



TECHNICAL COMPONENT INFORMATION

Last Revised: January 11th, 2015

Table of Contents

1.0	THE TECHNICAL COMPONENT	2
2.0	THE REPORT	3
2.1	General	3
2.2	Content	3
2.3	Format and Deadline	6
3.0	THE DISPLAY	7
4.0	THE PRESENTATION	8

1.0 THE TECHNICAL COMPONENT

The Technical Component of the IEEE Ottawa Robotics Competition is meant to document and reflect on the design process of the teams based on their work leading up to the day of the competition.

In an engineering field, similar to other professions, there is an emphasis on the importance of recording the stages of every assignment and project. For this reason, **the Technical Component is worth 50% of the overall competition (per Challenge).** The other 50% of the competition depends on how well a team performs in their Challenge. This means that a team must do well in *both* components (challenge performance and the technical component) of the competition in order to score high points in the overall Challenge. This Grading Scheme applies to all Challenges.

The Technical Component is made up of three individual parts: a report, a poster or PowerPoint presentation display, and a presentation to be delivered on the day of the competition. Figure 1 displays the weight of each individual component.

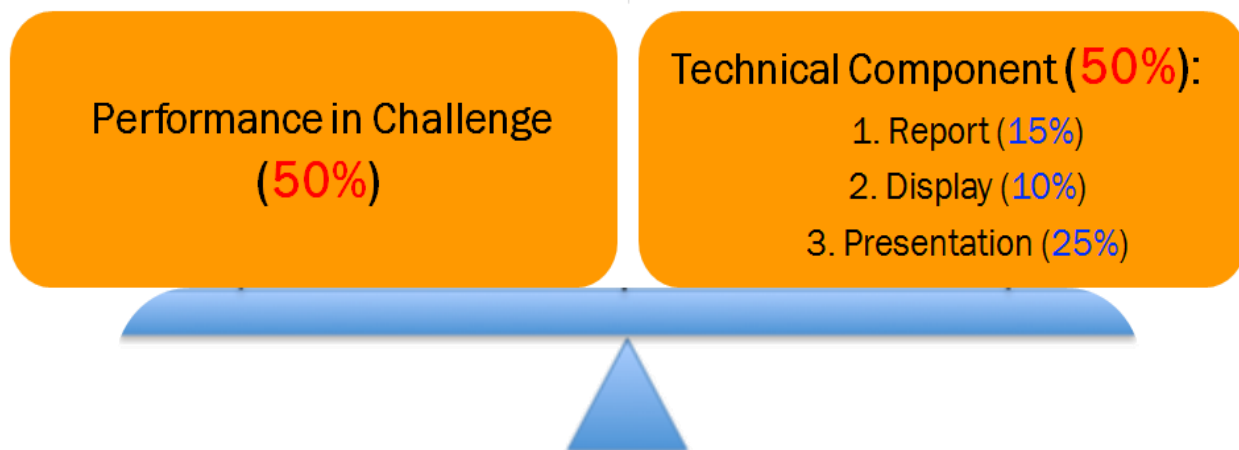


Figure 1: IEEE ORC 2015 Overall Grading Scheme.

The Technical Component can be written, displayed, and presented in either **English or French** (bilingual materials are not a requirement).

The rest of this document details more information on the required elements of the report, the display, and the presentation.



IEEE

Ottawa
Section



ORC | CRO

2015

2.0 THE REPORT

The report is meant to document the progress of the team throughout the design, implementation, and testing phases of the project. The report will be a package of everything that you have done throughout your journey in preparing for the competition. It gives you the chance to show what you have learned, what you have done, and how you worked together as a team to overcome challenges.

2.1 General

Please note that a team participating in *more than one Challenge* (maximum of 2) will have to prepare **one report per Challenge**. However, certain non-technical sections that will be highlighted with a star “★” can be re-used in both reports within the team.

2.2 Content

The report must include the following:

1. ★ Title Page ★

- a. Team name and Team Member names
- b. Challenge name (please specify which Challenge per report)
- c. School or Community Group name

2. Table of Contents

3. Mechanical Design

- a. Decisions made for your particular challenge and why
 - i. For example: *The team chose to have a lot of gears to make a shooter for the Hockey 2.0 Challenge. We made this decision because we think that it is much faster to shoot the moment we have the puck into the net rather than to drive the puck into the net. (Please come up with your own though!)*
 - ii. Judges are expecting at least two of these decisions.



IEEE

Ottawa
Section



ORC | CRO

2015

b. List of parts used

- i. As a minimum requirement, you should list the type of kit used along with the number of motors used, and the names of sensors that were used.

4. Software Design

a. Explain how your program works (be sure to mention part names)

- i. For example: *Our robot first waits three seconds and then moves until it detects black with the colour sensor. Then it continues to go until the colour sensor detects yellow, if it detects white because it reached the end of the black box, it will back up and then turn left. Once yellow is detected by the colour sensor, we will move forward a bit and then pick up the puck. The puck is then transported into our shooter with the help of the motors and gears. We rotate our robot until the ultrasonic sensor finds an object within 1.5 metres, and then shoot out the puck at max speed with the help of our motors and gears.*

b. Explain why you chose this program over other programs

- i. For example: *We chose the shooting algorithm described previously because we figured out that it would be much longer to try to drive the puck into the net than it would be to shoot the puck straight from where we pick it up. Moreover, had we tried to drive our puck to the net, we could have encountered another yellow line that may throw off the robot's desired pathway.*

c. Screenshot of your program or a flowchart of your logic

- i. Doing both does not gain extra points, but you do gain a few skills in the process!

5. Design Process

a. ★ Challenges faced and milestones achieved ★

- i. At least 2 challenges and milestones.
- ii. These challenges can be about your team, your robot, programming, etc.



IEEE

Ottawa
Section



ORC | CRO
2015

iii. Milestones can include things like deciding that you would not use a sound sensor for a challenge (but that means you also had to test it out for your challenge and justify why you thought it could have been used to begin with).

b. Experiments and test results

i. This can be about software or your robot's construction.

6. ★ Journal ★

a. One entry per meeting the team has (date will be sufficient).

b. Each entry describes topics discussed, what was done, and the end result of the meeting (good or bad).

c. **HINT:** Use this section to help with your write up for your other sections!

7. ★ Reflection ★

a. One reflection per team member (no length limit, but half a page to a full page should be sufficient)

i. We will mark based on the content and not based on length.

b. Discuss the following:

i. Your role as a team member.

ii. What did you like about the competition?

iii. What did you dislike about the competition?

iv. What do you think you got out of joining the competition and working as a team?

8. Summary

a. Brief description (less than half a page) of the final design chosen and approach to a challenge

b. What makes the robot unique



IEEE

Ottawa
Section



**ORC | CRO
2015**

- i. It must relate to the robot's design or program (see the example).
- ii. We will **not** accept, "It is unique because our team put a lot of effort into it!" or anything similar to this.
- c. Picture of the robot (can go on the title page).
 - i. For teams participating in the Da Vinci Challenge, teams **must** also include a picture of the expected artwork.
- d. For example: *Our robot is very unique in the sense that it will shoot the pucks straight from the middle of the arena rather than carrying the puck into the net. Our approach to the challenge was to ensure that our robot would be able to get the puck into the net as soon as it can and as well as it can by using our combination of gears, motors, and our ultrasonic sensor.*

2.3 Format and Deadline

Reports are to be submitted electronically via e-mail. Each team must e-mail a soft copy of their report(s) to orcpts@gmail.com by **Saturday, May 16th, 2015**.

These items **must** be included in the subject header of the e-mail:

- Team Name
- The specific Challenge for that report (for teams submitting 2 reports, please include both Challenges in the subject header)
- School or Community Group Name

The Report can be submitted in these formats: .DOCX, .DOC, .ODT, Document, or .PDF as an attachment to the e-mail.

Please note that we will also notify you when we receive your report.

Reports will be marked on the content as well as the overall quality of the report (professionalism, spelling, grammar). Reports can be in English or French. After marking by the judges, reports (with comments) will be e-mailed back to your team supervisor by email, along with your final score on the report, before the Competition Day.



IEEE

Ottawa
Section



ORC | CRO

2015

3.0 THE DISPLAY

Each team must have a poster or multimedia presentation (PowerPoint, Prezi, OneNote, etc.) ready to show to visitors and judges on the day of the competition. Teams will not have time to complete the display on the day of the competition (only set up time will be available).

The display must contain at least the following:

- Team name and school name
- Short biographies of all the team members (you can talk about their role on the team)
- Description of robot design and approach to the challenge(s)
- Picture(s) of the robot

Displays will be marked on the overall quality, effort, and visual appeal. Teams are encouraged to have a team member at their table to answer questions from visitors. Displays can be either in English or French, but should be visually descriptive so that anybody can understand. Rubrics and comments for displays will be emailed to your team supervisor after the Competition Day.

4.0 THE PRESENTATION

Teams must present to a panel of judges with the aid of their display materials and their robot. All team members must participate in the presentation. Teams should be able to talk about their robot design, the decisions they made throughout the design process, and what makes their robot unique.

Presentations will be at a scheduled time in a separate judging area, and teams must bring all equipment needed for their presentation. The presentation will last 5 minutes (no matter the number of challenges you are part of), with up to 5 additional minutes for questions from the judges.

Teams may give an oral presentation, slide presentation, or perform a skit. Presentations can be in English or French, and must include the following:

- The robot's design and what makes it unique
 - Show the judges the robot to help explain specific features.
- Decisions that you made in preparing for the challenge
 - For example: *"We wanted to make a robot that could pick up pucks and then bring them as fast as we could to the net, but then we found out that it would be better to shoot pucks the moment we pick them up instead."*
- What you liked about working as a team
 - Like having fun! Be creative on this!!!

Marking will be based on content, presentation skills, and creativity. The judges will also be looking for team spirit during this marking – judges will look for team spirit throughout the day, but this is really where you can show it off. Rubrics and comments for displays will be emailed to your team supervisor after the Competition Day.