teams in their award category, make sure to include information from the panel of Judges that were assigned to the engineering portfolio, the Judges that were assigned as Match Observers, and the Judges that were assigned to the Control Award. For example, the Judge Panel assigned to the Connect Award may place their top contenders on the list. However, the Judges that reviewed the engineering portfolio may have feedback that there wasn’t any mention of outreach listed in their engineering portfolio. While creating the list, pay attention to each award that requires the engineering portfolio, and get feedback from the engineering portfolio panel to ensure all requirements of each award have been satisfied. Be sure to check with the Match Observers to learn how the team interacts with other teams and event volunteers, and about their Game Strategy.

When teams are nominated in multiple categories that are similar, look at the teams and try to decide which area the team is most noteworthy in, and continue from there.

**Differentiating Awards**
Some awards have similarities. You may find the same teams listed in both the Motivate and Connect Award lists. The differences between these awards is subtle – the Connect Award focuses on outreach to the science, technology, engineering, and math communities. The Motivate Award focuses on outreach to individuals or organizations that are not science based. Creating a team in a new school might count for the Motivate Award. Recruiting a Mentor to help the team with Computer Programming might count for the Connect Award.

Similarly, there may be teams who are nominated for both the Design Award and the Collins Aerospace Innovate Award. The differences here are subtle as well. The Design Award has specific mention of CAD, and it rewards Industrial Design, robot elegance, simplicity, and durability. The Innovate Award rewards innovative thinking, creativity, and ingenuity.

**Equitable Distribution of Awards**
When deciding the winners and finalists of each award, it is necessary to understand that teams can only win one judged award at an event (this does not include the Promote and Compass Award). Finalists of each award do not count as award winners (this includes 2nd and 3rd place Inspire Award finalists). Although it may be that a team comes to the top of the list time and time again, ultimately, they can only win ONE Judged Award. In cases where the same team is up for multiple awards, discuss each award with your fellow Judges and decide in which category the team was strongest. Teams should win the award for which they are best suited.

**Gracious Professionalism®** - “Doing your best work while treating others with respect and kindness - It’s what makes FIRST, first.”
Finalists for each award are announced during the Award Ceremony, but do not receive a physical trophy. It’s important that teams feel successful and celebrated at the event. If many teams are nominated for an award, and all are strong contenders, judges should consider awarding the finalist spot to a team not already designated as a finalist for another award. This is especially true if the strong contender has already been chosen by the judges as a winner for another award.

Also, when making the final decisions it may be that two teams are so close the Judges feel both teams should win, and that a tie should be made on a particular award. Teams cannot tie for an award. The judges must decide which of the top contenders is most deserving to be the winner of the award.

Many regional events have judges’ awards. These are given to teams who may not fit into a standard category. This allows the Judges an opportunity to provide a deserving team with recognition when the team might not otherwise receive it. The Judges Award should never be treated as a 2nd place or replacement for an existing award.

**Award Scripts**

Once award winners have been identified, the Judges are responsible for writing awards scripts. There is a format to the awards scripts that we like to use. A good award script is usually three sentences. The structure of the sentences is important.

1. Sentence one could apply to many teams but has a subtle hint.
2. Sentence two has a hint in which the winning team might understand.
3. Sentence three has a bigger hint, leaving the team somewhat sure who it is, but is not 100% positive.
4. The last sentence is: “And the award goes to…”

**Example:** Team 3344 is called the Robo-Knights, from Carnation, WA. They are winners of the Design Award. Their team colors are blue, they have a robot with an impressive arm design, and the robot has a shiny blue finish. The award script might say:

“This VALIANT effort required many nights designing a robot with an impressive array of features. A strong arm and a solid design have their opponents turning BLUE with envy. A SHINING example worthy of a knight at the round table of Camelot, the Design Award goes to team 3344 the Robo-Knights from Carnation, WA.”

**Key points about Award scripts:**

- Judges should write them. They have the notes and details needed.
- Always read them aloud when making final edits. They often read and speak differently.
- Make reading the script easy for the Emcee. Avoid long sentences and long words. Someone else needs to read your script.
- Capitalize or Bold words that the Emcee should emphasize when reading the script.
- Don’t reveal the winner in the first sentence. “We think team 1234 deserves the Design Award because…” is a common submission from the Judges. Ask them to rewrite it to reveal the result only at the end.
- Try to reveal the key reasons the team has received the Award.

Keep in mind that scripts are only needed for the winners of the Award. The Judges do not need to write scripts for the Finalists.
End of the Day

Awards and Closing Ceremony
Once the awards have been decided, and the award scripts written, the Judges will attend the awards and Closing Ceremony. At most events the Judges will join the rest of the event volunteers and take part in the Award Ceremony.

When it comes time to announce the finalists and winners of each award, the Judges line up for a “High Five Line”. When the winner of each award is announced, the team will come up to the high five line to pick up their trophy. The team will then high five each Judge in the line.

Feedback to Teams
Teams who wish to receive feedback from Judges Must submit a completed Judging Feedback Request form. Judges will conduct the team interview, review the documentation submitted by the team, and complete the Judges portion of the feedback form. The Judges must complete their portion of the Feedback Form immediately following their interview with the team. After the event, the Lead Coach/Mentor 1 for the team will receive a Judging Feedback Form which has been completed by the event Judges via email.

Notes Taken During Judging
Notes that Judges take during interviews and deliberations should be treated as confidential and left with the Judge Advisor at the end of the day for disposal. This includes notes taken electronically. Under no circumstances are notes to be shared with people who are not a part of the judging pool, either intentionally or by accident.
Overview of Responsibilities – Judge Advisor

Judge Advisor
The primary role of a Judge Advisor is to facilitate Judge deliberations and decision-making after all the team interviews have been completed for the day. The Judge Advisor does not take part in the interviews and does not select teams for awards. The Judge Advisor works with the Judges to help guide them in selecting the teams that best fit the award criteria. The Judge Advisor should not bring any outside knowledge of any team to the Judges, unless it occurred at the event, as this can influence their final decisions. The Judge Advisor keeps the group of Judges moving forward with award decisions. The Judge Advisor ensures decisions are made on time, and that scripts are written when needed by the Tournament Director. Other responsibilities may vary from region to region. This manual will provide the Judge Advisor information about many aspects of the role they may need to fulfill as well as being the facilitator. In the next section we will cover the duties of a Judge Advisor in more detail.

The Judge Advisor role is to make sure all the FIRST Tech Challenge teams have a high-quality experience with the Judging process. Every team should feel like they were treated fairly and given the opportunity to show the Judges their accomplishments. The key to a high-quality experience is planning well for the event.

Pre-Event Day Responsibilities – Judge Advisor

Before the event, Judge Advisors have a little homework.

- Read this training manual in its entirety.
- Watch the training videos.
- Take and pass the certification test.
- Review the game summary and watch the game animation.
- Meet with your Regional Lead Judge Advisor.
- Call in to monthly Judge Advisor calls.
  - Judge Advisors will receive a schedule of calls by email.
- Create a judges training using the template provided by FIRST.
- Connect with the Tournament Director to get the event schedule.
- Get a list of judges with their contact information from the Volunteer Coordinator for the event.

It is strongly suggested that Judges and Judge Advisors take part in monthly discussion calls. These calls are set up for Judges and Judge Advisors in multiple regions to share tips and best practices with one another, to ask questions, and to build a sense of community and consistency across all regions.

Communicate with the judges in advance
Judge Advisors should ask the Tournament Director or the Volunteer Coordinator for a list of Judges assigned to the event. Using this list, Judge Advisors should contact the Judges, confirm the responsibilities of the role, including a specific time the Judges should arrive. Judge Advisors should encourage the volunteers to complete the training and certification, ask about conflict of interest, and ask about any technical expertise the volunteer has. Provide the judges with an event schedule, and make sure they understand the time commitment for the role, including what time they must arrive, and when the event is scheduled to end. For more information about pre event responsibilities, please visit Appendix G.
**Interview schedule**

The Judge Advisor is often responsible for building the Judging Interview Schedule, along with the Tournament Director and the Lead Inspector. At a Traditional Event, Judging, Robot, and Field Inspections all happen at the same time, and it’s important to leave teams enough time to prepare for each of their scheduled appointment, and that teams are not double booked.

- At a **REMOTE** Event, Judging is held independently of the competition component.

It’s important to allow some time between interviews for judges to make and compare notes, to review the engineering portfolio, and to review the Control Award Submission Form. At a Traditional Event, we recommend 15 minutes for the interview and 10 minutes between interviews, although the event schedule, the number of teams, and the number of judging panels may dictate a shorter amount of time.

- For **REMOTE** Events, it’s even more important to allow extra time, both for the interviews themselves, and in between interviews. Consider extending the team interview portion to 20 minutes, to allow for a better flow of conversation between multiple people.

**Scheduling Tips for Traditional Events**

- Each panel must have at least two judges
- Each panel must spend at least 10 minutes with each team, 15 minutes is recommended. The first 5 minutes of the interview will be used by the team to make their formal presentation if they have one.
- Schedule 5 minutes to review the engineering portfolio after the interview
- Schedule 5 minutes for the judging panel to make notes using the judging summary sheet. These notes will be used later in the nomination process, and when completing feedback sheets for teams

Each panel requires 20 to 25 minutes to complete the judging process from start to finish. Judges should not be scheduled to see more than 8 teams in a day.

Make sure to schedule a break or two for the judges as well.

Judge Advisors should not assign Judges into interview panels until they fully understand which volunteers might have a conflict of interest with a team.

**Scheduling Tips for **REMOTE** Events**

- Each panel must have at least two judges
- Each panel must spend at least 15 minutes with each team, 20 minutes is recommended. The first 5 minutes of the interview will be used by the team to make their formal presentation if they have one.
- Schedule 5 minutes to review the engineering portfolio after the interview
- Schedule 5 minutes for the judging panel to make notes using the judging summary sheet. These notes will be used later in the nomination process, and when completing feedback sheets for teams.

- For Traditional Events, each panel requires 20 to 25 minutes to complete the judging process from start to finish. Judges should not be scheduled to see more than 8 teams in a day.
- For **REMOTE** Events, each panel requires at least 30 minutes to complete the judging process from start to finish. Judges should not be scheduled to see more than 5 teams in a day.

Make sure to schedule a break or two for the judges as well.

**Judge Advisors should not assign Judges into interview panels until they fully understand which volunteers might have a conflict of interest with a team.**
Training judges
Whenever possible, we recommend that the judge advisor offer an added training for judges before the event. This will help to clear up any questions the judges might have, instill confidence in new judges, and help you to ensure that the judges for your event have completed the training provided by FIRST. The judge advisor can choose to provide this training in any way that is convenient for them.

Event Day Responsibilities – Judge Advisor

Early Morning Preparations
Judge Advisors should arrive about an hour before the judges arrive or about 2 hours before the event is scheduled to begin. Preparing for the judges in advance is a great way to get the event off to a good start.

Meet with Tournament Director
Judge Advisors should have a brief meeting with the Tournament Director. In this meeting, the Judge Advisor should find out:

- What is the schedule for the day? Have there been any changes to the schedule?
- Who will read the award script?
- What time do scripts need to be completed.
- Who will read the scripts?
- To learn if any teams at the event are not eligible for award consideration. Eligibility requirements can be found in Appendix N
- Determine who should receive the Award Record Sheet (Appendix L) final list of awarded teams.
- Determine who should receive the award script

Preparing the Interview Rooms
The judge advisor should visit the area where interviews will be held. Be sure that the rooms are numbered, are large enough to fit up to 15 students, and each have a table and at least 2 chairs for the judges (more if the panels are larger).

Preparing the Deliberation Room
The judge advisor should check the deliberation room to make sure there are enough chairs for all the judges, and enough tables (usually set up in a U formation) to accommodate all the chairs.

The judge advisor should put at least two large flip charts on the wall or utilize a whiteboard. Mark these with 5 columns. As Judges enter the room, ask them to put their name in column A, the teams they are affiliated with in column B, and a check mark in either the technical or non-technical column.

Interview panels are assigned after conflicts are known. Award panels are assigned after first round deliberations are completed.

<table>
<thead>
<tr>
<th>Judges Name</th>
<th>Team Affiliations</th>
<th>Technical</th>
<th>Non-Technical</th>
<th>Interview Panel/Award Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frank Smith</td>
<td>323, 14056</td>
<td>X</td>
<td></td>
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<td>Julia Roberge</td>
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</table>
This serves as a reminder to all the judges in the room of where conflicts exist, and which skills each judge has experience in.

Check for whiteboard or flip chart markers.

Check to be sure there are enough pens in the room for all the judges, plus some spares.

**Judging Packets**
The Judge Advisor assembles the Judging Packets. The judging packets are made up of the contents listed in Appendix H.

**Morning Meeting**
A morning meeting is held before any judging takes place. This gives the Judge Advisor the opportunity to discuss the flow of the day, provide training where necessary, and provide the event day schedule. It’s also a great opportunity for the Judges to see the event layout and where the interviews and deliberations will take place.

The Judge Advisor will ask Judges about any conflict of interest they have with a team and request that the judges add their name, affiliated teams, and technical or non-technical experience to the flip chart or whiteboard set up for that information. Conflicts of interest can cause teams to feel the process isn’t fair, and we strive to avoid any perception of unfairness at FIRST Tech Challenge events. For more information about Conflict of Interest, please visit Appendix F.

The judge advisor should be sure to cover the following topics:

- Thank the judges for volunteering their time and expertise
- Go over the schedule for the day
- Outline the expectation of the judges
- Brief overview of the awards and criteria
- The judging process throughout the day
- Basic guidelines for interviews
- Leave time for Questions

The judge advisor then assigns judges to interview panels, making sure that judges who are affiliated with teams are not assigned to a panel scheduled to interview those teams, matching experienced judges with inexperienced judges, and technical judges with non-technical judges.

**Create Formal Interview Panel**
Once any optional awards have been confirmed with the tournament director, and any Conflicts of Interest disclosed, the Judge advisor should assign pairs of Judges to interview teams. Avoid having Judges interview teams they have a conflict of interest with.

When making assignments for the team interviews, keep in mind each Judges skill sets and interests. Try to create interview panels in a way that balances different skill sets and personality types, creating a broad scope of perspectives among each interview panel. Doing this will create a balance of objectivity when each team is interviewed.

**Gracious Professionalism**® - “Doing your best work while treating others with respect and kindness - It’s what makes FIRST, first.”
Pairing Technical and Non-Technical Judges
Some of the awards are more technical, while other awards are less technical. Pairing a non-technical Judge with one who is technical to Judge a technical award (or vice versa) can expose each Judge to learn a new skill. Make sure all the Judges feel comfortable with these assignments before solidifying the assignment.

Pairing Experienced and Inexperienced Judges
Many events pair experienced Judges with non-experienced Judges. This training or apprentice system allows a new Judge to learn the process with someone who has Judged at other events. Similarly, a new Judge may offer a fresh perspective to a Judge who has volunteered for multiple events.

Alumni
When a Judge is a recent FIRST participant (participated in a FIRST program within the last 3 years), this Judge falls under the category of an inexperienced Judge and should be assigned with an experienced Judge.

We strongly encourage Alumni to volunteer. They have valuable skills, and unique insights, however, it can be difficult, especially for volunteers who recently participated as a team member. It is common for a new Alumni to personalize their experience and compare the teams at this specific event to what they remember about their team or other teams.

Managing Personality Types
Within the pool of Judges, there will be many different personality types. One Judge may be more apt to voice their thoughts and opinions, while another Judge may not be so forthcoming with feedback. Try to find ways to match up each Judge pair in a way that they complement one another. A Judge who tends to follow the award criteria exactly may be best paired with a Judge who has more subjective views and might see something great about a team that otherwise may have not been noticed.

Initial Deliberations
After the judging panels have interviewed all of the teams, and have briefly reviewed the engineering portfolios and Control Award Submission Sheets, the initial deliberations begin.

This early round of deliberations will help the Judges start to pare down the top contenders based on their interview alone. The Judges will still need to later observe matches, and interview teams in the Pits. Each Judge pair will recommend a team for each award, except for the Inspire Award. Initial deliberations must not include any recommendations for the Inspire Award.

The Judge Advisor is responsible for ensuring the Inspire Award is the last award decided. The team that wins this award is nominated for multiple award categories and will rise to the top of the list. Nominating a strong team only for the Inspire Award could leave them without any recognition for their accomplishments. This is one of the reasons that judges do not nominate teams directly for the Inspire Award.

- The process for handling Judge Deliberations For each award, the Judge Advisor will create a separate list on a whiteboard or flipchart the entire judging panel can see.
- For each award, each panel will give their top 2 teams. Smaller events may need the top 3. Do this for all awards except for the Inspire Award. The Inspire Award nominees are handled differently.
- Judges may only nominate teams who have met the required award criteria.

A few tips on creating the Award Candidates list:
- At large events with over 20 teams competing, panels are not required to nominate teams for each award.
- Include brief notes on why each team is on the flipchart list.
● If the team is very strong in all categories, then they should be nominated for all categories. No team is submitted directly to the Inspire Award.
● Judges are encouraged to look for the best in all the teams they interview. Judges should not focus on the slickest presentation. Substance counts.
● Judges should be mindful of the fact that they are reviewing teams with a variety of resources. Judges should always consider what a team does with the resources they have. Some teams are highly resourced, and others are not. Pay particular attention to teams who have done more with less.
● Remember that every award category includes a list of requirements. All teams in consideration for Judged Awards must meet the requirements. This is not optional or negotiable.
● If there are no teams that meet the basic criteria for an award category, no team should be nominated for the category.

The Inspire Award
Make sure to NOT select teams for the Inspire Award during the nomination process Nominate teams for the categories where they best meet the award criteria.

Create Specialized Award Panels
Once the initial interviews have been completed, and early deliberations have taken place, it is time to reorganize the Judges into panels for each specialized award. The Judge Advisor should already have a good idea of each Judges skills and interests. Each specialized Judge panel will be responsible for deciding on the Winner and Finalist for the award they have been assigned to.

The Judge Advisor should match the Judge panels with the specific award that fits the skills and interests the Judges provided pre-event. Judge Advisors should not place Judges on a panel solely because a Judge has a strong wish to be a part of that award panel. A technical Judge should be paired with a technical award such as the Control Award, while a non-technical Judge may feel more comfortable assigned to the Connect Award.

Whenever possible, judges who have direct conflicts of interest with teams at the event should be assigned to the judged award panel. These judges will interview the teams who have not been nominated for awards in the pits to learn more about their accomplishments in consideration for a judged award.

In instances where it is not possible to remove judges with conflicts of interest from the pit interview or deliberation process, the Judge Advisor must be diligent in watching for and managing bias, the perception that judges are advocating for or against teams in award categories, or other concerns about the fairness and integrity of the judging process. Judge Advisors are encouraged to call the FIRST Staff support person on call if they have any concerns about conflicts or the integrity of the process. The Staff support number can be found in Appendix A.
**Pit Interviews and Match Observation**

Once the initial round of deliberations is complete, it’s time to gather more information about the teams. In the new award panels, the judges should visit the pits and the competition area to talk with the teams and watch matches.

Each judging award panel are required to visit their nominated teams. When finished, the judges should interview as many teams as possible. Having the Judges interview many teams can provide an opportunity for a team to present information they might not have shared in their interview.

**Feedback from Field Personnel**

As the Judge Advisor it is important to check in with other Key Volunteers about interactions they may have had with teams throughout the day. Often volunteers such as Head Referees or Queuers may have feedback about a team – good or bad – that they would like to share. Sometimes these volunteers cannot leave their respective areas of the competition, so it’s best to try to visit as many of these volunteers as possible. When the volunteer has areas of concern about a team, the judge advisor should make sure that the information being relayed is first-hand information, rather than hearsay.

Ask broad questions such as “Have you met any teams that you would like to share information about with me?” Keeping questions open-ended ensures the feedback isn’t driven in any way. The Field Personnel can respond about any team they would really like the Judge Advisor to know about.

Talk with the Tournament Director or Volunteer Coordinator if any of the Field Personnel have conflicts of interest with teams competing at the event. Knowing this ahead of time will help the Judge Advisor keep the feedback in context when speaking with an event volunteer who may have a team competing at the event.

If an incidence of ungracious behavior comes to light, the judge advisor should seek out the coach for the team being reported and discuss the behavior with them and the reason it is unacceptable. The judge advisor should advise that the team could be (or will be, depending on the egregiousness of the behavior) eliminated from consideration for judging. If this needs to be done, the judge advisor must call the event support line to discuss this decision with the on-call staff person. A phone number for the on-call staff is located in Appendix A.

**Final Deliberations**

Once the Judges have had the chance to interview teams, see match play, review the engineering portfolios, and visit the teams, the Judges must come together and make final decisions on the winners of each award.

At this point in the day, the Judges will gather in the deliberation room to go through the teams they had nominated during their initial deliberations and decide who the finalists and winners are for each award. The goal is to have a list of the top five teams in rank order for each award. The judges who have direct affiliations with teams at the event nominate teams for the optional judges awards and provide their reasoning for the nomination. These judges are then requested to leave the judge deliberation room.

As each panel creates their list for the top five teams in their award category, make sure to include information from the panel of Judges that were assigned to the engineering portfolio, the Judges that were assigned as Match Observers, and the Judges that were assigned to the Control Award. For example, the Judge Panel
assigned to the Connect Award may place their top contenders on the list. However, the Judges that reviewed the engineering portfolio may have feedback that there wasn’t any mention of outreach listed in their engineering portfolio. While creating the list, pay attention to each award that requires the engineering portfolio, and remind the judges to get feedback to ensure all requirements of each award have been satisfied. Remind the judges to check with the Match Observers to learn how the team interacts with other teams and event volunteers, and about their game strategy.

**Equitable Distribution of Awards**

When deciding the winners and finalists of each award, it is necessary to understand that teams can only win one judged award at an event (this does not include the Promote Award, or the Competition Awards). Finalists of each award do not count as award winners (this includes 2nd and 3rd place Inspire Award finalists). A team may rise to the top of the list time and time again, but they can still only win one award. In cases where the same team is up for multiple awards, discuss each award with the judges and decide in which category the team is most strong. Teams should win the award for which they are best suited.

**Recognition Principles**

When at all possible, judges should not list the same teams as award finalists in most of all of the award categories. Use common sense when listing finalists for awards. It may not always be possible to have a worthy candidate for all 3 positions (Winner and 2 finalists) without duplication or double listing, but an earnest effort by the judges to celebrate the accomplishments of as many teams as possible is required.

As a judging panel, the focus should be on celebrating exceptional work, and celebrating as many teams and students as possible. This is true for every award, except the Inspire Award. The Inspire Award 2nd and 3rd place teams can be teams listed as a finalist or winner for one other award.

Judges should determine awards based on the award criteria, and on the order of advancement to the next level of competition.

The Inspire Award winner is the first team to advance from any level of event. The next teams to advance are:

- Captain of the Winning Alliance
- 2nd Pace Inspire Award Finalist
- First Team selected on the Winning Alliance
- 3rd Place Inspire Award Finalist

The full Advancement order can be found in **Appendix M**.
Here is a step through of how equitable distribution of awards works. This is a required method for determining award winners and finalists:

At the beginning of the final deliberations, these are the nominated teams.

<table>
<thead>
<tr>
<th>Inspire</th>
<th>Think</th>
<th>Connect</th>
<th>Innovate</th>
<th>Control</th>
<th>Motivate</th>
<th>Design</th>
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</thead>
<tbody>
<tr>
<td>101</td>
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<td>106</td>
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</table>

**Selecting the Inspire Award Candidates**

From this list, the Inspire Award candidates are selected, based on the number of times they appear in the initial nominations for the other awards. All the Inspire candidates must appear in at least one Machine, Creativity, Innovation category, and in at least one Team Attributes category. This is important, and required. Inspire Award teams are strong contenders as an all-around team, which requires a nomination in both types of categories to meet that award requirement. This will form the initial nominees for the Inspire Award. The Judge Advisor will form the initial Inspire Award Nomination List based on these requirements. One this list is created, record where teams are nominated for clarity later.

For example, these teams were initially nominated for awards:

<table>
<thead>
<tr>
<th>Think</th>
<th>Design</th>
<th>Innovate</th>
<th>Control</th>
<th>Connect</th>
<th>Motivate</th>
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<td>100</td>
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<td>131</td>
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</tbody>
</table>
From the initial nominations, record which teams show up in more than one award category and which categories. Teams should show up in the Engineering Portfolio category, MCI category and TA category as this demonstrates a well-balanced team for the Inspire Award.

Once the judging panels have their top five teams ranked, use this information to help determine your Inspire Award 1st, 2nd, and 3rd place winners. Use this information to determine if you can eliminate any teams from contention for the Inspire Award or if judges need to go back and interview the teams in the pits.

From this information, the judges could decide eliminating teams 106 and 120 from the Inspire Award discussion, leaving teams 100, 105 and 101 as the three contenders for the Inspire Award. Lead a discussion with judges as to who they believe is more deserving of the Inspire Award based on Judging Interviews and Pit Interviews. You may also decide to have a separate Inspire Panel go out and interview these three teams in the Pit Area.

In our example, the judges decided that team 100 would win 1st Place Inspire, team 101 would win 2nd Place Inspire and team 105 would win 3rd Place Inspire. Now we need to make sure we have equal award distribution. We call this concept “spread the wealth”. It means to find a way to celebrate as many worthy teams as possible at the event.
Next, award conflicts are identified for the first 3 Awards – Inspire, Think, and Connect. We remove team 100 from the number 1 spot for Connect and Design, as well as from the number 2 spot for the Think Award. The Inspire Award Winner does not need to be recognized more than once in the Award Ceremony.

We can leave team 105 in the number 1 spot for the Think Award, as well as in the number 3 spot for the Inspire Award as they can receive both a 1st place Think Award and a 2nd Place Inspire Award.

Team 101 could win the Connect Award, and we’ll remove them as a runner up for Think. They’re still listed as the number 2 Inspire Winner, and there is a greater potential for advancement in that spot.

Team 100 wins Inspire and is dropped from the list in Think and Connect. 105 can’t be listed under Connect as they have already won an award, and are listed as a finalist for the Inspire Award.

Now that we’ve decided our first 3 awards, let’s look at the remaining 4.
Team 100, 105, and 101 have already been recognized, so we remove them from the remaining 4 awards. This leaves us with team 110 as the Innovate Award Winner, Team 123 as the Design Award Winner, Team 103 as the Motivate Award Winner, and team 106 as the Control Award winner.

We have one final conflict to resolve. Team 115 appears as an Innovate Award finalist, as a Think Award Finalist, and as a Design Award Finalist. In this instance, because Think is an award that is higher on the advancement list, we’ll remove team 115 from the Innovate and the Design Category.

This will leave us with a single finalist for the Design category. This is acceptable, although a deeper list of candidates may have given us a second finalist.

With this team award selection, we’ve awarded 7 teams, and recognized 11 additional worthy teams.

<table>
<thead>
<tr>
<th>Inspire</th>
<th>Think</th>
<th>Connect</th>
<th>Innovate</th>
<th>Control</th>
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</table>

This is what we mean by equitable distribution of awards. All the teams in the above example were worthy candidates for the awards they were nominated for. Their good work was recognized in the Award ceremony, even though most of the teams didn’t receive an actual award.

In the interest of event consistency across all regions, this process is now the procedure that Judge Advisors are required to follow.

**Award Scripts**

Once award winners have been identified, the Judges are responsible for writing awards scripts. By this time of the day, there is likely not much time to devote to this activity, so it’s helpful to give judges an example of how they can start.

There is a format to the awards scripts that we like to use. A good award script is usually three sentences. The structure of the sentences is important.

1. Sentence one could apply to many teams but has a subtle hint.
2. Sentence two has a hint in which the winning team might understand.
3. Sentence three has a bigger hint, leaving the team somewhat sure who it is, but is not 100% positive.
4. The last sentence is: “And the award goes to…”

**Example:** Team 3344 is called the Robo-Knights, from Carnation, WA. They are winners of the Design Award. Their team colors are blue, they have a robot with an impressive arm design, and the robot has a shiny blue finish. The award script might say:

*Gracious Professionalism® - “Doing your best work while treating others with respect and kindness - It’s what makes FIRST, first.”*
“This VALIANT effort required many nights designing a robot with an impressive array of features. A strong arm and a solid design have their opponents turning BLUE with envy. A SHINING example worthy of a knight at the round table of Camelot, the Design Award goes to team 3344 the Robo-Knights from Carnation, WA.”

**Key points about Award scripts:**
- Judges should write them. They have the notes and details needed.
- Always read them aloud when making final edits. They often read and speak differently.
- Do the Emcee a favor: Avoid long sentences and long words. Someone else needs to read your script.
- Capitalize or Bold words that the Emcee should emphasize when reading the script.
- Don’t reveal the winner in the first sentence. “We think team 1234 deserves the Design Award because…” is a common submission from the Judges. Ask them to rewrite it to reveal the result only at the end.
- Try to reveal the key reasons the team has received the Award.

Keep in mind that scripts are only needed for the winners of the Award. The Judges do not need to write scripts for the Finalists.

**End of the Day**

**Record Keeping**
When the awards have been decided, an important step is for the Judge Advisor to record the Winners and Finalists for all awards. Appendix L of this document contains an Award Record Sheet for your use. This information will be provided to the scorekeeper or the tournament director later. Filling in this sheet should be done carefully and then reviewed by the Judge Advisor and the Judge Advisor Assistant to ensure the data is correct. Extra care should be taken to be sure team names and team numbers are correct. It’s easy to transpose team numbers, but this will cause confusion during the award ceremonies.

The contents of the Awards Record Sheet should be treated as a closely held secret until after award ceremony. You should limit access to the Judge Advisor, Judge Assistant, Scorekeeper, Tournament Director, and the Master of Ceremonies.

Pro-tip: Once you have filled in the award record sheet the Judge Advisor or Judge Assistant should either take a photocopy or use a mobile phone to take a picture of the sheet. It is an easy thing for this sheet to get misplaced and sometimes reproducing the information accurately later is difficult.

The Judge Advisor will usually pass the Award Record Sheet to the person agreed to during the morning meeting with your tournament director. It is typically given to the scorekeeper so the information can be entered into the scoring system. If in doubt, we know the scorekeeper will eventually need this list.

**Awards and Closing Ceremony**
Once the awards have been decided, and the award scripts written, the Judges are invited to attend the awards and Closing Ceremony. At most events the Judges will join the rest of the event volunteers and take part in the Award Ceremony.

When it comes time to announce the finalists and winners of each award, the Judges line up for a “High Five Line”. When the winner of each award is announced, the team will come up to the high-five line to pick up their trophy. The team will then high five each Judge in the line

**Feedback to Teams**
Teams who wish to receive feedback from Judges Must submit a completed Judging Feedback Request form. Judges will conduct the team interview and review the documentation submitted by the team. After the event, the Lead Coach/Mentor 1 for the team will receive a Judging Feedback Form which has been completed by the event Judges via email.

**Notes Taken During Judging**
Notes that Judges take during interviews and deliberations should be treated as confidential and left with the Judge Advisor at the end of the day for disposal. This includes all electronic notes. Under no circumstances are notes to be shared with people who are not a part of the judging pool, either intentionally or by accident. Judge Advisors should take these notes with them at the end of the day and dispose of them in a secure manner.

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Appendix A – Resources

Game Forum Q&A
http://ftcforum.usfirst.org/forum.php
Anyone may view questions and answers within the FIRST® Tech Challenge Game Q&A forum without a password. To submit a new question, you must have a unique Q&A System Username and Password for your team.

Volunteers that apply for a specific volunteer role will receive an email from FTCTrainingSupport@firstinspires.org with their username and password to the forum. You will receive access to the forum thread specific to your role.

FIRST Tech Challenge Game Manuals

FIRST Headquarters Pre-Event Support
Phone: 603-666-3906
Mon – Fri
8:30am – 5:00pm
Email: Firsttechchallenge@firstinspires.org

FIRST Tech Challenge Event On-Call Support
These numbers are available for event personnel only. Please do not call these numbers if you are a team looking for a ruling, a decision, or assistance. We trust that you will not misuse this resource.

All other Day of Event support: 603-206-2412 (Judging, Refereeing, Inspection, etc.)

FIRST Websites
FIRST homepage – www.firstinspires.org
FIRST Tech Challenge Page – For everything FIRST Tech Challenge.
FIRST Tech Challenge Volunteer Resources – To access public Volunteer Manuals.
FIRST Tech Challenge Event Schedule – Find FIRST Tech Challenge events in your area.

FIRST Tech Challenge Social Media
FIRST Tech Challenge Twitter Feed - If you are on Twitter, follow the FIRST Tech Challenge Twitter feed for news updates.
FIRST Tech Challenge Facebook page - If you are on Facebook, follow the FIRST Tech Challenge page for news updates.
FIRST Tech Challenge YouTube Channel – Contains training videos, Game animations, news clips, and more.
FIRST Tech Challenge Blog – Weekly articles for the FIRST Tech Challenge community, including Outstanding Volunteer Recognition!
FIRST Tech Challenge Team Email Blasts – contain the most recent FIRST Tech Challenge news for Teams.

Feedback
We strive to create support materials that are the best they can be. If you have feedback about this manual, please email firsttechchallenge@firstinspires.org. Thank you!
Appendix B: Sample Judge Questions

Team Number: ________________________

Here are some sample questions that Judges might ask a team:

● What does it mean to be a Gracious Professional®?
● What does your robot do?
● How did you come up with the overall design?
● What role does each of your team members play on your team?
● How did your team make decisions about assigning roles on the team?
● How do you manage your time?
● How does your team attract additional Mentors?
● What did you learn by being a part of the team?
● How do you fundraise?
● How do you market your team?
● Does your team perform any type of community service?
● Does your team reach out to other teams? In what way?
● Describe a way that your team has displayed Gracious Professionalism®.
● Which of your student team members participated in an outreach activity?
● How many student members are there on your team?
● Which of your student members participate in community service?
● What is the one thing that we didn’t ask about that you most want the Judges to know?
● In what ways is your team unique?

You can and should ask the students to share more information about an answer that doesn’t seem complete or clear, or a topic that the team seems particularly enthusiastic about.

When teams are affiliated with other FIRST teams, Judges may want to clarify the specific ways in which this team participated in outreach, community service, fundraising, etc.

● What role did your team play in determining what outreach activities and community service your multiple FIRST teams did?
● Were there any activities where your team took the lead?
● How did you work with the other FIRST team(s)?

Here are some topics that Judges should always avoid:

● Religion
● Politics
● Gender
● Disabilities
● How students are doing in school.

Unique Situations:
Sometimes, a Judging panel will interview a team that is a little or a lot larger than the maximum of 15 students. These teams often have very impressive outreach credentials, and it’s difficult to find a fair way to provide an equitable amount of credit towards the outreach of a team of 20 students, versus the outreach that a team of 5 may have achieved, but that is exactly what is required of the judging role. If all things are equal, the work that a smaller team does should count for more than the equal amount of work that a larger team has done.

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## Appendix C: Judge Summary Sheet

<table>
<thead>
<tr>
<th>Team Name:</th>
<th>Not Demonstrated</th>
<th>Beginning</th>
<th>Developing</th>
<th>Accomplished</th>
<th>Exemplary</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team #:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### For All Awards

Team shows respect and Gracious Professionalism® to everyone they meet at a FIRST Tech Challenge event (required).

### Think Award – Engineering Portfolio required

- Engineering Portfolio must have examples of engineering content that includes entries describing underlying science, mathematics, and game strategies (required)
- Engineering Portfolio must show that the team has a clear understanding of the engineering design process, with images, pictures or drawings and details documenting all stages of robot design (required)
- Portfolio must show examples of the team’s journey, experience and lessons learned throughout the season (required)

### Connect Award – Engineering Portfolio Required

- Portfolio includes a Team plan that covers the Team’s goals for the development of team member skills, and the steps the team has taken or will take to reach those goals. Examples of what the plan could include are timelines, outreach to science, engineering, and math communities, and training courses.
- Portfolio must include a summary of how the team acquired new mentors or acquired new knowledge and expertise from a mentor. Working with Mentors from FIRST’s Mentor Matching site is an acceptable way to learn from Mentors.
- Team actively engages with the engineering community to help them understand FIRST, the FIRST Tech Challenge, and the team itself (required)
<table>
<thead>
<tr>
<th>Team Name:</th>
<th>Not Demonstrated</th>
<th>Beginning</th>
<th>Developing</th>
<th>Accomplished</th>
<th>Exemplary</th>
<th>Comments</th>
</tr>
</thead>
</table>

**Collins Aerospace Innovate Award** – Engineering Portfolio required

- Team must submit an Engineering Portfolio with examples of engineering content that document the design process and how the team arrived at their design solution (required)
- Robot or robot sub-assembly must be elegant and unique in its design (required)
- Creative component must be stable, robust, and work reliably (required)
- Robot design is effective and consistent with team plan and strategy (required)

**Control Award** – Engineering Portfolio required

- Team must apply for the Control Award by filling out the Control Award Content Sheet (required)
- The Engineering Portfolio must include examples of content that documents the control components (required)
- Control Components must enhance the functionality of the robot on the field (required)
- Advanced software techniques and algorithms are encouraged
- Control Components should work reliably

---

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### Motivate Award

An Engineering Portfolio must be submitted and should include a team plan that identifies their future goals and the steps they will take to reach those goals. The plan could include fundraising goals, sustainability goals, timelines, outreach, and community service goals (required)

The team is an ambassador for FIRST programs (required)

Team can clearly demonstrate the successful recruitment of new teams, mentors, coaches, and volunteers who are not otherwise active within the STEM community (required)

Team can explain the individual contributions of each team member, and how these connect to the overall success of the team (required)

All team members participate in their presentation, and actively engage with the Judges

Team can show a creative approach to materials that market the team and FIRST
Team Name:
Team #:

<table>
<thead>
<tr>
<th>Design Award – Engineering Portfolio required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team must submit an Engineering Portfolio with examples of engineering content that include detailed robot design drawings (required)</td>
</tr>
<tr>
<td>Team demonstrates industrial design principles, striking a balance between form, function, and aesthetics (required)</td>
</tr>
<tr>
<td>Robot differentiates itself from others by its aesthetic and functional design (required)</td>
</tr>
<tr>
<td>Basis for the design is well considered (i.e. inspiration, function, etc.) (required)</td>
</tr>
</tbody>
</table>

*Inspire Award Nominees are those teams that are nominated in multiple categories. **Bold items are award requirements.**

**Promote and Compass Awards are not Judged at events.

**CONFIDENTIAL - NOT TO BE SHARED WITH TEAMS**
Appendix D: Team Self-Reflection Sheet

Using the FIRST Tech Challenge Judging Session Self-Reflection Sheet

Why Team Self-Reflection?
Self-Reflection is an essential life skill. Whether it be your own behavior, job performance, or when brainstorming an invention, learning how to step back and objectively evaluate your own performance is valuable.

The FIRST Tech Challenge Team Judging Session Self-Reflection Sheet
FIRST Tech Challenge knows that judging can be a challenging part of the program for many students and teams. Judging is subjective, and while Judges will use the Judging Feedback Form to provide teams with insight into the team’s performance, Judges do not provide feedback to teams on how the decisions were made. FIRST Tech Challenge judging can help students develop interview and public speaking skills, which are necessary life skills, so it is important that teams prepare for, do their best in, and benefit from each judging interview. To help teams maximize the benefits of their judging experience, FIRST Tech Challenge recommends (but does not require) teams to complete a Judging Interview Session Self-Reflection Sheet. This document is for the team's use ONLY and will not be collected by the Judges or any other event day staff. Judges do not use this document in any way as part of their deliberations or decision-making.

Using the Self-Reflection Sheet
Before the event, teams should complete the Self-Reflection sheet portion (top section only). After their judging interview, teams should complete the remainder of the Self-Reflection sheet – ideally as soon as possible so that clear details can be recorded before they are forgotten. The type of feedback that is most useful should be specific: “everyone made eye contact” or “a few members interrupted the Judges”. An example of less-helpful feedback might be “we did great” or “this area needs improvement”. Over time, Self-Reflection will become second nature and the team may not find it useful to use the Self-Reflection Sheet anymore, which is fine – remember, teams ARE NOT required to complete the Self-Reflection Sheet.

Ideas for When and How to do Team Self-Reflection
Every team will approach goal setting and self-reflection in their own unique way. No one method is best, nor would it work for everyone. Here are a few possibilities for when and how a team might approach the task, but teams should develop the system that works best for them:

- Schedule Practice Interviews with teachers, mentors, parents, or even friends, and ask them to use the Self Reflection sheet to review the team’s interview performance.
- Designate a student member of the team to be an interview session observer and take notes on the Self-Reflection Sheet. This person should be a keen, unbiased observer and a good note-taker. Before the next event, review the notes and prepare the team for judging with new goals and an adjusted judging interview session plan.
- Provide each team member with a copy of the Self-Reflection Sheet to fill out at the event. Collect the sheets and review them together in a post-event team meeting.
- Collect the team together immediately after the judging interview session to reflect on how it went. Have one team member note what people say on the team Self-Reflection Sheet. Before the next event, review the notes and prepare the team for judging with new goals and an adjusted judging interview session plan.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Assessment</strong> (to be completed prior to the Judging Session)</td>
<td></td>
</tr>
<tr>
<td>Team has prepared for the Judging session and has a plan for who will speak, when, etc.</td>
<td>What did the team <strong>do well</strong> in preparing for the Judging Interview?</td>
</tr>
<tr>
<td>Team has held practice Judging sessions.</td>
<td></td>
</tr>
<tr>
<td>Team has identified a goal for the Judging session.</td>
<td>What is <strong>one thing</strong> the team can focus on improving before the next Event?</td>
</tr>
<tr>
<td><strong>First Impression</strong> (to be completed AFTER the Judging Session)</td>
<td></td>
</tr>
<tr>
<td>All members exhibited Gracious Professionalism through their language and behavior.</td>
<td>What did the team <strong>do well</strong> at making a First Impression?</td>
</tr>
<tr>
<td>Team spirit was visible in dress, energy, materials, or preparedness.</td>
<td></td>
</tr>
<tr>
<td>Used Judging session time efficiently and effectively.</td>
<td>What is <strong>one thing</strong> the team can focus on improving in this area?</td>
</tr>
<tr>
<td><strong>Team Dynamic</strong> (to be completed AFTER the Judging Session)</td>
<td></td>
</tr>
<tr>
<td>Team shares the spotlight in Judging, inspection, Competition, and in the Pits by ensuring every member has a role and communicates this by words and actions.</td>
<td>What did the team <strong>do well</strong> in Team Dynamic?</td>
</tr>
<tr>
<td>Team has a rapport that shows attention to teambuilding and behaves as Gracious Professionals to each other.</td>
<td>What is <strong>one thing</strong> the team can focus on improving in this area?</td>
</tr>
<tr>
<td><strong>Speaking Skills</strong> (to be completed AFTER the Judging Session)</td>
<td></td>
</tr>
<tr>
<td>Speakers spoke clearly and enunciated.</td>
<td>What did the team <strong>do well</strong> in Speaking Skills?</td>
</tr>
<tr>
<td>Responded to Judges questions with thoughtful, thorough responses.</td>
<td></td>
</tr>
<tr>
<td>“Is there anything else you want to share?” – Team prepared with a unique tidbit about the team or the Robot.</td>
<td>What is <strong>one thing</strong> the team can focus on improving in this area?</td>
</tr>
<tr>
<td><strong>Presentation Skills</strong> (to be completed AFTER the Judging Session)</td>
<td></td>
</tr>
<tr>
<td><strong>Members made eye contact and maintained good posture when speaking to Judges, staff.</strong></td>
<td>What did the team <strong>do well</strong> in Presentation Skills?</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Team materials were professional, clean, easy to read.</strong></td>
<td><strong>What is one thing</strong> the team can focus on improving in this area?</td>
</tr>
<tr>
<td><strong>If applicable, presentation was organized and well-rehearsed.</strong></td>
<td></td>
</tr>
</tbody>
</table>

### **Listening Skills** *(to be completed AFTER the Judging Session)*

<table>
<thead>
<tr>
<th><strong>Team understood the Judges questions or asked for clarification.</strong></th>
<th>What did the team <strong>do well</strong> in Listening Skills?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team fully responded to the Judges questions.</strong></td>
<td>What is <strong>one thing</strong> the team can focus on improving in this area?</td>
</tr>
<tr>
<td><strong>Team paused to allow for Judges follow-up questions.</strong></td>
<td></td>
</tr>
</tbody>
</table>

### **Content** *(to be completed AFTER the Judging Session)*

<table>
<thead>
<tr>
<th><strong>Team shared authentic stories, proud moments, and unique tidbits.</strong></th>
<th>What did the team <strong>do well</strong> in the Content of their Interview?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team articulated how, as individuals and as a team, they have grown and interacted with others during the season.</strong></td>
<td>What is <strong>one thing</strong> the team can focus on improving in this area?</td>
</tr>
<tr>
<td><strong>Focused on what is unique about the team.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Team was able to show the breadth of their team and how each member plays a key role.</strong></td>
<td></td>
</tr>
</tbody>
</table>

### **Overall Post-Assessment** *(to be completed AFTER the Judging Session)*

<table>
<thead>
<tr>
<th><strong>What are <strong>two</strong> team Judging Interview strengths?</strong></th>
<th>1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td><strong>What is <strong>one</strong> area the team can focus on improving?</strong></td>
<td><strong>1.</strong></td>
</tr>
</tbody>
</table>
## Appendix E: Engineering Notebook Self-Assessment

### Notebook Formatting

This section describes the minimum requirements a team must meet for their engineering notebook to be considered at any competition.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Present?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required: Minimum of one notebook, not to exceed two. Judges won’t look at more than 2 notebooks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required: Team number on the outside front cover an on the Spine of each notebook. Judges need to know who the notebook belongs to.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended: Summary Page - Either attached to front cover or in first 3 pages of the notebook.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Team Number. <em>If your summary page falls out of the notebook, judges know who it belongs to.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Brief, one-page narrative about the Team, the School/Organization, and overview of highlights of the team’s season.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. References to page numbers or tabbed pages for judges to pages in the notebook the team would like the Judges to consider. <em>This is an easy way to direct the judges to what you want them to see!</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended: Notebook is divided into sections, including:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. A section that describes the engineering process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. A section that describes the team, outreach activities, and individual goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Team Plan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notebook Sections

This section provides teams with guidance on what type of content should be included in each of the sections of the engineering notebook.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Present?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Engineering content that outlines the design, build, &amp; testing stages of the robot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Includes code development process. You don’t need to add the code itself.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Team member coach and mentor biographies. <em>Please don’t use last names.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Team sponsor information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Team outreach activities, including fundraisers, demos, community connections, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Plan can include the following.</td>
<td>What</td>
<td></td>
</tr>
<tr>
<td>1. Business Plan:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Goal Setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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b. Team Funding/Budgeting

2. Strategic Plan
   a. How to execute goals

3. Sustainability Plan
   a. Where does your team hope to be in 1 year, 2 years, etc.? How will you get there?

4. Learning Plan
   a. What learning goals does your team have for the season?

### Notebook Suggestions – Content and Quality

*This section provides additional suggestions on how teams can create a standout engineering notebook.*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Present?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formatting Suggestions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Creative cover, team photo, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Table of contents and section dividers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Neat organization, neat presentation of information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Important pages are tabbed, or pages are numbered so your summary can point to them.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Entries made on both sides of the paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Content Suggestions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Team growth and development is documented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Team leadership and organization is documented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Team failures and struggles are documented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Every team member contributes to the notebook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Every meeting has at least one notebook entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Entries include pictures, drawings, and text as applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Notebook is an accurate representation of the team and journey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Notebook documents changes in the robot plan, including <em>WHY</em> the change was made</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

---
Appendix F: Conflict of Interest

Conflict of Interest

All Judges will be asked to disclose any potential Conflicts of Interest, and to complete the Conflict of Interest and Disclosure form. During the Judges meeting, Judges will be asked to declare any potential conflicts to the rest of the Judging pool. Some scenarios of conflict of interests:

● A coach/Mentor is volunteering as a Judge;
● A Parent/Relative of a team member is volunteering as a Judge;
● An Alumni (student or adult) of a team competing at the event is volunteering as a Judge;
● A Sponsor of a team that is competing at the event is volunteering as a Judge;

Having a Conflict of Interest, or even the perception of a Conflict of Interest can impact a team’s experience, even if decisions that were made throughout the day were not biased in any way. The perception of potential favoritism is enough to discourage a team, coach, or Mentor, and take away from their overall experience at an event. Knowing what Conflict of Interest is, and how to avoid being in a position that could be a conflict will ensure all teams feel they have been evaluated fairly.

Conflict of Interest, in some cases can be very easy to see. In other cases, it may be a less obvious, and it may be difficult to decide what constitutes a true Conflict of Interest. In some cases, the bias may be apparent, while other times a Conflict of Interest may be perceived by a team or a coach. It is best to keep the following in mind when volunteering:

● Be open and forthcoming about Conflicts you may have with a team competing at the event.
● If there is a known Conflict of Interest, avoid making decisions about a team that would change the outcome of the day, such as speaking for or against a team in Judge deliberations.
● Remove yourself from any situation that could be perceived as a Conflict of Interest.

Below is one example of a possible Conflict of Interest. Keep in mind this is an example, and there are many forms of Conflict of Interest, and ways to handle it.

Parent/Relative/Alumni of a Team
If a parent or a relative of a team member is volunteering at an event, this volunteer must abstain from making any decisions that could impact the results of the tournament. Whether volunteering as a Judge or as Field Personnel (Referee, Field Technical Assistant, etc.) it is important to have that volunteer remove themselves from making any decisions related to that team. For example:

● If the volunteer is a Judge, they must recuse themselves from any conversations about that team during deliberations
● If the volunteer is a Referee, they should not be involved in any decisions around penalties, match replays, etc.

Keep in mind that there are many ways Conflict of Interest can be present, from parents, to sponsors. Make sure to remove any apparent Conflicts of Interest, but also keep in mind any perceptions of conflicts.
Appendix G: Pre-Event Checklist for Judge Advisors

Talk through the entire event ahead of time with Tournament Director

- Confirm when you should arrive and when Judges should arrive, where Judge check-in will occur, and where the Judges should assemble.
- Request a schedule for the entire event day or days.
- Know which teams are attending the event and check Judges for conflict of interest.
- Confirm opening ceremony & Closing/Award Ceremony details such as any responsibilities (sitting, walking/waving, introductions).
- Make sure to confirm that you will have time before the judging interviews start to meet with all the Judges (at least 30 to 45 minutes – longer if you need to conduct training).
- Make sure that there are enough interview rooms, enough Judges, and enough allotted time so that the “formal” interviews can be completed BEFORE matches start.
- Know when the award scripts need to be available (deadline) and who they get handed to when completed.
- Some tournaments like to create an award presentation or similar with video/pictures - that generally means awards need to be done EARLY enough to get that done.
- Confirm time, who, and what format that the award scripts need to be created.
  i.e. can they be handwritten or typed/digital (technology?)

As Judges are recruited, collect their contact information

- Confirm with Tournament Director/Volunteer Coordinator that you will “manage” Judges to take this off their list.
- Collect the Judges preferred name, email address, and cell phone number.
- Is there any information that they need from each Judge? (Bio? Shirt size?)
- Send welcome email to each Judge and make sure that they are connected to training resources and can be there the entire tournament day! Be sure to provide information about what time the judges should arrive. Please use the blind copy (bcc) feature on your email, so judges’ names and email addresses are not shared to a group of people.
- Ask about any conflict of interest (based on team list) and ask about their background (technical/non-technical skills)
- Understand if there are special diet, access, or similar restrictions or issues with any Judge and make sure that accommodations can be made

Once you know how many Interview rooms will be available:

- Confirm with the Volunteer Coordinator that you have enough Judges so that there are at least 2 Judges and no more than 3 Judges in each interview room.
- “Pre-Pair” up Judges to eliminate conflict of interest and “spread” skill and experience. Pair a technical person with a non-technical person and try to pair an experienced Judge with a new Judge. Be flexible about this, as additional team affiliations may come to light the morning of the event, and you may need to make some changes.
Appendix H: Supply and Print List

The following is a checklist of items that should be collected/purchased and printed before the event.

**Supply List**
- Water/Beverages
- Pens/Pencils
- Highlighters
- “Post-it” Notes
- Clipboard or notebook to organize summary sheets – one per judge
- Whiteboard or Flip Chart
- Whiteboard or Flip Chart markers
- Paper or notepads for Judges to add additional notes.

**Print List**
- Award Criteria (1 copy per judge)
- Game Manual Part 2 (1 copy for every 3 Judges)
- Judge Summary Sheet (2 per team competing plus extras) See Appendix C
- Judge Match Observer Sheets (2 per team competing plus extras)
- FIRST Tech Challenge Award Record Sheet (1 for Judge Advisor to provide to Tournament Director) See Appendix L.
- Interview schedule from the scoring system. One per Judge, one per queuer, plus a few extra copies, sorted by room number.
- FIRST Tech Challenge Award Record Sheet (1 for Judge Advisor to provide to Tournament Director or Lead Scorekeeper)
- Schedule of interview appointments and teams, by interview room
- Schedule for the day, highlighting at what time judges must return to the deliberation room.
# Appendix I: Judge Match Observer Sheet

Team Number: ______________________________________

<table>
<thead>
<tr>
<th>Match#</th>
<th>Autonomous Mode</th>
<th>Game Play</th>
<th>Reliability</th>
<th>Standout Notes</th>
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<tbody>
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Appendix J: Sample List for Deliberations

On a whiteboard (or chalkboard) write each award category and add each nominee under each award. Write notes about each Nominee as to why they have been nominated for that award.

<table>
<thead>
<tr>
<th>Think Award</th>
<th>Connect Award</th>
<th>Rockwell Collins Innovate Award</th>
<th>Design Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judges Notes</td>
<td>Judges Notes</td>
<td>Judges Notes</td>
<td>Judges Notes</td>
</tr>
</tbody>
</table>

In these fields, the Judges will write the teams that they feel deserve each award, and a brief description why they feel that team deserves the award.
Appendix K: FIRST Dean’s List Award

FIRST Dean’s List Award

In an effort to recognize the leadership and dedication of FIRST’s most outstanding secondary school students, the Kamen family sponsors an award for selected 10th and 11th grade students known as the FIRST Robotics Competition and FIRST Tech Challenge Dean’s List.

Similar to the very prestigious National Merit Scholarship Award winners, there are three (3) “categories” of FIRST Dean’s List Award students:

1. **FIRST Dean’s List Semi-finalists** – comprised of the two (2) students in their 10th or 11th grade school year nominated by each team.

2. **FIRST Dean’s List Finalists** – comprised of the students (2, 3, or 4, depending on the region) selected at each State/Regions Championship.

3. **FIRST Dean’s List Winners** – comprised of the ten (10) FIRST Robotics Competition and ten (10) FIRST Tech Challenge students selected from the applicable FIRST Dean’s List Finalists at the FIRST Championship.

Dean’s List Award Evaluation Structure

There are 2 volunteer roles that are recruited to evaluate the Dean’s List Award Semi-Finalists and Finalists:

- Dean’s List Interviewer
- Dean’s List Reviewer

Working in pairs, Dean’s List Interviewers conduct informal 5-7 minute interviews with the students nominated by their team to be a Dean’s List Semi-Finalist. Interviewers update a FIRST database with their findings. Dean’s List Reviewers decide Award Finalists for their region based on the input of the Dean’s List Interviewers.

The Tournament Director or Volunteer Coordinator will recruit at least two Interviewers for the Dean’s List Award for each event. These Interviewers will be asked to review all entries before the event and conduct all interviews for this award during the event. This position is separate from the standard Judge volunteer position, as they only conduct the interview; they do not participate in deliberations for this award at the event.

There are three levels of competition where a Dean’s List Semi-Finalist must be interviewed:

- Qualifying Tournament
- League Tournament
- Remote Interview (for regions that have not yet implemented Qualifying Tournaments or League structures)

Every nominated student must be interviewed. Interviewers work with the Tournament Director to set up the student interviews. Dean’s List Award Interviewers should ensure there are 10 minutes allotted for each interview; up to seven minutes for the interview itself and a few extra minutes for the Judges to make notes and complete Dean’s List Evaluation Form.
Dean’s List Reviewer
Working to come to consensus, Dean’s List Reviewers read the nominations and Dean’s List Interviewer feedback and select two Dean’s List Finalists for their region. Finalists are recognized at the State or Regional Championship Tournament.

The Dean’s List Reviewer is responsible for deciding the Dean’s List Award Finalists. The Reviewer must access the Dean’s List Award System to view the original submission as well as the notes from the Dean’s List Interviewer. Once all the submissions and notes have been taken into consideration, the Reviewer is responsible for choosing two Finalist students to be announced at the State/Region Championship. Dean’s List Reviewers do not need to be present at the event; rather they review each Semi-Finalist and enter the Finalists in the Dean’s List Award System. This information will feed up to the State Championship.

More about the Dean’s List Award
The students who earn FIRST Dean’s List Award status as a Semi-finalists, Finalist or Winner, are great examples of student leaders who have led their teams and communities to increased awareness for FIRST and its mission. These students have also achieved personal technical expertise and accomplishment. It is FIRST’s that these individuals will continue, post-award, as great leaders, student alumni, and advocates of FIRST.

Prestigious colleges have expressed great interest in meeting FIRST Dean’s List’s Award winners and FIRST hopes that each team will take advantage of the opportunity to nominate the most qualified students as FIRST Dean’s List Nominees!

For more information on the Dean’s List Award, and to see past FIRST Tech Challenge winners, please visit our website! [http://www.firstinspires.org/Robotics/ftc/deans-list](http://www.firstinspires.org/Robotics/ftc/deans-list)

Eligibility
Every registered FIRST Tech Challenge team can submit up to two (2) students as FIRST Dean’s List Award Semi-Finalists.

- Students must be a sophomore (grade 10) or junior (grade 11) to be eligible for this award.
  - Note: For regions of the world that do not use grade levels such as this to identify years of schooling: This award is intended for students who are two (2) to three (3) years away from entering college or university. Students that would be attending college or university in the next academic year are not eligible. Mentors will be asked for the year of graduation during the nomination process.
- The coach or mentor nominating the student(s) must submit an essay explaining why the student should receive this award. The essay must be 4,000 characters or less.

Criteria
Criteria for selection of the FIRST Dean’s List shall include, but not be limited to a student’s:

- Demonstrated leadership and commitment to FIRST Core Values
- Effectiveness at increasing awareness of FIRST in their school and community
- Interest in and passion for a long-term commitment to FIRST
- Overall individual contribution to their team
- Technical expertise and passion
- Entrepreneurship and creativity
- Ability to motivate and lead fellow team members

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Appendix L: FIRST Tech Challenge Award Record Sheet

Award Record Sheet for Events with Traditional Match Play
Once Award Winners are confirmed, the Judge Advisor will complete this form and provide it to the Tournament Director or Lead Scorekeeper

<table>
<thead>
<tr>
<th><strong>FIRST® Tech Challenge Award Record Sheet</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Event Name</td>
</tr>
<tr>
<td>Date</td>
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<tr>
<td>Location</td>
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<tr>
<td>Judge Advisor</td>
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<table>
<thead>
<tr>
<th>Team #1</th>
<th>Team #2</th>
<th>Team #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winner</td>
<td>2\textsuperscript{nd} Place</td>
<td>3\textsuperscript{rd} Place</td>
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</table>

Design Award

Motivate Award

Control Award, sponsored by Arm, Inc

Collins Aerospace Innovate

Connect Award, sponsored by Arm, Inc.

Think Award

<table>
<thead>
<tr>
<th>Team #1</th>
<th>Team #2</th>
<th>Team #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winner</td>
<td>2\textsuperscript{nd} Place</td>
<td>3\textsuperscript{rd} Place</td>
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Inspire

Judges Choice Award (write title)

Judges Choice Award (write title)

<table>
<thead>
<tr>
<th>Winner Name and Team #</th>
<th>Finalist Name and Team #</th>
<th>Finalist Name and Team #</th>
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Compass Award (If given)

Promote Award (if given)

<table>
<thead>
<tr>
<th>Captain</th>
<th>1\textsuperscript{st} Picked</th>
<th>2\textsuperscript{nd} Picked</th>
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</table>

Winning Alliance

Finalist Alliance
**FIRST® Tech Challenge Award Record Sheet**

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date</th>
<th>Location</th>
<th>Judge Advisor</th>
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<thead>
<tr>
<th>Team #1</th>
<th>Team #2</th>
<th>Team #3</th>
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</thead>
<tbody>
<tr>
<td>Winner</td>
<td>2nd Place</td>
<td>3rd Place</td>
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### Design Award

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### Motivate Award

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### Control Award, sponsored by Arm, Inc

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**Collins Aerospace Innovate**

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### Connect Award, sponsored by Arm, Inc.

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### Think Award

<table>
<thead>
<tr>
<th>Winner</th>
<th>2nd Place</th>
<th>3rd Place</th>
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### Inspire

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### Judges Choice Award (write title)

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### Judges Choice Award (write title)

<table>
<thead>
<tr>
<th>Winner Name and Team #</th>
<th>Finalist Name and Team #</th>
<th>Finalist Name and Team #</th>
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### Compass Award (if given)

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### Promote Award (if given)

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### Ranking Order

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<th>Team Ranked #1</th>
<th>Team Ranked #2</th>
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<tr>
<th>Team Ranked #4</th>
<th>Team Ranked #5</th>
<th>Team Ranked #6</th>
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Appendix M: Advancement Order

**Traditional Event Order of Advancement**

If the team listed has already advanced or there is no team fitting that description (as in 2nd team selected at smaller events), the advancement will continue in order.

1. Optional – Qualifier Host team *(NOTE: Each region’s Affiliate Partner decides if this advancement opportunity will be offered, and if so, when the host team must be identified. The team MUST compete at one other tournament within the region and must meet the criteria set forth by the Affiliate Partner in the agreement. This advancement applies to Qualifying Tournament hosts only, and does NOT apply to host teams of Meets, League Tournaments or Championship Tournaments).*
2. Inspire Award Winner
3. Winning Alliance Captain
4. Inspire Award 2nd place
5. Winning Alliance, 1st team selected
6. Inspire Award 3rd place
7. Winning Alliance, 2nd team selected
8. Think Award Winner
9. Finalist Alliance Captain
10. Connect Award Winner
11. Finalist Alliance, 1st team selected
12. Collins Aerospace Innovate Award Winner
13. Finalist Alliance, 2nd team selected
14. Control Award, sponsored by Arm, Inc. Winner
15. Motivate Award Winner
16. Design Award Winner
17. Highest Ranked team * not previously advanced, from the Winning Division.
18. Think Award 2nd Place
19. Highest Ranked team *not previously advanced, from the Finalist Division.
20. Connect Award 2nd Place
21. Highest Ranked team *not previously advanced, from the Winning Division.
22. Collins Aerospace Innovate Award 2nd Place
23. Highest Ranked team *not previously advanced, from the Finalist Division.
24. Control Award, sponsored by Arm, Inc. Winner 2nd Place
25. Highest Ranked team *not previously advanced, from the Winning Division.
26. Motivate Award Winner 2nd Place
27. Highest Ranked team *not previously advanced, from the Finalist Division.
28. Design Award Winner 2nd Place
29. Highest Ranked team *not previously advanced, from the Winning Division.
30. Think Award 3rd Place
31. Highest Ranked team *not previously advanced, from the Finalist Division.
32. Connect Award 3rd Place
33. Highest Ranked team *not previously advanced, from the Winning Division.
34. Collins Aerospace Innovate Award 3rd Place
35. Highest Ranked team* not previously advanced, from the Finalist Division.
36. Control Award sponsored by Arm, Inc. 3rd Place
37. Highest Ranked team* not previously advanced, from the Winning Division.
38. Motivate Award 3rd Place
39. Highest Ranked team* not previously advanced, from the Finalist Division.
40. Design Award. 3rd Place
41. Highest Ranked team* not previously advanced, from the Winning Division.
42. Highest Ranked team* not previously advanced, from the Finalist Division.
43. Highest Ranked team* not previously advanced, from the Winning Division.
44. Highest Ranked team* not previously advanced, from the Finalist Division.
45. Highest Ranked team* not previously advanced, from the Winning Division.
46. Highest Ranked team* not previously advanced, from the Finalist Division.
47. Highest Ranked team* not previously advanced, from the Winning Division.
48. Highest Ranked team* not previously advanced, from the Finalist Division.
49. Highest Ranked team* not previously advanced, from the Winning Division.
50. Highest Ranked team* not previously advanced, from the Finalist Division.
51. Highest Ranked team* not previously advanced, from the Winning Division.
52. Highest Ranked team* not previously advanced, from the Finalist Division.

*Refers to Qualification Match Ranking. These advancements are in order. There is no normalizing of rank between divisions.

**REMOTE Event Order of Advancement**
If the Team listed has already advanced or there is no Team fitting that description (as in Inspire Award 3rd place at events of 20 or fewer Teams)

1. Optional – Qualifier Host team (NOTE: Each region’s Affiliate Partner decides if this advancement opportunity will be offered, and if so, when the host team must be identified. The team MUST compete at one other tournament within the region and must meet the criteria set forth by the Affiliate Partner in the agreement. This advancement applies to Qualifying Tournament hosts only, and does NOT apply to host teams of Meets, League Tournaments or Championship Tournaments).
2. Inspire Award Winner
3. Inspire Award 2nd place
4. Highest Ranked Team not previously advanced
5. Inspire Award 3rd place
6. Highest Ranked Team not previously advanced
7. Think Award Winner
8. Highest Ranked Team not previously advanced
9. Connect Award Winner
10. Highest Ranked Team not previously advanced
11. Collins UTC Innovate Award Winner
12. Highest Ranked Team not previously advanced
13. Control Award Sponsored by Arm, Inc. Winner
14. Motivate Award Winner
15. Design Award Winner
16. Highest Ranked Team not previously advanced
17. Think Award 2nd Place
18. Highest Ranked Team not previously advanced

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19. Connect Award 2nd Place
20. Highest Ranked Team not previously advanced
21. Collins UTC Innovate Award 2nd Place
22. Highest Ranked Team not previously advanced
23. Control Award Sponsored by Arm, Inc. 2nd Place
24. Highest Ranked Team not previously advanced
25. Motivate Award 2nd Place
26. Highest Ranked Team not previously advanced
27. Design Award 2nd Place
28. Highest Ranked Team not previously advanced
29. Think Award 3rd Place
30. Highest Ranked Team not previously advanced
31. Connect Award 3rd Place
32. Highest Ranked Team not previously advanced
33. Collins UTC Innovate Award 3rd Place
34. Highest Ranked Team not previously advanced
35. Control Award Sponsored by Arm, Inc. 3rd Place
36. Highest Ranked Team not previously advanced
37. Motivate Award 3rd Place
38. Highest Ranked Team not previously advanced
39. Design Award 3rd Place
40. Highest Ranked Team not previously advanced
41. Highest Ranked Team not previously advanced
42. Highest Ranked Team not previously advanced
43. Highest Ranked Team not previously advanced
44. Highest Ranked Team not previously advanced
45. Highest Ranked Team not previously advanced
46. Highest Ranked Team not previously advanced
47. Highest Ranked Team not previously advanced
48. Highest Ranked Team not previously advanced
49. Highest Ranked Team not previously advanced
50. Highest Ranked Team not previously advanced
51. Highest Ranked Team not previously advanced
Appendix N: Advancement and Award Eligibility

FIRST Tech Challenge Award Eligibility and Advancement Criteria
To ensure fairness to all teams and to provide equal opportunity for all teams to win an award at a FIRST Tech Challenge Championship tournament, teams are only eligible to win an award or advance to the next event level at the first three events of any type they attend. If they advance to the next level, they are again eligible advance or win an award at the first three events at that level. Those teams who compete in more than three Qualifying Tournaments, League Championships, and Championship Tournaments do so to being involved in the fun and excitement of the tournament and not with the intent of winning awards or advancing to the next tournament level.

Each team is responsible for telling tournament organizers and Judges if they are ineligible for awards or advancement based on the policies below.

Eligibility
Teams must be registered and in good standing with FIRST before they are eligible to compete in Official FIRST Tech Challenge tournaments.

The Tournament Director will confirm the eligibility of the teams.

Eligibility for Judged Awards
Teams are eligible to be considered for all Judged Awards (except the Inspire Award, please see Inspire section for details) at any of the first three events they participate in at each of the following levels. Teams may compete at each level in any region that will accept them. Affiliate Partners have the authority to decide if their event is open to teams from other regions or is only for teams within their region.

- League Tournament
- Qualifying Tournament
- Super Qualifying Tournament
- Championship Tournament

Inspire Award Eligibility
Teams that have won the Inspire Award at another event of the same level, regardless of the region, cannot be considered for the Inspire Award or as an Inspire Award Finalist at additional events at that level. The Program Delivery Partner in your region will share that information with the Tournament Director.

All teams are eligible to be considered for all Judged Awards at the following events:

- World Championship Tournament

Eligibility for Advancement
Teams are eligible for advancement at any one of the first three events they participate in at any of the following levels, regardless of the region. This applies to both teams in North America, and teams outside of North America:

- League Tournament
- Qualifying Tournament
- Super Qualifying Tournament
- Championship Tournament
- Teams may advance to only the first World Championship Event they have been invited to.

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Appendix O: Control Award, sponsored by Arm, Inc. - Instructions and Submission Form

To be considered for the Control Award, Teams must submit a Control Award Submission Form. On this form, Teams identify and summarize the key control elements that make their Robot unique. Included is a description of key observable actions for Judges to look for as well as the sensor and algorithm use that make it all possible. Judges will use this form for both evaluating control designs and when observing Robots on the competition field. Information on this form will typically fit on one page, with an additional page for each autonomous mode described. Optionally, additional summary pages may be added at the end to help the judges understand key developmental activity.

**Autonomous Objectives**

List the overall actions that the Robot can complete. These should include scoring actions as well as other positioning and defensive operations. The Robot does not have to do accomplish all these in every program but should be demonstrable in at least one autonomous program.

**Sensors Used**

List the sensors used to control the Robot and a brief description of how they are used.

**Key Algorithms**

List the key algorithms that make your Robot unique or are vital to its success on the field. Particularly complex or unique algorithms or those that integrate the use of multiple sensors are good candidates to highlight here.

**Driver Controlled Enhancements**

List any advanced control elements that are used during the driver-controlled period to enhance performance. These may include signaling operations when a certain condition is detected on the field, auto-complete functions, fail-safe algorithms, or just any enhancements that make the control of the Robot easier or more efficient for the driver.

**Engineering Notebook References**

Judges also use the Teams Engineering Notebook to evaluate details of the control elements. To help guide this effort, Teams should provide pointers to where in the Engineering Notebook control related information is located.

Some things to consider including as pointers are: Team goals for control activities, strategies for autonomous mode, Robot performance with and without added sensors, requirements for successful autonomous operation, performance improvements using algorithms and sensors, and testing results.

**Autonomous Program Diagrams**

For autonomous operations, Teams should draw and label a typical path the Robot takes. The labeled points identify key observable actions the Robot makes. For each labeled point, a brief description of what is taking place should be noted (see example below). Especially describe those key operations where adjustments are made to ensure accurate and repeatable performance.

For Teams with multiple autonomous programs, it is not necessary to document every program on a separate sheet. It is sufficient document the most commonly used or complex programs and note variances for the rest.

**Additional Summary Information (optional)**
For those Teams that have developed many different control features, they may want to provide additional information to assist the judges in understanding their work. This is a place where Teams can provide more detailed information about their designs. It should be organized such that separate topics are easily identified and can be quickly found.

**Control Award, Sponsored by Arm, Inc., Submission Form**

**Please turn in this sheet during your judge interview along with your engineering portfolio**

<table>
<thead>
<tr>
<th>Team #</th>
<th>Team Name:</th>
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**Required for Remote Submissions** – Please provide a link to a video recording of the controls described in this submission form:

**Autonomous objectives:**

**Sensors used:**

**Key algorithms:**

**Driver controlled enhancements:**

**Engineering portfolio references:**

*Gracious Professionalism®* - “Doing your best work while treating others with respect and kindness - It’s what makes FIRST, first.”
Autonomous program diagrams: