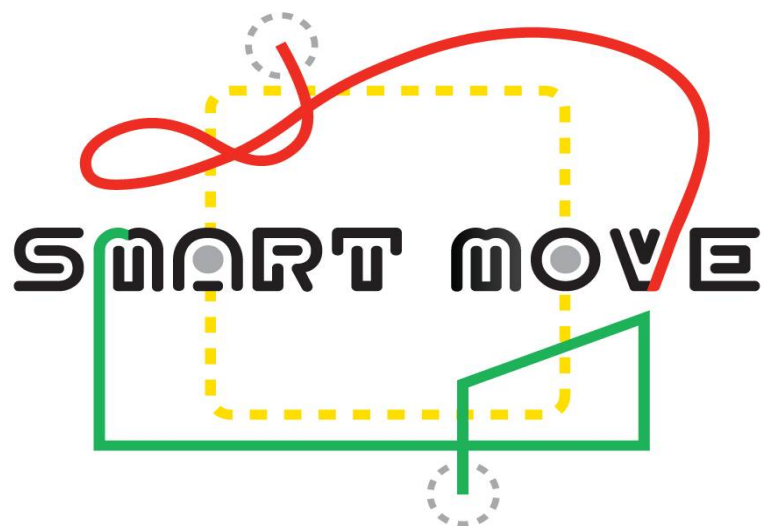




JUDGES' HANDBOOK



Purpose of this Handbook

The purpose of this handbook is to provide you with an overview of *FIRST* and *FIRST* LEGO® League, to describe your important responsibilities and to help you understand the judging process. Please take the time to read it prior to arriving at the tournament. The Judge Advisor assigned to your tournament will go over this information in more detail during the judge meeting before the competition commences.

A Special Thanks:

We would like to thank FLL Global Judge Advisor, Skip Gridley, for his generous guidance and content contributions to the *FIRST* LEGO® League Judges' Handbook

FIRST LEGO League Judges' Handbook
2009 printing

FIRST LEGO® League
200 Bedford Street
Manchester, NH 03101
www.usfirst.org
www.firstlegoleague.org

FLL is the result of an exciting alliance between *FIRST* and the LEGO® Group.

©2009 *FIRST* and the LEGO® Group.

Official *FIRST* LEGO® League Operational Partners are permitted to make reproductions of this handbook for immediate judging and Operational Partner use only. Any use, reproduction, or duplication of this manual for purposes other than directly by the immediate FLL Operational Partner as part of FLL participation is strictly prohibited without specific written permission from *FIRST* and the LEGO® Group.

Communication

For official answers to questions about FLL judging, e-mail flljudge@usfirst.org

Table of Contents



INTRODUCTION TO <i>FIRST</i> AND <i>FIRST</i> LEGO® LEAGUE	4
Vision.....	4
Mission.....	4
Philosophy.....	4
Welcome.....	4
<i>FIRST</i>	4
<i>FIRST</i> LEGO® League.....	4
Gracious Professionalism.....	5
<i>FIRST</i> LEGO® League Core Values.....	5
Keep the Children in Mind.....	6
Adult Intervention.....	6
FLL TOURNAMENTS	6
The Four Categories of FLL Competition.....	7
Tournament Logistics.....	8
Judge Responsibilities.....	9
BEFORE THE TOURNAMENT STARTS	10
Preparing for Interviews.....	10
Be Fair.....	10
What to Expect.....	10
Team Dynamics.....	11
JUDGING PROCESS – TEAM EVALUATION AND FEEDBACK	11
Team Evaluation.....	11
During the Interviews.....	11
Coach Involvement and Team Preparedness.....	12
Constructive Comment Samples.....	12
JUDGING PROCESS – DELIBERATIONS AND AWARDS	14
Awards Eligibility.....	14
Initial Deliberations and Call-backs.....	15
Determining the Rest of the Award Winners.....	17
Awards Ceremony.....	19
APPENDIX A –RUBRICS (EVALUATION SHEETS)	19
APPENDIX B – SAMPLE QUESTIONS	27
Teamwork and FLL Core Values Sample Questions.....	27
Robot Design Sample Questions.....	28
Project Sample Questions.....	29
APPENDIX C – AWARDS DESCRIPTIONS	30
FLL Core Awards (Required).....	30
Optional Awards.....	32
Special Recognition Awards.....	32
APPENDIX D – AWARDS CEREMONY SCRIPT EXAMPLE	34
APPENDIX E – JUDGE ADVISOR, HEAD JUDGES AND JUDGE ASSISTANTS	35
GLOSSARY	37
FLL CHAMPIONSHIP JUDGING STANDARDS	39

Introduction to *FIRST* and *FIRST* LEGO® League



Vision

"To transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology heroes." – Dean Kamen, *FIRST* Founder

Mission

The mission of *FIRST* and *FIRST* LEGO® League is to inspire young people to be science and technology leaders, by engaging them in exciting mentor-based programs that build science, engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication and leadership.

Philosophy

Everyone is a winner. *FIRST* LEGO® League is designed to be a celebration of achievement. Everyone is transformed by the experience. Judges learn from participants, mentors learn from teams and students leave wanting more. It's not about building robots; it's about robots building people.

Welcome

Thank you for agreeing to serve as a judge for a *FIRST* LEGO® League event! You were asked to serve as an FLL judge because we believe that your professional accomplishments make you an ideal role model for the students – as well as some of the engineers and other professionals – participating in the program. In other words, you are a hero, and we are delighted that you could find the time in your busy schedule to assist us in reaching our mission.

FIRST

FIRST encourages the individuals it selects as its judges to serve as "Ambassadors of *FIRST*" during the various *FIRST* events. Accordingly, it is important that you understand the mission of *FIRST*. The aim of *FIRST*, in its broadest sense, is to transform the culture: to restore the sense of excitement, awe, respect and honor that was once attached to science and technology, and especially to imbue the younger generation with an appreciation of the rewards, including career opportunities, that pursuing an enriched understanding of science and technology and learning can bring.

FIRST LEGO® League

FIRST LEGO® League (FLL) is an exciting and fun global robotics program that ignites an enthusiasm for discovery, science, and technology in kids ages 9 to 14 (16 outside of the U.S. and Canada). Each year FLL teams embark on an adventurous Challenge based on current, real-world issues. Guided by a team coach and assisted by mentors, the teams:

- Research and solve a real-world problem based on the Challenge theme
- Present their research and solutions

- Build an autonomous robot using engineering concepts

Using the yearly Challenges, FLL:

- Entices children to think like scientists and engineers
- Provides a fun, creative, hands-on learning experience
- Teaches children to experiment and overcome obstacles
- Builds self-esteem and confidence
- Inspires participation in science and technology

No matter what the child's subject interest, FLL offers an opportunity for engagement. Whether it is by creativity, technology, or research, FLL dares kids to test, explore, expand, or completely change thoughts and approaches for different sciences each year.

FLL is the result of a partnership between *FIRST* and The LEGO® Group. In 1998, *FIRST* Founder Dean Kamen and The LEGO® Group's Kjeld Kirk Kristiansen joined forces to create *FIRST* LEGO® League, a powerful program that engages younger children in playful and meaningful learning while helping them to discover the fun in science and technology. In its first decade, FLL has reached more than 500,000 children in over 40 countries around the globe.

Gracious Professionalism

Dr. Woodie Flowers, *FIRST* National Advisor and Pappalardo Professor Emeritus of Mechanical Engineering, Massachusetts Institute of Technology, coined the term "Gracious Professionalism."

Gracious Professionalism is part of the ethos of *FIRST*. It's a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.

With Gracious Professionalism, fierce competition and mutual gain are not separate notions. Gracious professionals learn and compete like crazy, but treat one another with respect and kindness in the process. They avoid treating anyone like losers. No chest thumping tough talk, but no sticky-sweet platitudes either. Knowledge, competition, and empathy are comfortably blended.

In the long run, Gracious Professionalism is part of pursuing a meaningful life. One can add to society and enjoy the satisfaction of knowing one has acted with integrity and sensitivity.

FIRST LEGO® League Core Values

FIRST LEGO® League places strong emphasis on teams demonstrating FLL Core Values and Gracious Professionalism. FLL Core Values are presented in the Coach's Handbook for them to discuss with their team and are a basic part of what every FLL team should learn and demonstrate during their experience.

FLL is a child-centered activity and is about giving children a unique and stimulating experience. We want them to learn the value of teamwork and to respect everyone's ideas and contributions to the team. FLL Core Values are about appreciating our differences and learning what those differences add to our lives. FLL succeeds most fully when team members bring the FLL Core Values they learn back to their communities.

FLL Core Values

We are a team.

We do the work to find solutions with guidance from our coaches and mentors.

We honor the spirit of friendly competition.

What we discover is more important than what we win.

We share our experiences with others.

We display Gracious Professionalism in everything we do.

We have fun.

At an FLL tournament, all volunteers should be looking for clear displays of FLL Core Values, or evidence that a team is not practicing Gracious Professionalism. For our top award, the Champion's Award, this factor is considered in determining the winners.

If a team behaves in a way that violates FLL Core Values, the team is not eligible to win an award.

Keep the Children in Mind

The most important thing for you to know about an FLL tournament is that it is supposed to be **FUN**. *FIRST*'s mission is to get children excited about science and technology. If you experience any special challenges during the day, focus on that goal. Everything else will fall into place.

Also remember that these are children who worked hard all season to make it to the tournament. Treat their accomplishments and their work with respect, and be sure that other judges do as well. One negative comment from a judge can have a devastating effect on teams. Make it your goal as a judge to ensure that the teams know what they did well, and that they have a positive experience showcasing their achievements.

Adult Intervention

In FLL, the children are expected to do the work – the programming, the research, and the decision-making. Adult coaches and mentors are guides, helping the children find the answers. FLL judges should be wary of teams where adults are overly involved, and ask questions to determine if the children did the work themselves. After questioning the children, if judges believe that adults did the work for the children – or if children tell the judges that their coach or mentor did the work – that team should be marked down to reflect this problem.

But don't assume that the children couldn't do a project or certain programming – ask them! Children are usually very honest, and if they can explain why they programmed the robot a certain way, why they chose a certain project topic, or how they arrived at their solution, then the judges will have evidence that the children did the work. Further guidance on coach involvement is presented in the Judging Process section of this Handbook.

Many tournaments limit the number of adults allowed into judging sessions. Your Judge Advisor can tell you what your tournament's policy is, and what to expect from adults in terms of involvement during the day.

FLL Tournaments



Each year, we provide FLL teams around the world with an annual Challenge that has two parts: a robot game and a project. In the Robot Game, teams design, build, test, and program autonomous robots that must perform a series of tasks, or missions. In the Project, teams conduct research and create a technological or engineering solution to an aspect of the Challenge and present that solution.

FLL tournaments provide teams with an opportunity to showcase their achievements on the FLL Challenge. FLL believes that all teams who complete the Challenge are successful, and the awards represent the special achievement of particular teams.

FLL teams compete in four categories, all of which are equally important:

- Robot Performance, or score on the playing field
- Robot Design, how well a team demonstrates its understanding of robot design
- Teamwork, how well a team demonstrates working together to achieve a common goal
- Project, how well a team demonstrates their solution for a real world problem, and the research behind their solution

Teams that excel in all categories and demonstrate our Core Values compete for our highest honor – the Champion’s Award.

The Four Categories of FLL Competition

Robot Performance

Robot Performance is score-based, and is officiated by FLL Referees. Referees use the Challenge Mission Descriptions, Rules, Field Setup and Question and Answer materials to guide their scoring. There are several ways to determine which team wins the Robot Performance award. See below for options, which depend on whether a tournament chooses to use an Elimination Round (similar to a single or double elimination tournament used in several other competitive situations) to determine the Robot Performance award winner. If an Elimination Round is used, the higher scoring team from each match continues to compete, and the lower scoring team is eliminated from the remainder of the competition. If elimination rounds are held, participants are the top N teams (set by the tournament organizer) according to each team’s single highest score after at least three robot rounds. Scores may not be averaged or added together.

Some competitions that have an elimination round give out Robot Performance awards for both the regular rounds and the elimination round winners.

If an elimination round is not held:

The team with the highest score among at least 3 rounds is the winner

-and-

If two teams tie, their second highest scores are used to determine which among them has the higher ranking, and so on

If an Elimination Round is held:

The team with the highest score in the Elimination Round is the winner

- or -

The team that completes the Elimination Round without being eliminated, i.e. the team that scores highest in each of its Elimination Round matches is the winner

Robot Design

Robot Design is subjectively judged based upon the mechanical design and programming of each team’s robot for the Robot Game portion of each year’s Challenge. Robot Design judging begins with an interview with each team to discuss the design and programming of their robot. Robot Design judges should have a background in mechanical design and/or programming. Pairing judges with different technical backgrounds can be an effective way to ensure that judges have the required knowledge to choose the winners.

Interviews take place in a separate judging area, which should include an FLL Challenge table (or surface with borders) with a Field Setup Kit. Your tournament organizer will tell you what format your Robot Design interviews will use.

Project

Part of the annual FLL Challenge requires teams to identify an existing problem in the scientific specialty related to the Challenge, and find a solution to that problem. Then teams must share their findings and their solution with others. At tournaments, these presentations are done for the Project judges. Teams are given at least five minutes for their presentation – including setup time. This time is followed by a question and answer period. Teams may perform a skit, a PowerPoint presentation, songs, or choose another creative way to share their Project solutions. The Project is judged on the creativity of the presentation, the innovativeness of the Project solution, and the quality of the research. These interviews take place in a separate judging area, and the tournament organizers set guidelines for what audiovisual aids can be used.

Teamwork

Teamwork judging is usually done in one of four ways: as a question and answer interview session with the judges; by floating judges, who observe teams in action during the course of the day or visit teams in the pits; by observing teams doing a hands-on Teamwork activity and then asking them questions; or by Teamwork judges working in the Robot Design and Project interviews, asking Teamwork-specific questions. Your tournament organizer will tell you what method they will use to judge Teamwork at your event. In all cases, questions asked of the teams should cover both the tournament day and the entire season.

FLL Core Values are also judged primarily during Teamwork judging. A complete picture of how well a team understands FLL Core Values comes from input from all judges and other tournament personnel, such as referees. Occasionally, teams will present to judges one view of FLL Core Values, but on the playing field demonstrate a different understanding!

Tournament Logistics

Judging Sessions

Judges are usually grouped in teams to judge the major categories. Larger tournaments generally have several teams of judges for each award. Each pair or group of judges should see between ten and fifteen teams during the course of the day. More than that, and we find that judges start to lose the differential between teams. Within this range, we find that the judging process runs more smoothly, volunteers and teams have an easier day, and the event stays on schedule. Judging sessions are at least ten minutes long, including questions and answers, with several minutes between sessions for judges to evaluate and score teams. Check with your tournament organizer to determine how your event will be scheduled.

The Pit

The area that teams use as their home during the day is called the pit. Teams are usually given a table for their presentation materials, robot, laptop, and other materials. This is their gathering place for the duration of the tournament, and where they stay between robot competition rounds and judging interviews. This is a great place to meet with teams in an informal way, and see them in a more relaxed environment. It can be difficult to catch teams at their pit tables, as competition schedules are typically very tight, and the teams have little down time between interviews and robot rounds.

The Competition Floor

Robot rounds take place on the competition floor, on two 4' x 8' FLL tables, placed together to form one 8' x 8' competition table. Rounds last 2 ½ minutes and are scored by referees. Teams typically have one or two practice rounds, and three competition rounds to complete during the course of the day. This is a great place to see the teams in action, and to observe how team members and coaches interact when they are focused on a goal.

Members of the Judging Team

Judging is a major portion of any FLL tournament, and there are many roles that must be performed by the volunteers who assist with judging. The person who leads these volunteers and is responsible for their activity is the Judge Advisor. For larger tournaments, Head Judges will often be assigned to assist specific areas of the competition. There will also likely be several Judge Assistants assigned to help with all aspects of judging. The Judge Advisor, Head Judge and Judge Assistant roles are described in Appendix E. The rest of this guide will focus on individual judges.

Judge Responsibilities

Prior to the Event	During Team Evaluations
Familiarize yourself with: <ul style="list-style-type: none"> • FLL Mission and Core Values • Event schedule • Challenge materials as appropriate • Judging procedures • Tournament award structure and descriptions Attend the Opening Ceremonies	Introduce yourself Interview teams Make sure judging sessions stay on schedule Evaluate each team according to the Rubric criteria Note and report: <ul style="list-style-type: none"> • cases of adult intervention • demonstrations (or lack) of Gracious Professionalism and FLL Core Values • candidates for specific awards
During Deliberations	During the Awards Ceremony
Determine the top ranked teams for your judging category Work with judges of other categories to determine the Champion's Award winners Share your notes on winning teams with the Judge Advisor for use in the Awards Ceremony script	Attend awards ceremony Help distribute medals, awards and other team recognition Join the "high five" line or find other ways to congratulate all teams on participation in the season and event

Before the Tournament Starts



Preparing for Interviews

Review the material related to the FLL Challenge. Judging rubrics are included in Appendix A for each judged category. These rubrics are given to teams as a roadmap to success, and help identify what skill level teams have achieved. They tell the teams what “Excellent” means, and give judges a common language to use to determine award winners.

FLL also provides you with a set of questions to ask during your judging interviews (Appendix B). Review the questions carefully, keeping in mind that you cannot ask all of the questions during a ten-minute interview. Some teams will give you answers that cover multiple questions; others will give brief, targeted answers. Prepare the list of questions that you think will be most useful, and have back-up questions ready if you need them. You may choose to add your own questions to the list. Just be sure that you and the other judges are using the FLL supplied criteria (in the form of rubrics) to evaluate teams and to determine award winners in your category.

Many tournaments ask teams to fill out a Team Information page, telling judges about their team and their season. Some ask teams to present these to judges directly; others give the pages to judges with their schedules for the day. This is a helpful way for judges to become acquainted with teams, and can be used to refresh memories during judge deliberation.

Be Fair

Judge the teams based upon the information provided to you by the tournament organizer and by FLL. Personal opinions that are not based on these materials and the team’s performance should never be part of the judging process. To protect the integrity of the awards, *FIRST* requires that judges with any affiliation to a team advise other judges of the affiliation, refrain from commenting upon the team, abstain from voting for the team, and refrain from influencing the judges’ decisions on such team in any manner.

What to Expect

You will find that some children are talkative, while others are very shy. You may have to ask more questions of a team of introverts to arrive at the same information that a team of extroverts gave you voluntarily. Be prepared to re-word your questions if you find that the children are struggling to understand or answer. Try not to ask questions that allow the teams to answer with a yes or no, and encourage the teams to elaborate on their answers.

What You Should Review Prior to the Event

All Judges Review:

- FLL mission and Core Values
- The Challenge description
- The tournament schedule
- Judging procedures
- Award descriptions and criteria

Robot Design Judges:

- Challenge missions and rules

Project Judges review:

- Challenge project assignment

Teamwork Judges review:

- Teamwork activity, if any

Keep in mind that all judging should consider the age of the team members. Age-appropriate expectations are critical to success.

Be polite and respectful, but do not allow the coach to answer questions for the team. Take note when teams look to their coach for answers, and try to determine if the children know the answer and are just nervous, or if they're looking to their coach to find out how to answer. The children will be nervous. A tournament is a stressful experience. Asking them questions about their robot or their project can help to put them at ease. Try to ensure that each team leaves your judging room feeling positive about their performance in FLL.

Team Dynamics

Some teams will have clearly defined roles. Two children may program, two others are the robot drivers, and two others directed the project preparation. This is a completely acceptable team dynamic. You may find that not all of the children can answer all of the questions. All of the children should be able to tell you what their role on the team was, and what they did to contribute. If one or two children don't answer any questions, target your questions to those children, and find out what they did during the season.

Don't pre-judge team dynamics, or believe that there is only one right answer. Listen to the children carefully, and expect different levels of appropriate coach involvement based upon the age or maturity of the team members.

Judging Tip:

Determine a plan of action for your judge group before you begin judging

For Example:

Determine how to divide or share responsibilities such as evaluation input, timekeeping, questions to ask.

Example:

Do you want to see a team or two before you start to score them?

Does each judge concentrate on specific rubric items?

Judging Process – Team Evaluation and Feedback



Team Evaluation

The first step in the judging process is for each team to be evaluated by a group of judges. Judges use the methods outlined in the Four Categories of FLL Competition to gather data and information. Each judge group then evaluates each team that they see according to the criteria defined in the rubric for the appropriate area.

During the Interviews

When a judging session starts, take a few moments to introduce yourself and welcome the team to their session. This will help to break the ice, and should help the children relax. You can ask the team where they are from, remind them about the amount of time they have, ask them for any materials they would like to present to you or any other method that makes them more comfortable.

If the logistics of your event are such that your judging area makes it difficult to hear the children, or difficult to view their visual aids, please move closer to them to create a warmer environment. Also, whenever possible, address the children at eye level. An adult towering

above a smaller child will only add to the intimidation the child may be feeling because of the stress of the situation.

Please show every team respect by remaining attentive during their presentations. Maintain eye contact where culturally acceptable. Turn off mobile phones and other devices which interrupt interaction. Refrain from eating during team presentations.

Take plenty of notes during judging sessions, and turn in your notes to the Judge Advisor at the end of the day. Please do not take them home, as sometimes, questions about the judging deliberations process come up after the tournament. Be sure to observe teams during setup, breakdown and throughout the day. A team's actions during unguarded moments can tell you volumes, and give you even more information than the interview. Remember too not to assume what you see in a particular situation, especially during non-interactive observation. Strive for clarity by interacting with the children as much as possible. Not only will the information you gather be more accurate, but the children will have the opportunity to interact with you in your job as role model. They also might find out that you are fun and approachable, and not a scary adult judge!

If evaluation sheets (sometimes called score sheets) are being used, turn them in regularly. This allows the scorekeeper to enter information on an ongoing basis, and makes the deliberation process easier.

Keep an eye on your schedule. Every time your judging team falls behind a minute or two, the schedules for other judging sessions and robot rounds are affected. Just ten minutes can mean that all judging and robot performance rounds are off schedule, and can cause havoc with the schedule for the entire day.

Specifics

Please be as specific as possible when gathering information, taking notes and discussing teams. The level of competition at this event demands attention to detail, especially when it comes to decision making for awards. Specific comments are much more helpful than overall impressions. Detailed reasons concerning a team's suitability for an award are ***extremely important!*** The teams deserve a level of effort from the judges commensurate with what they have put in over the course of a season.

Coach Involvement and Team Preparedness

Please be ***absolutely sure*** that you have all the information you can in cases where you suspect adult intervention. The starting assumption is that all teams have completed the work on their own, and there must be evidence to the contrary. It is not okay to "feel" like a team had too much coach involvement. Also, please refrain from penalizing a team for being "too prepared." FLL tournaments showcase these team's accomplishments, and they naturally want to demonstrate what they have done. Teams will naturally practice for this event, and some may seem less natural than others. Don't assume that because a team is too polished or prepared that they must not truly understand what they are saying. Again, it is your job to probe and question further to assess their true level of understanding.

This does not mean, however, that judges can go to any length to prove that a team is being less than forthcoming. Judges may not ask for personal information, such as age. Judges may not ask for intellectual property (for example computer programs or research) developed by the children to be stored on their personal media or computers. Teams may elect to provide this information of their own accord, but a process should be in place to ensure the information is returned to the team following the event.

Constructive Comment Samples

The teams have put forth a tremendous amount of effort over the course of their season to learn robotics, complete missions, develop teamwork skills, research and prepare their project presentation and develop an engineering design review to describe their robot.

They deserve to be treated with respect and provided with worthwhile and appropriate recognition and evaluation of their accomplishments.

The goal is to compliment the children’s accomplishments with terms and phrases that are appropriate for the subject matter. If they have an innovative attachment that uses worm gears and provides a high amount of torque and good lifting strength, tell them that! That’s more constructive than “awesome arm!” If they designed their t-shirts to spread the message of FLL, tell them their choice of using their shirts to spread FLL Core Values is inspirational. Don’t just say, “cool shirts” or “they were so cute!”

Don’t limit yourself to these or hesitate to expand the student’s vocabulary with adult superlatives. The goal is to compliment the students’ accomplishments or cerebral prowess.

Some examples of appropriate comments are listed below to help guide your feedback to the teams. They are grouped by category and also include some general comments.

General	Example Teamwork Comments
Effective leadership/problem solving/ troubleshooting Resourceful Keen observers Applied what you learned You should be proud of your accomplishments and yourselves Wonderfully focused Determined Accomplished well beyond your years Think “out-of-the-box”	Understand contributions of all members Truly respect each other Demonstrate great partnership Great division of roles – Effective use of each other’s strengths Excellent relational skills Great personification of Gracious Professionalism Encouraged each other Pulled for the team Worked well under pressure
Example Robot Design Comments	Example Project Comments
Good grasp of mechanical concepts Solid understanding of programming logic Creative or effective strategy Good understanding of KISS principle Innovative	In-depth research Solid analysis Creative and relevant presentation Good organization Genuinely understand subject matter Innovative and resourceful Very creative approach/presentation Enjoyable presentation Highly interesting

Judging Process – Deliberations and Awards



After you review and evaluate your assigned teams, you will likely have a short break. You can use this time to complete any final feedback that you wish to give to the teams you have evaluated. After all your evaluations are completed and ready to be returned to the teams, the judging process shifts from evaluating the achievement of all teams to selecting the best achievements to give awards from among all the teams.

FLL awards fall into three categories. Some team awards FLL requires because they are considered core to our mission and values. Other awards are optional for teams or honor the service of exceptional individual volunteers. All optional awards may be presented if/as desired by the local tournament organizer. A description and criteria for the required FLL Core Awards, as well as other optional awards, are listed in Appendix C.

If your tournament is large enough to have several groups of judges who have only seen a subset of all the teams at a tournament, how do you decide which teams are most deserving of awards? For example, if you are a Robot Design judge, how do you decide if teams that you consider worthy of receiving a Programming Award are more deserving of that award than another team evaluated by a different set of judges? Taking it a step further, how do you decide if that team deserves a Programming Award, or perhaps a Creative Presentation Award, or even if that team should be considered for FLL's highest honor, the Champion's award?

The answer is that you work with your fellow judges to decide. There will typically be only a short amount of time to go through this process at your event, so it is important to understand it from the beginning. If you have any questions about the process after reading this handbook, please consult your Judge Advisor.

The objective of the process is to produce an equitable distribution of awards that inspires the children and celebrates their achievement. The objective is not to give every award to the absolute "best" in each category. Teams winning awards should be among the highest achievers at a tournament; typically rating Excellent in most categories evaluated using the Rubrics.

The Judge Advisor will lead the judging group in determining the award winners. When using multiple judging groups for one award area, each award area should have a Head Judge to facilitate deliberations. For example, if there were 4 pairs of teamwork judges, there would also be a Head Teamwork Judge.

Awards Eligibility

All teams are normally eligible to win up to one award at a tournament. The only exception is the Robot Performance award, which can be awarded to ANY team, regardless of whether they have won any other awards. This means that even a team that has won any of the Core Awards, even the Champion's Award, may also win the Robot Performance award.

Awards should be distributed as equitably as possible among the teams. Note that awards given to individual coaches and mentors do not impact the team's eligibility for an award.

To ensure fairness to teams and provide equal opportunity to win awards, FLL teams are only eligible for awards at the first Championship tournament they attend. Similarly, if a

team has participated in a qualifying event in one region it is ineligible for awards or advancement at any other qualifying tournament. Teams who compete in more than one Championship or qualifying tournament do so at the tournament organizer's discretion, and for the fun of competing. Teams have been asked to use the honor system and notify the tournament organizer when they are not eligible to win awards based on the above circumstances.

Teams attending Open Championships and the World Festival are exempt from this policy.

ALL teams at Open Championships and the FLL World Festival are eligible to receive awards at those events, regardless of whether they received awards at other events or not.

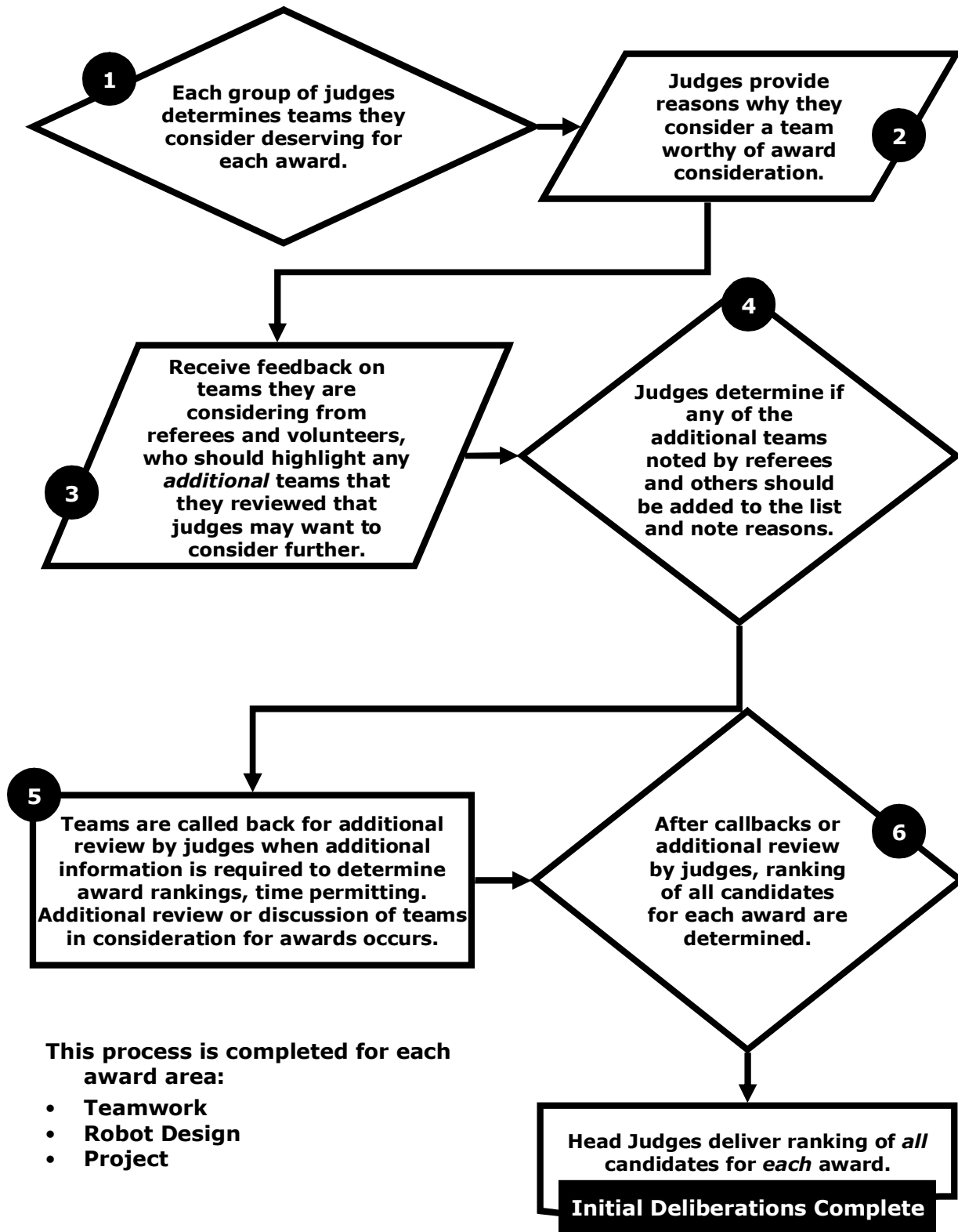
Your Judge Advisor will inform you what the awards eligibility criteria are for your event.

Initial Deliberations and Call-backs

At the conclusion of the team evaluations, all groups of judges meet with other groups of judges that are in the same category to discuss the teams they have nominated for awards. Each group of judges nominates appropriate candidates for awards. Any judging rankings or scores are only important to the group of judges who generated them, and are not to be used as part of the awards deliberation process. Each judging group presents its choice(s), and shares reasons they are recommending these teams. Good notes from interviews can be very important here. Through consensus, the group then rank orders all teams in consideration (that have been nominated) in each award category. If necessary, judges can revisit teams in consideration for awards, by either informally watching them on the field and in the Pit, or formally back in the judging rooms. Revisiting a team to gather additional information is occasionally referred to as a call-back. These final visits will help determine the final award winners.

This process is represented graphically on the next page.

Initial Deliberations Process for Each Award



Final Deliberations and Determining the Champion's Award Winner

After all judges in each category complete their rankings for each award, it is time for Final Deliberations to choose and finalize the award winners. The first award to be determined is the Champion's Award. All other awards then follow from the rankings determined in Initial Deliberations

The following process chooses the Champion's Award winning teams:

1. The Judge Advisor and Head Judges identify teams that appear as top teams across all four competition categories and also exemplify FLL Core Values. Judges use the team's ranking for Project, Teamwork and Robot Design, in conjunction with the Robot Performance scores and an assessment of FLL Core Values to determine Champion's Award candidates. All four required competition categories and Core Values are of equal importance in FLL and are therefore important in determining the Champion's Award winner.
2. Judges discuss the relative merits of all teams identified as being in consideration for Champion's Award.
3. After sufficient discussion of all teams in consideration, each judge is asked to vote yes or no on the following question, for each team. "Is Team N an acceptable choice to win the Champion's Award?" Note that each judge is asked this question for each team. The Judge Advisor tallies the number of "Yes" votes for each team.
4. The teams are rank ordered from most "Yes" votes to fewest.
5. The highest ranked team from this list is selected as the Champion's Award 1st place team. Accordingly, the 2nd ranked team from this list is chosen to receive the 2nd place Champion's Award. Any additional places are awarded, respectively, when these awards are given.
6. Any Champion's Award winner is removed from consideration for any other team awards, except Robot Performance.

The Champion's Award

The Champion's Award is the most prestigious award that a team can win. It celebrates the ultimate success of the *FIRST* mission and FLL Core Values. A champion is someone who passionately supports a cause. For FLL, our champions passionately inspire and motivate others about the excitement of science and technology, solving problems, working as a team, and demonstrating respect and Gracious Professionalism. To be considered for the Champion's Award, teams must perform well in the Project, Teamwork, Robot Design and Robot Performance categories, which are equally weighted.

Once teams are selected for consideration, judges convene and review the results of the teams' performance and participation at the tournament, including their understanding and any demonstration of FLL Core Values. Using these additional parameters for determination, judges decide which team receives this highest honor. The winning team is given the honor of serving as a valued role model for *FIRST* and the *FIRST* LEGO[®] League Program.

Determining the Rest of the Award Winners

After the Champion's Award winners are chosen by the above process, teams that do not win a Champion's Award are considered for awards under the categories where they were initially nominated and ranked. The Head Judges for each award category provide the rankings of top teams in their award category, and present information on why each team was chosen. Awards are then assigned based on the rankings previously determined by each individual team of judges during initial deliberations. Before final award assignments

are made, the Judge Advisor checks with the judges to ensure that judges are comfortable with the results.

Often a team will be in consideration for several awards. In these instances, a team is given an award based on the highest ranking it received. With the exception of the objectively determined Robot Performance award, FLL Core Awards (Champion’s, Teamwork, Robot Design, and Project, and any breakouts of these awards) are given priority in cases where a team is ranked equally high for more than one award. Several scenarios are presented below to help illustrate the decisions that are required at this stage to reward teams appropriately. It is often the case that a team may rank high in more than one category, so a determination must be made as to the most appropriate award to give that team.

	Scenario 1	Scenario 2	Scenario 3
Project Ranking	2	1	1
Robot Design Ranking	1	2	1
Team Spirit Ranking	2	1	2
Appropriate Award	Robot Design	Project	<i>It depends</i>
Why?	Team was ranked first in this category, and it is also this team’s highest ranking.	Project is an FLL Core Award, and is therefore considered a higher honor.	Project and Robot Design judges (at a minimum) should discuss this team’s performance and determine which of the two awards is most appropriate for this team to win. The team should win that award, and the next ranked team in the other category should win the award for that category.

When all awards have been determined, the Judge Advisor should check with judges to ensure they are comfortable with the choices. Note that not all judges will necessarily agree with all the choices, but the judging team as a whole is looking for consensus and a minimum level of comfort about the results. At this point, the Final Deliberations are complete, and the awards are determined.

It is important to note that FLL’s judging process is designed to allow for normalization of judging scores. Some judges naturally score higher; others lower. This process allows the judges to consider teams in terms of their overall ranking or achievement, rather than according to their judging scores.

Awards Ceremony

When awards have been determined, the Awards Ceremony script must be prepared. This is the Judge Advisor's responsibility, but he or she will require input from the judges. For each award, judges will be asked to prepare two to three sentences to explain why the team chosen for that award was picked above all the other teams. This provides a good showcase of the team's achievements to the public at the Awards Ceremony, and makes the presentation of the award more meaningful for the children and spectators. Judges familiar with the award winning teams should prepare a **short** explanation explaining why that particular team was selected. Some examples are presented in Appendix D.

Whenever possible, all judges should attend the Awards Ceremony. Often judges will be asked to help present awards and to congratulate teams after they receive awards. Many tournaments have a traditional *FIRST* LEGO® League "high five" line for judges to congratulate teams.

Appendix A –Rubrics (Evaluation Sheets)



Rubrics for Teamwork, Robot Design and the Project are included on the following pages. These rubrics should be used to evaluate all teams. These may also be used as evaluation sheets at your tournament.

NOTE: Versions of the rubrics that have been reformatted slightly to facilitate scoring may be obtained through your FLL Operational Partner and/or Judge Advisor.

Teamwork Rubric FLL Number Team Name					
		Needs Improvement	Fair	Good	Excellent
Roles & Responsibilities	No clearly-defined roles	Loose role assignments	Defined roles	Clearly defined roles	
	Not clear who completed which tasks and/or very uneven distribution of work	Uneven work distribution	Work is distributed fairly, but with individual focus only	Workload is distributed fairly and team members understand each other's roles	
	Team members not collaborative	Team members will help each other, if asked	Team members assist each other without being asked	Team members fill each other's roles (happily!), if needed	
	Time management is poor or purely directed by the coach	Time management skills are weak	Team mentions learning time management	Team members give concrete examples of learning time management	
Gracious Professionalism	Team members show little/no respect for each other	Team members show limited respect for each other	Team members show respect for teammates	Team members give concrete examples of respect for teammates	
	Team members show no awareness of school/community issues	Team members show limited awareness of school / community issues	Team members imply increased awareness of school/ community	Team members show increased awareness of their school/community issues, including concrete examples	
	Team members compete with each other to be heard during judging	Team is aware of Gracious Professionalism, but gives no concrete examples of what they have done to help others	Team members are vague about how this awareness translates into other aspects of their lives	Team members clearly discuss how this increased awareness translates into other areas of their lives	
	Team doesn't understand the concept of Gracious Professionalism	Team did not help each other/other teams	Team implies that they have helped each other/other teams	Team members give concrete examples of how they have helped each other/others	
Problem-Solving & Team Dynamics	A problem was identified, but no steps were taken to identify a solution	A problem was identified, but the chosen solution was inadequate to some team members	A problem was identified and there is compromise evident in the solution	A problem was identified and the team worked together to find a solution	
	One team member used power to reach their desired outcome	Some team members didn't accept the solution	Team tested various solutions to solve the problem	Various solutions were tested and then incorporated	
	One person's ideas are used	Simple majority had input at meetings	Cooperation is a dominant theme	Team accepts input from all and sees the big picture in their overall goals	
	Team members working against each other	Decisions made by simple majority without collaborative discussion	Decisions made by most of the team, however team focuses on individual tasks	Team members show equality and value each other's roles by entire team making decisions	

Teamwork Rubric FLL Number Team Name				
	Needs Improvement	Fair	Good	Excellent
	Coercion and/or confrontation dominate	Team coexists peacefully	Team collaborates well	Collaboration and co-ownership are dominant themes with the members recognizing interdependence
Confidence & Enthusiasm	Only one team member spoke to the judge(s)	About ½ the team spoke to the judge(s)	Everyone was ready to answer at least one question from the judge(s)	All team members spoke to the judge(s) showing confidence in themselves as well as the team
	Some team members seem disinterested	About ½ the team seems interested	Most of the team appears excited and interested	Team members show equal investment in FLL
	Most team members are disengaged	Members are not paying attention to one another	Members are enthusiastic, but talk over one another	Members enthusiastically work together to include each other
FLL Core Values	No clear enthusiasm for science, engineering or technology	Some members show an interest in science, engineering or technology	Team shows a keen interest in subject matter, but limited use of concrete examples	Group articulates a clear understanding of the FLL experience
	Team doesn't mention new skills acquired	Limited attention paid to new skills acquired	Team implies new skills acquired	Team gives concrete examples of new skills acquired and their interest in the subject areas
Additional Comments:				

Robot Design Rubric FLL Number Team Name				
	Needs Improvement	Fair	Good	Excellent
Innovative Design	<ul style="list-style-type: none"> • Design, drive train, and structure are standard • Manipulators/sensors used in expected ways • Strategy for combining missions expected • Programming written as expected 	<ul style="list-style-type: none"> • Design creative, unique use of drive train or structure • Manipulators/sensors used in unexpected ways • Unique/creative strategy for coordinating missions • Programming tasks used in unexpected ways <p><i>(Fair: 1 of the 4 above is demonstrated.)</i></p>	<ul style="list-style-type: none"> • Design creative, unique use of drive train or structure • Manipulators/sensors used in unexpected ways • Unique/creative strategy for coordinating missions • Programming tasks used in unexpected ways <p><i>(Good: 2 of the 4 above are demonstrated.)</i></p>	<ul style="list-style-type: none"> • Design creative, unique use of drive train or structure • Manipulators/sensors used in unexpected ways • Unique/creative strategy for coordinating missions • Programming tasks used in unexpected ways <p><i>(Excellent: 1 done exceptionally or 3 of 4 above demonstrated.)</i></p>
	Strategy, Process, Problem Solving	<p>Uses standard design. No design process (from initial concept through build, test, and refinement) communicated</p> <p>Strategy based only on ease of task - did not maximize time, combine mission tasks or consider points</p>	<p>Some forethought in initial design. Refinement of robot and programs not communicated</p> <p>Strategy often based on ease of task - few risks taken. Some consideration of time, mission combinations or maximizing points</p>	<p>Basic design process communicated, evidence of conceptual planning, building, testing, refining of robot, manipulators, programs</p> <p>Effective strategic planning, combining mission tasks, plotting routes, using manipulators and/or program slots</p>
Locomotion and Navigation	Difficulty going same distance on repeated missions	Goes defined distances sometimes	Goes defined distances most of time	Goes defined distances efficiently
	Too fast for accuracy, or too slow to accomplish mission	Somewhat too fast for accuracy or somewhat too slow to accomplish mission	Not too fast for accuracy or too slow to accomplish mission	Adjusts speed, position sensing for optimum speed and accuracy
	Turns inaccurate or inconsistent	Turns sometimes accurate	Turns reasonably accurate and consistent	Turns always accurate and consistent
	Moves between two points inconsistently	Sometimes moves between two points consistently	Moves between two points with reasonable accuracy and consistency	Moves between two points with very good accuracy and consistency
	No effort to know position on table beyond distance and accurate turns	Little or no effort to know position on table beyond distance and accurate turns	Allows for variables. May use various sensors to know position	Excellent allowance for variables (battery wear, obstacles). May use various sensors to know position

Robot Design Rubric FLL Number Team Name				
Needs Improvement		Fair	Good	Excellent
Programming	Programs disorganized	Programs somewhat organized	Programs organized	Programs logically organized
	Programs inefficient	Programs efficient at completing some tasks	Programs efficient at completing most tasks	Programs very efficient
	Results unpredictable	Results somewhat unpredictable	Results mostly predictable	Programs always work, even for complex tasks
	<i>Sensors to replicate actions (if used):</i>	Not Used	Used	
	Sensors inadequately used	Sensors occasionally used effectively	Sensors used effectively	Sensors, guarantee certain actions in every trial
	Programs do not accomplish expected tasks	Programs do some of what is expected	Programs do what they're expected to do	Programs work in competition as in practice
	<i>Variables, loops, subroutines and conditions (if used):</i>	Not Used	Used	
	Variables, loops, subroutines and conditions defined but unused	Variables, loops, subroutines and conditions not understood	Variables, loops, subroutines and conditions are needed	Variables, loops, subroutines and conditions are effective
Children can't describe what run will do	Children can describe part of the mission	Children can describe most of mission	Children can describe mission and reference the program	
Children Did the Work	Little knowledge of why some parts are located as they are on the robot. Little or no understanding of what pieces do	Knowledge of robot structure and programming shows minimal understanding of underlying design, science, and technology	Knowledge of robot structure and programming shows moderate understanding of underlying design, science, and technology	Knowledge of robot structure and programming shows thorough understanding of underlying design, science, and technology
	Building/programming appears primarily done by coach	Building and programming seems primarily directed by coach	Building/programming mostly directed by team members, with help from coach	Building/programming was done by team members
<i>Age specific expectations</i>				
<i>Okay for team members to have different roles, as long as work is done by children.</i>				

Robot Design Rubric FLL Number Team Name					
		Needs Improvement	Fair	Good	Excellent
Structural	Difficulty with robot assembly during demo	Robot assembly done with few errors	Slow robot assembly, with no errors	Robot assembles easily	
	Base weak, falls apart when handled or run	Robot base structure has some stability	Robot base stable, but not robust	Robot base stable and robust	
	<i>Attachments (if used):</i> Attachments weak and fall apart often; difficulty completing task; or overly complex	Not Used Attachments difficult to apply; and/or not modular; not precise or not repeatable	Used Attachments modular; function most of the time; and/or take some time to assemble; somewhat precise and/or repeatable	Attachments modular; function as expected and easily added/removed from robot. Robot displays wide range of capabilities. Attachments perform tasks extremely well and are repeatable	
	Robot design from book, little modification by team	Robot shows signs of team's design ideas	Robot designed by team	Robot designed by team; design is unique and creative	
Overall Design	Robot lacks most critical design components: works, stays together, efficient parts use, attachments easy to add/remove, simpler than comparable robots	Robot lacks many critical design components: works, stays together, efficient parts use, attachments easy to add/remove, simpler than comparable robots	Robot lacks some critical design components: works, stays together, efficient parts use, attachments easy to add/remove, simpler than comparable robots	Robot is elegant, complete system	
	Few components work together	Some components work together	Most components work together	All components work well together	
	Few components look like they belong together	Some components look like they belong together	Most components look like they belong together	All components look like they belong together	
Additional Comments:					

Project Rubric				
FLL Number				
Team Name				
Needs Improvement		Fair	Good	Excellent
Research	** No clearly defined research problem or it does not relate to the FLL theme	Research problem is vague or relates poorly to FLL theme	Research problem is fairly clear and concise, and relates fairly well with FLL theme	Research problem is explained clearly and concisely, integrates well with FLL theme
	No outside sources used in research	Limited outside sources used in research or few mentioned	Cited a diverse variety of outside sources used in research	Cited multiple sources used in research including communication with a professional(s) (or attempts to)
	No research on the impact of the problem	Limited research on the impact of the problem	Impact of problem clearly researched	Impact of problem thoroughly examined and applied to solution
	No research on existing solutions or technologies used to address the problem	Limited research on existing solutions or technologies used to address the problem	Present solutions and technologies clearly researched but not considered in developing solution	Clearly researched existing solutions and technologies, applied knowledge when developing solution
	Alternative theories or interpretations ignored, no clear arguments	Alternative theories or interpretations dismissed and/or arguments obscured by jargon	Considered alternative theories or interpretations and presented clear arguments	Alternative theories or interpretations presented and addressed in persuasive arguments
	Did not demonstrate understanding of technical terms	Demonstrated a limited understanding of technical terms	Demonstrated understanding of technical terms but didn't explain them clearly	Demonstrated and shared a complete understanding of technical terms
Innovative Solution	** No solution presented	Solution is unclear	Solution is described but not clear how it addresses the problem	Solution is concisely described and clearly addresses the problem
	No data presented in support of proposed solution	Weak or limited data to support proposed solution	Adequate data supports proposed solution	Substantial data supports proposed solution
	Solution is not innovative or new	Solution is somewhat innovative, or limited knowledge of science and/or technology applied	Solution is innovative and applies some knowledge of science and/or technology	Solution is innovative and applies knowledge of science and/or technology
Sharing	** Did not share their project, research or solution with anyone outside team	Shared their project, research or solution with team parents	Shared their project, research or solution with others beyond parents such as a class, sponsors, or other teams	Shared their project, research and solution with others such as their school, community, or experts in their field
	Did not consider how their problem and/or solution might impact themselves or consider what changes to make	Considered how this might impact themselves or their family, but did not consider changes	Considered how this might impact themselves and their family and recommended changes	Considered how this impacts others and implemented a plan to produce change

Project Rubric				
FLL Number				
Team Name				
Needs Improvement		Fair	Good	Excellent
Creative Presentation	Presentation rambles	Presentation organization is weak	Presentation organization is clear, integration and/or logical progression could be improved	Organized presentation with clear beginning, middle and end; well-integrated; logical progression
	Limited number of team members participated in project presentation	Less than half of the team participated	Most of the team participated in the presentation	All or almost all team members participated
	Unable to answer judges' questions	Weak answers to judges' questions	Adequate answers to judges' questions	Comprehensive answers to judges' questions
	Team member ideas were not integrated	Team member ideas not well-integrated	Project is a group effort	Collaboration of group is seamless
	No visual aids or support material	Ineffective visual aids or weak support material	Visual aids or support material complement presentation	Carefully chosen visual aids and/or support material clearly add to presentation
	Lacks excitement or creativity	Information presented with limited creativity	Team uses creativity doing presentation	Excellent use of creativity
	Excessive adult intervention	Adult intervention is apparent	No apparent adult intervention but difficulty with setup/take down within allotted time	Clearly the work of the children from beginning to end including all visual aids and material
	Many errors or not rehearsed	Few errors or should have rehearsed more	Very few evident errors, well rehearsed	No evident errors and well rehearsed
	Too long	Slightly too long	Proper length	Excellent use of time
	Plagued with technical difficulties	Several technical difficulties	Very minor technical difficulties	No technical difficulties
Additional Comments:				

** If any of these boxes are indicated, team is not eligible to be considered for any Project awards. Team must complete all elements of the Challenge Project assignment to be considered for Project awards.

Appendix B – Sample Questions



Teamwork and FLL Core Values Sample Questions

Roles and Responsibilities

- Tell us about the roles each of you had on the team and how this worked.
- How did you decide who would do each role?
- Can someone else do your job? What happens when someone is sick?
- Do you have team leaders? If so, explain how that works.

Gracious Professionalism

- What does Gracious Professionalism mean to you?
- Can you give an example of Gracious Professionalism that your team displayed this season?
- Explain how Gracious Professionalism is like good sportsmanship.
- How do you show Gracious Professionalism when you relate to your team? To your coach? To others?

Problem Solving, Team Dynamics and Communication

- Tell us about a problem your team had and how it was solved.
- How do you solve disagreements?
- What happens if a team member is not getting his/her job done?
- Does your team have a set of rules? If so, what are they, and how are they enforced?

FLL Core Values

- Tell us what you have learned about FLL and how you think it will help you in the future.
- How does your team share with others your excitement and interest in science and technology?
- Do any of your team members mentor others? If so explain.
- If you saw something happening to another team and thought it wasn't fair, what would you do and why?

Look for:

- Confidence and enthusiasm of team members.
- Concrete descriptions and examples.
- Are team members listening to each other and to the judges? Are they interrupting each other or waiting their turn?
- Are team members looking at the judges when they speak or at team members when they are talking?
- Is everyone answering questions or just a few?
- Do they encourage each other to participate?

Robot Design Sample Questions

Strategy, Process, Problem-Solving

- What was the greatest design or programming difficulty you encountered?
- How did you solve that problem?

Innovative Design Question

- What part of your design, program or strategy do you think is unique to your team?
- How did you come up with the idea?

Locomotion & Navigation Questions

- Would you explain how your robot turns (or travels a specific distance, or goes from base to a specific destination)? How satisfied are you with this?
- Would you explain which sensors you used, and how and why you used them?
- Would you explain how your robot knows where it is on the field? Note: Sensing includes not only touch and rotation sensors, but time (timers in the RCX) and passive sensing such as referencing to walls or other objects, etc.

Children Did the Work Question

- What jobs/roles did each of you have on the team?
- How did your coach help the team be successful?

Programming Question

- What mission is your favorite? Explain the steps in the program for that mission.
- What program do you feel is your best? Why?
- What did you do to make your programs more understandable and easier to use?

Structural Questions

- How did you get your robot to stay together?
- If your robot has attachments, tell us about them. Which attachments are most difficult to put on and/or take off?

Overall Design Questions

- How many of the missions has **this** robot completed successfully in a single match (includes a tournament match, a tournament practice, or home practice)?
- We want to consider the overall design of your robot. Tell us about your robot, its attachments and sensors and the missions the robot attempts so that we will understand why your robot has a good overall design.

Look For:

- Unusual strategy, programming or design.
- Propulsion or steering methods or functional aspects that no one else has or you are surprised someone would try.
- Robot is able to effectively perform the same task over and over.
- Parts or functional aspects that make something difficult look very easy.
- Parts or mechanisms that perform several functions.
- Propulsion, steering methods or functional aspects that work, but children have no understanding how.
- Children can describe what the robot will do based on the program.
- Does the team look to the coach for answers or are they focused on the robot and judges?

Project Sample Questions

Research Quality

- What resources did you use to research your problem and why did you choose these?
- Did you use any unusual methods to research your topic? If so what and why?
- Did the information you used offer different ideas than what you expected to find? If so, what and how did your team use this information?
- Did you speak to anyone whose work relates to the Challenge area? What did you learn from them?
- Can you tell us about a problem you discovered or something that you learned that surprised you while completing this project?
- After working on this project, what is the most important thing that your team learned?

Innovative Solution

- What makes your solution different from what is being used to solve this problem now, and why do you think it is better?
- How did you arrive at your solution and why?
- Were there solutions that you thought of that you decided not to use? Why?

Project Sharing

- With whom did you share your project? Why did you choose that individual or group?
- How did you share the information? Did you present it in the same manner as you presented to us, or did you choose a different approach? Why?
- What impact did your presentation have on them?
- What changes have you or others made as a result of your research and presentation?

Creative Presentation

- How did you decide on this presentation style that you used?
- Why did you choose the presentation style that you chose? How does this style help your audience understand what you are telling them?
- What do you think was the most creative aspect of your presentation or project and why?
- One aspect of the project asked you to share your ideas with others. How did your team do this?

Look for:

- Documentation of resources used.
- Depth of the information provided.
- All students participated in the research process, or understand the process and results of the team's research.
- Supporting printed materials provided to judges.
- Entire team participating in discussion.
- How the team interacts with each other.
- Do they all talk, or only a few? If so, why?
- Does the team look to the coach often or are they focused on the presentation and judges.

Appendix C – Awards Descriptions



FLL Core Awards (Required)

Champion's Award

The Champion's Award is the most prestigious award that a team can win. It celebrates the ultimate success of the FIRST mission and FLL Core Values. A champion is someone who passionately supports a cause. For FLL, our champions passionately inspire and motivate others about the excitement of science and technology, solving problems, working as a team, and demonstrating respect and Gracious Professionalism. To be considered for the Champion's Award, teams must perform well in the Project, Teamwork, Robot Design and Robot Performance categories, which are equally weighted.

Once teams are selected for consideration, judges convene and review the results of the teams' performance and participation at the tournament, including their understanding and any demonstration of FLL Core Values. Using these additional parameters for determination, judges decide which team receives this highest honor. The winning team is given the honor of serving as a valued role model for *FIRST* and the *FIRST LEGO*® League Program.

Project

Larger tournaments may divide the Project award into three separate awards. For three awards, Research Quality, Innovative Solution and Creative Presentation will be awarded.

When giving a single Project award:

Project

Judges look for teams whose quality research, innovative solutions, efforts sharing with the community and creative presentation best reflect an in-depth understanding of the various scientific disciplines and issues involved with the Project. Judges look for the team's ability to have as many team members as possible participating in the presentation.

When giving three Project awards:

Research Quality

An impressive presentation begins with dedication and perseverance, putting in the time and effort to review and formulate an in-depth understanding of the science that surrounds the Project question. This award recognizes teams that are best able to synthesize knowledge from diverse resources and use that information to positively impact their overall presentation.

Innovative Solution

Solutions to problems come in many different forms, limited only by the team's imagination. This award recognizes teams that develop thought provoking and innovative resolutions to the Challenge.

Creative Presentation

Effective communication of the team's work, depth of knowledge and their solution to a problem may take many different formats. This award is presented to teams that grab the judges' attention with a creative, imaginative presentation that is cohesive and reflects the team's knowledge and understanding of the Project.

Robot Design

Larger tournaments may divide the Robot Design award into three separate awards. For three awards, Quality Design, Innovative Design and Programming will be awarded.

When giving a single Robot Design award:

Robot Design Award

Judges look for teams whose work stands out and makes them say "wow!" Judges interview teams to learn their strategies for solving missions and explore their understanding of the design process. They also evaluate the robot's mechanical design, degree of innovation, and programming effectiveness to further assess overall quality design.

When giving three Robot Design awards:

Quality Design

This award celebrates the highest levels of quality in all aspects of robot design. Products designed with quality in mind perform consistently over time and are dependable under changing conditions. The team winning this award has engineered their robot with robust design practices, and the design of their robot shows attention to detail.

Innovative Design

This award celebrates teams that best demonstrate the ability to think "out of the box." Innovation can come in any aspect of robot design, including a distinctive drive system, creative programming techniques, a unique attachment, or a new and creative game strategy. Judges consider the most original robot design approach to solving the Challenge missions.

Programming

This award celebrates teams that understand outstanding programming principles, including developing clear, concise, efficient and reusable code that allows their robot to perform challenge tasks autonomously and repeatedly. Teams winning this award have demonstrated programming mastery.

Teamwork

Teamwork is critical to succeed in FLL and it is the key ingredient in any team's success. This award is presented to the team whose members best demonstrate extraordinary enthusiasm and spirit, exceptional partnership, the utmost respect for their own teammates, and support and encouragement of fellow teams. They demonstrate confidence, energy, strong problem solving skills, and great group dynamics.

Robot Performance

This award goes to the team whose robot is able to score the most points pursuing Challenge missions on the competition field. After each team has had a chance to run their robot for a minimum of three rounds, teams are ranked by their highest score in a single round. If two teams tie, their second highest scores are used to determine which among them has the higher ranking, and so on. Some tournaments follow these rounds with an elimination round.

Check with your tournament organizer to find out if he or she plans to have an elimination round and if so, what your tournament's rules are for this part of the competition. The Robot Performance award goes to either the team with the highest single score after three robot rounds, or the team that wins the elimination round, based on the rules set forth by the tournament organizer for the elimination round.

Some competitions that have an elimination round give out Robot Performance awards for both the regular rounds the elimination round winners.

Optional Awards

Against All Odds (Perseverance)

This award goes to the team that improvises and overcomes a difficult situation while still making a respectable showing, with an attitude that shows, "We can overcome incredible odds if we never give up, no matter what!"

Rising Star Award

At every tournament, there are teams that the judges notice and believe will soon be among the best and the brightest. The Rising Star Award recognizes a team that the judges believe stands out and that we expect great things from in future Challenges.

Team Spirit

Some teams really know how to have fun. This award goes to the team that most enthusiastically demonstrates a commitment to getting others to see how accessible, fun and rewarding science and technology can be, especially when you are part of a great team.

Judges'

During the course of competition the judges may encounter a team whose unique efforts, performance or dynamics merit recognition. Some teams have a story that sets them apart in a unique way. Sometimes a team is so close to winning an award that the judges choose to give special recognition to the team. This award gives the judges the freedom to recognize the most remarkable team for which a standard award does not exist.

Universal Design

This award is not part of the criteria used to select Champion's Award winners, nor part of the Project Innovative Solution award. This award is presented to the team(s) that incorporates principles of Universal Design into its Challenge Project solution and related presentation, to benefit people of all ages and abilities. Core principles of universal design state that "products and environments must be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. (Ron Mace North Carolina State University, the Center for Universal Design)

There are 7 core principles of Universal Design:

- Equitable Use – design is useful and marketable to all people with diverse abilities
- Flexibility in Use – design accommodates a wide range of preferences and abilities
- Simple and Intuitive – design is easy to understand regardless of user's abilities
- Perceptible Information – user understands how to use design regardless of user's abilities
- Tolerance for Error – design allows for errors - accidental or unintended actions - made by user
- Low Physical Effort – design easy to use without exhausting user
- Size and Space for Approach and Use – design size and space allows for use regardless of user's physical limitations

Short videos and tutorials, including examples of Universal Design are available on the web at <http://www.freedommachines.com/FLLUD.htm>

Special Recognition Awards

Outstanding Volunteer

This award honors the dedication of the volunteer(s) whose assistance and devotion helps change the lives of children in a positive way. FLL relies on volunteers for every aspect of the program. Some volunteers do truly extraordinary things for the children.

Adult Coach/Mentor

Many teams reach significant milestones of success thanks to their close relationship with an adult mentor. This award goes to the coach or mentor whose wisdom, guidance, and devotion are most clearly evident in the team's discussion with the judges.

Young Adult Mentor

FLL presents this award to the young adult, high school or college mentor whose support, impact, inspiration, and guidance, are most clearly evident in the team's discussion with the judges.

Appendix D – Awards Ceremony Script Example



Here is an example of parts of awards ceremony script from a recent Championship event to give you some examples of the way that script text can be written. The script text that you will be asked to write is the text that is in italics in the script below. The rest of the text (awards descriptions mostly) has already been written.

When writing snippets for the awards ceremony, here are several things to consider, and possibly try to incorporate into the final product

- **Teams winning awards want to know why they won a particular award.** A good example is shown below for the Innovative Design Award. The text incorporates a description of exactly what the judges felt was innovative about their robot
"This team roared into action with their multiple attachments. But their stealthy touch at riding the wall to snag the oil barrels stood out as one of the most innovative things the judges saw. The Innovative Design Award goes to: Team 1234, The Bears."
- **Incorporate the team name, theme, or something about the team to provide an element of foreshadowing.** A good example is shown below for the Champion's Award. The phrase "They keep going, and going, and going..." plays on the Energizer Rabbit marketing campaign for a team named the Energizer Monkeys.
"This team had the whole package, and is always happy to share their knowledge. They are truly energized when it comes to FLL. They keep going, and going, and going, and going... The Champion's Award goes to: Team 5678, The Energizer Monkeys."
- **Silly (though not overly so) humor works well to keep the audience interested and give a break to what could be a stressful time for the teams.** A good example is shown below for the Quality Design Award. "Their friction studies really stuck with us." This sentence is a two for one, actually, because not only is there an attempt at some humor, but there is also a good description of why the judges liked their robot design, and it's described in a professional, technical manner – their friction studies made them stand out.
"This team's design skills sent a Warning to the other teams that they are an engineering force to be recognized. Their cool dualie design should go Global soon, and their friction studies really stuck with us. The Quality Design Award goes to: Team 9012, Global Warnings"
- **Be creative, keep it short and be professional.** This is another chance for you to show the kids that you have given your full time and energy to the process, have paid attention to their presentations, and are honoring them for their work. This is another reason to have specifics from your encounters with teams – you can use them in your script writing! You can show the kids that engineers and scientists can be creative and fun. Keep it concise!

Appendix E – Judge Advisor, Head Judges and Judge Assistants



Judge Advisor

The Judge Advisor is a leader of the judging team, and has many responsibilities. He or she does not judge teams, but rather oversees the judging process and judging quality for the tournament. The Judge Advisor also sees to it that FLL Judging Standards are followed.

Before a tournament, the Judge Advisor is responsible for the following:

- Recruiting judges
- Training judges
- Confirming judging assignments
- Coordinating schedules for judging sessions
- Ensuring that plenty of judging supplies are available

At the start of a tournament and during the evaluation portion of the judging process, the Judge Advisor is responsible for the following:

- Reviewing expectations for the day and the schedule with judges
- Reviewing the philosophy of FLL with all the judges
- Identifying any conflicts of interest on the judging panel, and ensuring that judges with a relationship with a certain team do not take part in deliberations and award determinations for that team
- Facilitating a pre-tournament meeting
- Answering any last minute questions from judges or teams
- Acting as a liaison between teams and judges when questions arise
- Overseeing all judging areas
- Confirming award winner determination deadline with the Event Manager
- Collecting evaluation sheets from judges, and checking them for appropriate comments and feedback

For the Deliberations and Awards portion of the process, the Judge Advisor is responsible for the following:

- Coordinating with Head Judges (when assigned) for each category to monitor their activities and progress

Recruiting and Training

Judges for the Robot Design category should have adequate knowledge of LEGO® MINDSTORMS™ products, the Challenge missions, scoring and rules.

Some of the Project judges should have a background in the scientific specialty related to the Challenge. Teams spend at least eight weeks on this project, and they appreciate it when the judges acknowledge and understand their research.

Teamwork judges can often be recruited from among people in leadership positions in industry. People who work with groups of people, for example sports coaches, or people involved in training or local executive and management programs are other potential Teamwork judges.

- Head Judges supervise deliberations for the awards in that category and coordinate their judging group's activities with the Judge Advisor
- Checking with the Volunteer Coordinator and Head Referee for input on teams to be used during award deliberation
- Working with judges to determine which teams are called back, if call-backs are used
 - Working with Event Manager to schedule call-back interviews
- Moderating the judging panel's Final Award Deliberations
- Overseeing equitable award distribution
- Receiving the final Performance Ranking from the scorekeeper
- Entering the team name and number into Awards Ceremony script for the Robot Performance awards
- With Robot Design judges, assessing final performance rankings for Robot Design awards, and ensuring that Robot Performance results do not contradict results from the interview process
- Preparing list of award winners for Event Manager and Emcee, including full award description, judges' comments, and team name and number
- Presenting final awards list for Awards Ceremony script to Event Manager
- Discussing Awards Ceremony presentation procedures with judges
- Directing and coordinating judge participation in presentation of awards

At the conclusion of the event, the Judge Advisor is responsible for providing feedback from the judges to all the teams. There are two FLL provided ways to accomplish this requirement. In Appendix A there are rubric based forms that can be used. Judges can use these forms to evaluate teams and annotate them with any additional constructive feedback. The Judge Advisor would then review the forms for appropriate comments, and then provide these forms to the teams. It is suggested that the Judge Advisor retain a copy of these completed evaluations in case any questions arise at a later date.

The other FLL provided tool to accomplish team feedback is using FLL Judging Software, which has been specially developed to assist in the evaluation process, as well as facilitate deliberations and produce high quality award output and team feedback.

Judge Assistant

The role of Judge Assistant is fairly self-explanatory. In the most general sense, they assist all the judges and help make judging sessions run smoothly. Typical responsibilities for Judge Assistants are:

- Keep judges and teams on schedule
- Occasionally run judging session timers for the judges
- Update judges on any schedule changes that occur throughout the day
- Ensure that teams are ready to enter judging rooms on time, coordinating with the Pit Manager and runners as needed
- Ensure that teams leave judging rooms on time, and that the Judge Advisor is aware of any judging rooms that are not on schedule
- Provide the judges with team information sheets, when they are used and provided by teams
- Provide an extra pair of eyes and ears for the judges

Glossary



Award

Special recognition for achievement determined subjectively by judges, using data gathered in judging sessions, and other observations throughout a tournament.

Call-Back

An opportunity for judges to gather additional information about a team. Can be formal presentations, informal interviews in the pit area, or through observations on the competition field. Call-backs are often used to learn more about teams nominated for awards, to allow judges to review a team's accomplishments.

Deliberations

The period when judges discuss team achievements and determine which teams are most deserving of receiving FLL awards.

Evaluation

Judge determination of knowledge, skills, and abilities learned, demonstrated and articulated to judges during a judging session.

Feedback

Results of an evaluation plus additional judge comments provided to a team after the tournament is completed.

Judging Session

A set period of time during each tournament for each team to present information to the judges in the Project, Robot Design and Teamwork categories. The format could be any combination of the following: formal presentation, a formal or informal question and answer session, or through observation while completing an activity.

Project Judging

A judging session where a panel of judges evaluates each team to learn their findings concerning the challenge project assignment. Teams have five minutes for a formal presentation followed by an additional set period of time for questions and answers. Teams should present the following information:

- data they have gathered concerning a real-world problem related to the challenge assignment
- a team-developed solution to overcoming the problem they researched
- with whom in their community they have shared their research and how they got their message across

Information should be as specific as possible, and should be presented in a manner that is creative, yet conveys the message to the target audience. This is mostly analogous to a scientific conference presentation, with additional attention paid to marketing and delivery of a product.

Research Judging

See also Project Judging, which is the preferred term for this type of judging.

Robot Design Judging

A judging session where a panel of judges evaluates each team to learn:

- the robot they designed and built
- the programs they wrote to control the robot
- the strategy they employ to perform the missions
- the process they used to arrive at their final product

Information should be as specific as possible. This is analogous to an engineering design review in the professional world.

Rubric

A rubric is a chart composed of criteria for evaluation and levels of fulfillment of those criteria. It is also a description of expectations for what teams will learn or the behaviors that teams will demonstrate over the course of a season. A rubric allows for standardized evaluation according to specified criteria.

Teamwork Activity

A short, defined task used to help evaluate a team's level of achievement in Teamwork. The selected task should help demonstrate how well the team works together as a group. Teams should expect to involve each member of the team in the activity in some way.

Teamwork Judging

A judging session where a panel of judges evaluates each team to assess their Teamwork, FLL Core Values, and Gracious Professionalism. This can take several forms, including:

- judge review of a teamwork activity
- judge interviews either in pits or in a separate judging session
- judge review of a teamwork presentation
- teamwork judge representation in Robot Design or Project Judging

This is an assessment of skills development in addition to where much of the inspiration message of *FIRST* is measured. Inspiration within the team (mentoring, new skills, understanding of diverse skills, problem solving) and outside the team (outreach, involvement with engineering professionals) are measured here.

Technical Judging

See also Robot Design Judging, which is the preferred term for this type of judging.

FLL Championship Judging Standards



The following standards will be observed for all Championship FLL tournaments

1. Robot Design shall be judged according to the following requirements:
 - A minimum ten (10) minutes allotted to each team
 - A judging area which includes one full Field Setup Kit/mat
2. Project shall be judged according to the following requirements:
 - A minimum ten (10) minutes total allotted to each team
 - The time allotted shall include five (5) minutes for their presentation
3. Teamwork shall be judged according to the following requirements:
 - Judged in one of the following ways:
 - Question and answer interview session
 - Pit visits and observation of teams in competition
 - A hands-on teamwork activity followed by questions and answers
 - Teamwork specific questions asked by teamwork judges in Robot Design and Project judging sessions
 - Questions asked of the teams shall include questions about both the tournament day and the entire season.
4. All team evaluations shall be performed using FLL supplied rubrics in their complete, original form, or slightly altered for improved readability only
 - Evaluations shall weight all rubric criteria equally
 - Each rubric item shall have 4 levels of achievement
 - Each rubric item shall be evaluated
5. Rubric-based feedback shall be provided to each team, either at the end of the event, or within a reasonable time period following the event
6. FLL awards shall be given according to FLL provided award guidelines.
 - Only one award shall be given to any particular team
 - **EXCEPTION:** Robot Performance can be awarded to ANY team, regardless of whether they have won any other awards
7. A list of all awards to be given at an event shall be made available to the public either before (ideally) or at the event.
8. A complete listing of results shall be made available to the public
 - This list shall include:
 - All officially completed robot rounds
 - List of all award winners
 - This list shall NOT include:
 - A complete list of all judging evaluations for every team
 - Any information regarding ranking of teams in consideration for awards