

## Judging criteria WRO Future Innovators

The judges will look at different aspect of your project and your robotic solution. They will also look at the way you present yourself as a team.

In this document we explain the different topics on the scoring form. You can use this document for your preparations, but please make sure that you also read the official general rules and the season challenge!

## Project & Innovation

### Idea, Quality & Creativity

Your project should connect to the season theme and to the challenge as described in the season rules. (*Described in part 3 of the General Rules & Season Theme document.*) Your robotic solution should help solve one or more of the problems that are connected to the season theme. Creative thinking is important in your project, so try to find a new approach and think of new ways to solve the problem. The design of your solution should also be innovative and imaginative. Can you think of new uses for materials and resources? Think outside the box!

### Research & Report

Before you can build your robotic solution, you need to do research. Which problem do you want to solve and how? You will also do research to find out the best way to build your robotic solution. What materials will you be using? What is the best way to program your robot solution? Talk to other people to find out what they think of your idea. You will produce a report that is a documentation of the development of your project and the research you have done. (*Check article 6.4 of the General Rules & Season Theme document.*)

### Usage of the idea (Elementary teams)

You should think about who would use your robotic solution. Who would be helped with your idea? Talk to at least two (2) other people about your idea. (Not your coach or parents) What do they think about it? Do they have some good tips for you?

### Social Impact & Need (Junior & Senior teams)

You should think about who would use your robotic solution. Who would be helped with your idea? What is the (social) impact of your idea? Is it important for individuals or for your community or country? Would it benefit people from other countries too? Discuss your idea with at least three (3) other people to get further input. (Not your coach or parents)

### Key Innovation & Slogan

You should be able to explain what is unique about your idea. Are there potential competitors? What makes your idea better? You should also present a slogan about your idea - something that will help the public remember your robotic solution.

### (Junior & Senior teams only) Extra element of entrepreneurship

You need choose one of the following aspects to explain your idea further.

- a) Cost structure: Explain which costs are associated with producing and developing a real prototype of your idea.
- b) Revenue Stream: Explain how you could generate income through offering your idea to the market. It could be a social business model as well.
- c) Key Resources: Explain what key resources are needed to work on your prototype (e.g. staff, materials, know-how etc.).
- d) Partners: Explain what partners are needed to make your idea a reality (e.g. local partners, institutions, investors, etc.).

### (Senior only) Next Steps & Prototype Development

You need to present the logical next steps that are needed to develop your idea into a real prototype/product. Think of what you would need to do in the next 6-18 months. You can choose to use the Lean Start-up approach and present how your idea can be rolled-out in this way. For more information visit: [https://en.wikipedia.org/wiki/Lean\\_startup](https://en.wikipedia.org/wiki/Lean_startup). (But you can also use a different approach.)

## Robotic Solution

### Robotic Solution

Your robotic solution should have several mechanisms, sensors and actuators and is operated with one or more controller(s). It should be able to do more than a machine that is only repeating a certain workflow as it should make autonomous decisions. Your robotic solution can replace certain parts of human tasks or make it possible to do things we could not do before. (Check item 5.1 of the General Rules & Season Theme document for the definition of a robotic solution.)

### Meaningful use of engineering concepts

You need to use (technical) materials and components in a sensible and efficient way. Your robotic solution should be well constructed. You should show proper use of engineering and mechanical concepts/principles, for example, in the way you build your robotic solution or use gears, pulleys or levers. You should be able to explain the choices you made.

### Code Efficiency & Software Automation

Your robot solution should use inputs from sensors/controllers to run specific routines in a smart and appropriate way. The automation and logic should make sense for your project idea and should be structured and functional. You should be able to explain your code and explain why you have used certain routines and programming languages.

### Demonstration of Robotic Solution

You need to demonstrate your robotic solution and it should be reliable. This means that the demonstration can be repeated multiple times. You should be able to explain how the solution works and what could be improved in the future. Your robotic solution is a prototype - not everything will be perfect. If an error happens during the demonstration, you will have an opportunity to solve it or you need to be able to explain why the error happened.

## Presentation and Team Spirit

### Presentation & Project booth

You need to present your project to the judges in an interesting 5-minute presentation. This presentation should include the demonstration of your robot solution. Your project video is an addition to this presentation and judges will view the video before the judging. (Check article 6.5 of the General Rules & Season Theme document.) You should also decorate your booth in such a way that it is informative and attractive to the public. People that visit your booth should be able to get clear information about your project and robotic solution. You can use all kinds of materials to make your project booth look interesting. (Do remember that the goal is to present your robotic solution, not to have the best decorations...)

### Technical Understanding & Quick Thinking

You need to be able to explain why and for who your project idea is relevant, how your robot solution works and how you have developed and coded it. You will explain this in your presentation, but you also need to be able to answer questions about your project. This way you demonstrate that you have a good understanding of your solution.

### Team Spirit

As a team you show that you value each other's work and the different team roles you have defined for yourself during preparation for the tournament. You are enthusiastic about sharing your idea with others. You also show that you can work on your own, without help from adults, not only during your project, but also when installing your booth or solving technical problems.