



Global Innovation Challenge 2021  
Living Assistance Robot Award

Selection and Judging Guidelines

1st Edition

Global Innovation Challenge Executive Committee

# Table of Contents

1. Introduction.....	2
1.1 Introduction.....	2
1.2 Update History.....	2
2. Outline of Selection.....	3
2.1 Selection Process.....	3
2.2 Judges .....	3
2.3 Cost Burden.....	3
3. Selection Process.....	4
3.1 Document Screening.....	4
3.2 Organiser Recommended Team Screening.....	4
3.3 Remote Judging .....	4
Appendix: Task Accomplishment Checklist .....	6

# I. Introduction

## I.1 Introduction

The Global Innovation Challenge 2021 Living Assistance Robot Award Selection and Judging Guidelines (hereinafter, the “Selection and Judging Guidelines”) describe the selection method and criteria for determining the winning teams of the Global Innovation Challenge 2021 Living Assistance Robot Award (hereinafter, the “Award”). The purpose is to show the teams the selection method and criteria for determining the winning team of this Award, and to maintain fairness in the selection process.

## I.2 Update History

Last Updated.	Version
2020/12/02	1st Edition

## 2. Outline of Selection

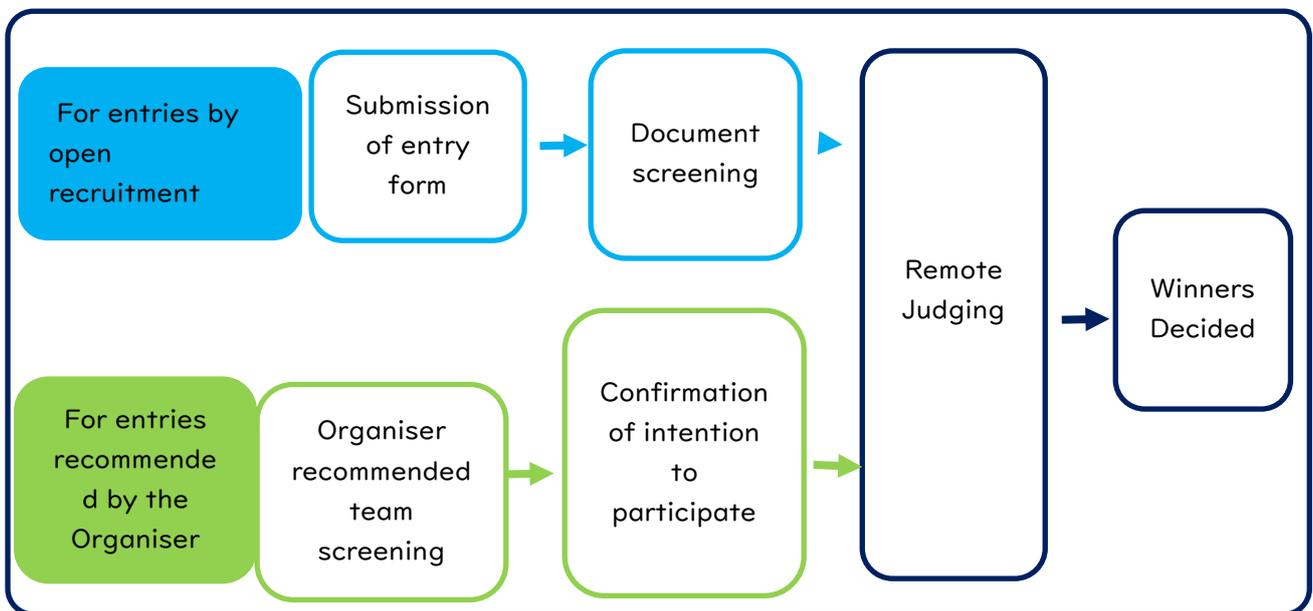
### 2.1 Selection Process

There are two ways to enter the Award: "entry by open recruitment" and "entry recommended by the Organiser".

In the case of entry by open recruitment, "remote judging" will be carried out after "document screening".

In the case of recommendation by the Global Innovation Challenge Executive Committee (hereinafter, the "Organiser"), the Organiser will select recommended teams independently, and after confirming their intentions to participate, "remote judging" will be carried out.

Figure: The Selection Process



### 2.2 Judges

The Judges will consist of

The selection will consist of the Organiser" and engineering and rehabilitation medicine experts delegated by the Organiser.

### 2.3 Cost Burden

Facility costs, labour costs, travel expenses, insurance enrolment fees, etc for submitting entry forms and conducting remote judging will be borne by the Organiser to the extent agreed upon by the team after consulting with the Organiser in advance.

# 3. Selection Process

## 3.1 Document Screening

### 3.1.1 Eligibility for selection

Teams that submit their entry forms to the Organiser during the entry period for this Award are eligible for selection.

Entry period: September 1, 2020 – February 28, 2021

### 3.1.2 Judging period

Judging period: December 1, 2020 – June 30, 2021

### 3.1.3 Selection criteria

Based on the content of the entry forms submitted by the teams, the teams deemed by the Judges to have a good chance of achieving the Tasks set out on the attached Task accomplishment checklist will be accepted.

If the entry form is incomplete or lacking in information, the Judges will ask the team for corrections or additional information.

## 3.2 Organiser Recommended Team Screening

The organizer will recommend participating in the Award to the teams that are judged to be likely to achieve the tasks described in the attached Task accomplishment checklist based on the public information during the entry period of this Award, and the teams that confirm their intentions to participate in this Award are accepted and added as the participating teams.

## 3.3 Remote Judging

In the Global Innovation Challenge 2021, remote judging will be conducted using web conferencing services to prevent infectious diseases. The Judges will evaluate the team's robots remotely to determine the winning team for this Award.

### 3.3.1 Eligible for selection

Teams that have passed the paperwork screening and teams that have passed the Organiser's recommended team screening

### 3.3.2 Judging period

Judging period: December 1, 2020 – June 30, 2021

The implementation date and time and implementation details will be coordinated by the Organiser with the team and the remote judging will take place on approximately two days within the judging period.

### 3.3.3 Implementation location

Perform the Tasks in a residential environment that is convenient for the team and designed without the assumption of people with lower limbs paralysis. For example, this can be a temporary housing built in the team's laboratory or in a hotel.

Also, spaces that are not included in the Tasks that the team enters are not required. For example, if you are entering only Task I - Toilet, you are not required to provide a living room or kitchen.

### 3.3.4 Implementation methods

The web conferencing system "zoom" (<https://zoom.us/>) will be used. The team will take a moving picture of the Task being carried out with a video camera, smartphone, etc., and the Judges will evaluate the robot based on the moving picture.

The team will carry out the Tasks entered during the remote judging.

The Organiser will ask the team to implement some of the "technical elements" set for each Task.

### 3.3.5 Equipment

Use common equipment such as beds, chairs, and doors to carry out the Task.

### 3.3.6 Criteria

- A task should be carried out within 4 times the reference time set for each Task.
- No accidents should occur.

### 3.3.7 Safety measures and insurance

To prevent accidents, the teams must take safety measures such as having an assistant or a nursing lift. During remote judging, if the Judges deem it unsafe and asks the team to stop, the team must comply with the instructions. Teams are also required to take out insurance to cover accidents during remote judging.

## **Appendix: Task Accomplishment Checklist**

The Judges will be assessed by the following Task accomplishment checklist.

<b>Task 1</b>	<b>Toilet</b>	<b>Reference time</b>	<b>5 minutes</b>
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**Description of the Task:**

Start in bed in your pyjamas. Sit up and put the robot on. Get up from the bed and move to the toilet. Once in the toilet, close the door. Drop your trousers and sit on the toilet seat. Then get up from the toilet seat and raise your trousers. Pull the flush lever. Exit the toilet and close the door. Move to the washroom and wash your hands, wipe your hands with the towel hanging in the washroom. Return to the bedroom and sit on the bed to complete the Task.



**Judgment table for individual actions**

Location	Action	Judgment
① Bedroom	Start in bed in your pyjamas	-
	Sit up and put the robot on	
(Move)	Get up from the bed and move to the toilet	
② Toilets	Once in the toilet, close the door	
	Sit on the toilet seat with your trousers down and hold for 10 seconds	
	Get up from the toilet seat and raise your trousers	
	Pull the flush lever	
	Exit the toilet and close the door	
(Move)	Move to the bathroom	
③ Bathroom	Wash your hands in the bathroom (10 seconds with soap) and wipe your hands with a towel hanging in the washroom	
(Move)	Return to the bedroom	
④ Bedroom	Sit on the bed	

**Results**

Time spent to carry out the Task	(min)
All items of individual operation have been cleared	<input type="checkbox"/>

<b>Task 2</b>	<b>Preparation</b>	<b>Reference time</b>	<b>6 minutes</b>
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**Description of the Task:**

Start from a sitting position on the bed. Put the robot on and move to the bathroom. Take a towel from the rack. Fill the basin with water and with both hands wash your face three times. After wiping your face with the towel, place the towel in the basket in front of the washing machine (marked with a star) and move to the living room. Once in the living room, close the door and sit on the couch to complete the Task.



**Judgment table for individual actions**

Location	Action	Judgment
(1) Bedroom	Start in bed	-
	Put the robot on and stand up	
(Move)	Move from the bedroom to the bathroom	
(2) Bathroom	Take a towel from the bathroom rack	
	Fill the basin with water and with both hands wash your face three times	
	Wipe your face with the towel	
	Place the towel in the basket in front of the washing machine (marked with a star)	
	Exit the bathroom and close the door	
(Move)	Move from the bathroom to the living room	
(3) Living room	Close the door after entering the living room	
	Sit on the couch	

**Results**

Time spent to carry out the Task	(min)
All items of individual operation have been cleared	<input type="checkbox"/>

<b>Task 3</b>	<b>Meal</b>	<b>Reference time</b>	<b>6 minutes</b>
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**Description of the Task:**

Start by sitting on the living room couch. Put the robot on and move to the kitchen. (1) Start toasting bread in the toaster, (2) transfer food from the frying pan to a plate, and (3) serve soup into a bowl from another pan. (4) Remove a drink from the refrigerator and pour it into a cup. Bring all four of these prepared items to the table. Then take a seat in a dining room chair in the living room. Take a spoon and fork from the table, make a sign (ex. clasp your hands). After that, make a sign again which means the end of a meal and carry the empty dishes into the kitchen. Place all the dishes in the dishwasher (marked with a star) and press the start button. Return to the living room and sit on the couch to complete the Task.



**Judgment table for individual actions**

Location	Action	Judgment
(1) Living room	Start by sitting on the living room couch	-
	Put the robot on and stand up	
(Move)	Move from the living room to the kitchen	
(2) Kitchen	(1) Toasting bread in the toaster	
	(2) Transfer food from the frying pan to a plate	
	(3) Serve soup into a bowl from another pan	
	(4) Remove a drink from the refrigerator and pour it into a cup	
	Bring all four of these prepared items to the table	
(Move)	Move from the kitchen to the living room	
(3) Living room	Take a seat in a dining room chair in the living room	
	Take a spoon and fork from the table	
	Make a sign (ex. clasp your hands)	
	Make a sign again and carry the empty dishes into the kitchen	
(Move)	Moving from the living room to the kitchen	
(4) Kitchen	Place all the dishes in the dishwasher (marked with a star) and press the start button	
(Move)	Return to the living room	
(5) Living room	Sit on the couch	

**Results**

Time spent to carry out the Task	(min)
All items of individual operation have been cleared	<input type="checkbox"/>

<b>Task 4</b>	<b>Laundry</b>	Reference time	9 minutes
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**Description of the Task:**

Start from a sitting position on the living room couch. Put the robot on and move to the washroom. Take clothes from the basket and put into the washing machine (marked with a star), add detergent and fabric softener, and press the start button on the washing machine. Then take the clothes out of the washing machine and hang them in the bathroom. Take in another piece of laundry that was hung out to dry. Fold the laundry (it doesn't matter where you fold it) and carry it to the bedroom and put it away in the wardrobe. Move from the bedroom to the living room and close the door after you enter the living room. Sit on the living room couch to complete the Task.



**Judgment table for individual actions**

Location	Action	Judgment
(1) Living room	Start from a sitting position on the living room couch	-
	Put the robot on and stand up	
(Move)	Move from the living room to the bathroom	
(2) Washroom	Take clothes from the basket and put into the washing machine (marked with a star)	
	Add detergent and fabric softener, and press the start button on the washing machine	
	Take the clothes out of the washing machine	
(Move)	Move to the bathroom with the clothes	
(3) Bathroom	Hang them in the bathroom	
	Take in another piece of laundry that was hung out to dry	
	Fold the laundry (it doesn't matter where you fold it)	
(Move)	Carry the laundry to the bedroom	
(4) Bedroom	Put the folded laundry away in the wardrobe	
(Move)	Move from the bedroom to the living room	
(5) Living room	Close the door when you enter the living room	
	Sit on the living room couch	

**Results**

Time spent to carry out the Task	(min)
All items of individual operation have been cleared	<input type="checkbox"/>

<b>Task 5</b>	<b>Package Receiving</b>	Reference time	5 minutes
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**Description of the Task:**

Start sitting on the couch in the living room. Put the robot on and get up from the couch. Move to the intercom (marked with a yellow star) and answer it. Then move to the front door with the steps (about 20cm) and receive your package (a cardboard box of about 1.5 kg, 32 cm x 25 cm x 11 cm). Take the package and move to the kitchen, open the package, and put its contents in the refrigerator. Fold the cardboard box and place it in the kitchen trash can (marked with a red star). Move from the kitchen to the living room and close the door after you enter the living room. Sit on the couch to complete the Task.



**Judgment table for individual actions**

Location	Action	Judgment
(1) Living room	Start sitting on the couch in the living room	-
	Put the robot on and get up from the couch	
	Move to the intercom (marked with a yellow star) and answer it	
(Move)	Move from the living room to the front door with the steps	
(2) Front door	Receive your package (a cardboard box of about 1.5 kg, 32 cm x 25 cm x 11 cm)	
(Move)	Take the package and move to the kitchen	
(3) Kitchen	Open the package and put its contents in the in the refrigerator	
	Fold the cardboard box and place it in the kitchen trash can (marked with a red star)	
(Move)	Move from the kitchen to the living room	
(4) Living room	Close the door after you enter the living room	
	Sit on the couch	

**Results**

Time spent to carry out the Task	(min)
All items of individual operation have been cleared	<input type="checkbox"/>

<b>Task 6</b>	<b>Cleaning</b>	Reference time	8 minutes
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**Description of the Task:**

Start by sitting on the couch in the living room. Put the robot on and use the vacuum cleaner (marked with a yellow star) placed in the living room to suck up trash in three places (red X). After sucking up the trashes, dump the trashes from inside the vacuum cleaner into the kitchen trash can (marked with a red star) and take the trash bag out of the trash can and tie it. Set a new trash bag in the trash can. Return the vacuum cleaner to its original place. Take the trash (about 4kg) and leave the front door with the steps (about 20cm) and take the trash out to the dumpster (next to the front door). Then return to the living room. Close the living room door after you enter the living room and sit on the couch to complete the Task.



**Judgment table for individual actions**

Location	Action	Judgment
(1) Living room	Start sitting on the couch in the living room	-
	Put the robot on and get up from the couch	
Living room/bathroom/bedroom	Use the vacuum cleaner (marked with a yellow star) placed in the living room to suck up trash in three places (red X)	
(Move)	Move to the kitchen with the vacuum cleaner	
(2) Kitchen	Dump the trash from inside the vacuum cleaner into the kitchen trash can (marked with a red star)	
	Take the trash bag out of the trash can and tie it	
	Set a new trash bag in the trash can	
(Move)	Move to the living room with the vacuum cleaner	
Living room	Return the vacuum cleaner to its original place	
(Move)	Move to the front door with the about 4kg trash bag	
(3) Front door	Leave the front door and take the trash out to the dumpster (next to the front door)	
(Move)	Return to the living room	
(4) Living room	Close the door after you enter the living room	
	Sit on the couch	

**Results**

Time spent to carry out the Task	(min)
All items of individual operation have been cleared	<input type="checkbox"/>

<b>Task 7</b>	<b>Bathing</b>	Reference time	20 minutes
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**Description of the Task:**

Start by sitting on the couch in the living room. Put the robot on and go to the bedroom and take your pyjamas out of the wardrobe. Take your pyjamas and head to the washroom. Once in the washroom, close the door and take a towel from the rack. Take off your clothes and put your clothes in the laundry basket. Then go into the bath area. Take a shower and immerse yourself up to your shoulders in the hot water of the tub. At the prescribed time, get out of the tub/bathroom. Move to the dressing room and wipe yourself down with a towel and put on your pyjamas. Dry your hair with the hairdryer and then head to your bedroom. Sit on the bed, take off the robot, and lie down to complete the Task.



**Judgment table for individual actions**

Location	Action	Judgment
(1) Living room	Start sitting on the couch in the living room	-
	Put the robot on and get up from the couch	
(Move)	Move to the bedroom	
(2) Bedroom	Take your pyjamas out of the wardrobe	
(Move)	Take your pyjamas and head to the washroom	
(iii) Bathroom	Once in the washroom, close the door	
	Take a towel from the rack	
	Take off your clothes and put your clothes in the laundry basket	
(Move)	Go into the bath area	
Bathroom	Take a shower	
	Immerse yourself up to your shoulders in the hot water of the tub	
	At the prescribed time, get out of the tub/bathroom	
(Move)	Move to the dressing room	
(e) Toilets	Wipe yourself down with a towel and put on your pyjamas	
	Dry your hair with the hairdryer	
(Move)	Head to the bedroom	
(6) Bedroom	Sit on the bed and take off the robot.	
	Lie down on the bed	

**Results**

Time spent to carry out the Task	(min)
All items of individual operation have been cleared	<input type="checkbox"/>

