



## Rules and Regulations

### Version 1.0

August 30, 2019

These RULES AND REGULATIONS (“Rules”) govern the ANA AVATAR XPRIZE. These Rules are an addition to, and where applicable, supersede, the published Competition Guidelines originally published September 10, 2018, and updated August 30, 2019).

All participating Teams must adhere to these Rules for Competition rounds in which they compete in order to progress through the Competition milestones and be qualified for selection as a winner of the Competition. Failure to adhere to these Rules may result in consequences as detailed in the Competitor Agreement.

XPRIZE may update these Rules as necessary during the course of the Competition to provide additional information or to improve the quality of the Competition. There may also be unanticipated issues that will require modifications to these Rules. XPRIZE reserves the right to revise these Rules, as it, in its sole discretion, deems necessary. Dates and locations are subject to change pursuant to the Competitors Agreement. Registered Teams will be notified directly of any such revisions.

**Note:** All terms that are in bold throughout the document have a corresponding definition in the Glossary section.

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# 1. Introduction and Scope

The ANA Avatar XPRIZE was launched in March 2018, and is sponsored by All Nippon Airways (ANA). It seeks to incentivize Teams to integrate a range of diverse, cutting-edge technologies to create a physical robotic Avatar System that will transport an operator's senses, actions and presence to a remote location in real time.

Robotic technologies have advanced greatly in the last decade, and are now employed in a wide range of applications and services. This challenge will extend the capabilities of robots by integrating a broad range of emerging and cutting-edge technologies that can increase the application of robotics in the future. The winner of this XPRIZE will demonstrate a functional **Avatar System**, which consists of a human operator controlling a robotic Avatar at a real and/or **Simulated Distance** that allows the operator to interact with other humans or the environment, receiving sensory information from the robotic Avatar. The ultimate goal is for a person to feel as if they are truly where the Avatar is, experiencing a sense of **Presence** through the Avatar.

## 2. Eligibility

XPRIZE believes that solutions can come from anyone, anywhere. Scientists, engineers, academics, entrepreneurs, and other innovators with new ideas from all over the world are invited to form a Team and register to compete. To participate, a Team is required to first create an account in the [Prize Operations Platform \(POP\)](#) system. POP is an online platform through which all Teams will register for the Competition, pay the required registration fee, and submit their qualifying documents. Teams are expected to maintain their POP profiles throughout the Competition, ensuring their profile is up to date with the most recent Team and Team members information.

A Team may recruit additional experts and can add new members to their Team profile page in POP at any time throughout the Competition. Teams may also merge with other Teams during the Competition. Teams must notify XPRIZE of a merger before it takes place. Please refer to the **Competitor Agreement** for all eligibility terms, and contact XPRIZE with related questions.

## 3. Team Definitions

Teams are categorized per the following:

- **Interested Team:** A Team or individual that is interested in participating in the Competition and has created a profile in the XPRIZE internal POP system.
- **Registered Team:** A Team that has paid the required registration fee and is eligible to submit a **Qualifying Submission** for Judge review.
- **Qualified Team (up to 150 Teams):** A Team that has been selected by the Judging Panel from the pool of Registered Teams based on the strength of their Qualifying Submission.
- **Semifinalist Team (up to 75 Teams):** A Team that has successfully completed the **Semifinalist Selection** and is selected by the Judges to proceed in the Competition.
- **Finalist Team (up to 20 Teams):** A Team that has successfully completed Semifinals testing and is chosen by the Judging Panel to attend Finals testing.

#### *Team Progression Chart*



## 4. Rules and Regulations Revisions

The XPRIZE Foundation may update these Rules as necessary during the course of the Competition to provide additional information or to improve the quality of the Competition. There may also be unanticipated issues that will require modifications to these Rules. The XPRIZE Foundation reserves the right to revise these Rules, as it, in its sole discretion, deems necessary. Dates and locations are subject to change pursuant to the Competitors Agreement. Registered Teams will be notified directly of any such revisions.

## 5. Judge Roles and Responsibilities

Judging decisions are final. Teams may not contact Judges outside of XPRIZE-managed circumstances. Judges are not required to provide Teams with reasons for their decisions nor supply feedback to Teams. XPRIZE does not interfere with the

Judges deliberations or decisions in any way. Judges are required to recuse themselves for any reason that might compromise the impartiality of their deliberations or decisions.

All judging decisions and opinions made by the Judging Panel are binding on both Team and XPRIZE, and not subject to review or contest. The Judging Panel retains ultimate discretion to declare a winner of the Competition and otherwise award all Prizes (subject to the Competitor Agreement). Any such judging decision may not be challenged by a Team, and all Teams agree to abide by and refrain from any such challenge.

In some instances, the Judging Panel may require additional information from Teams and XPRIZE will facilitate these discussions as necessary.

## 6. Team Roles and Responsibilities

Teams are responsible for the items listed below. This is not a comprehensive list; please contact XPRIZE at [Avatar@xprize.org](mailto:Avatar@xprize.org) if you have any questions about any activity.

1. Complete all activities in the POP system.
2. Fulfill insurance and eligibility requirements as detailed in the Competitor Agreement.
3. Design and development of the **Avatar Solution**.
4. Transportation of the Avatar Solution to and from physical testing sites.
5. Deployment and setup of the Avatar Solution before any test and removal of the Solution after the end of testing, in keeping with the allotted schedule set by XPRIZE.
6. Costs associated with lodging and travel for Team members.
7. Costs associated with transporting the Avatar Solution, insurance, customs fees, and other fees that may be incurred from bringing the Team's Avatar Solution to the testing location.
8. Train Judges and XPRIZE operations staff (as needed) to operate their Avatar Solution
9. Cooperation with the Judging Panel in any verification activities both on-site as well as follow up verification (post-testing) as necessary.

As defined in the Competitor Agreement, all Teams and Team Members must adhere to all applicable laws (including but not limited to) local, regional, national, and international laws, orders, directives, ordinances, treaties, rules, and regulations for all

aspects of the Competition. Teams are solely responsible for acquiring any appropriate licenses, waivers, or permits from the applicable regulatory bodies or other applicable third parties.

## 7. Testing Scenarios

**Testing Scenarios** for the **Semifinals** and **Finals** will be used to evaluate Team performance. Testing Scenarios will be designed to test the ability of the Avatar to remotely convey a sense of immediate presence to the human **Operator**. This means the Avatar System must allow a human's senses, actions and presence to be transported to an actual or simulated distant location to interact with an environment and/or a **Recipient** for these tests. The Testing Scenarios will represent a diversity of future real-world use cases critical for achieving transformational advances in domains such as, but not limited to, health care, family connectivity, facility maintenance, disaster aid, learning and exploration. They will be drawn from the vision of a future where Avatar technologies are abundant and benefitting the world and its people. Specifics of Testing Scenarios for Semifinals and Finals testing will be shared with the Teams that are selected as Qualified Teams to advance in the Competition.

Each Testing Scenario will comprise a series of tasks designed to cover a broad range of activities within a particular domain. Capabilities such as perception, planning **mobility**, exploration, and physical and social interaction will be explored in the scenarios. At both Semifinals and Finals, XPRIZE will provide the three (3) scenarios that each Team must accomplish. XPRIZE expects to provide the scenarios to the Teams no later than six (6) months before each testing event.

*For explanation purposes, the following Scenario is provided as a general example of the types of details that might be provided in a Testing Scenario.*

### **Example Scenario: “Visiting a Relative”**

Setup - The Avatar robot is positioned at a table across from a person. There are several objects on the table, such as a game of Checkers, an empty coffee mug and a family photograph.

Through the Avatar, the Operator must:

1. Recognize and verbally acknowledge the Recipient.
2. Engage in a game of Checkers with the Recipient.
3. Hand a coffee mug to the Recipient when asked.

4. Identify and talk about two people in a photograph by pointing at and describing the two people.

## 8. System Requirements

### 8.1 Avatar Robot

Teams are encouraged to design and build or purchase Avatar Systems that will be successful in the Competition. However, due to safety considerations and planned indoor testing the **Avatar Robot** must meet the following conditions:

- Total weight, including its power source, must not exceed 160 kg.
- Width and length dimensions must be no more than 100 cm x 120 cm maximum.
- Total height must be less than 210 cm.
- The Avatar must be able to safely operate indoors, and must not release any direct emissions.
- Teams may use a network and power tether for their system.
- It is anticipated that the power in the test location will be between 100 and 110 volts.
- It is expected that some scenarios will require mobility of the Avatar.

### 8.2 Operator Interface

Teams are permitted to use whatever **Operator Interface** they deem to be the most effective in allowing the Operator to feel the Avatar's senses and actions transported to and from the robotic Avatar. These may be existing commercial systems, or custom-made solutions. To ensure safety and testing considerations the Operator Interface should adhere to the following provisions:

- Total weight of such a system must be reasonable and not impair the user's normal activities in any significant way, such as excessive size or weight.
- The interface system worn by the Operator may be tethered or untethered, as long as adequate connection is maintained between the elements of the system.
- It is permissible for the Interface system to include a Heads-Up Display that includes overlaid information in addition to visual or sensory input from the robot.
- Any use of **Brain Computer Interfaces (BCI)** as part of the Operator Interface must not be of an invasive nature. Only externally-worn devices are allowed.



## 8.3 Avatar Communications

Teams should plan to have a data communications network approach where message traffic will go through a XPRIZE provided device that will monitor and control transmissivity, latency and bandwidth. Further details and the **Avatar Network Architecture** diagram will be distributed in future documents.

## 9. Competition Timeline



These are the milestones that Teams must accomplish in order to progress in the Competition.

*Competition Milestone Reference Table*

<b>Competition Milestone</b>	<b>Date</b>	<b>Requirements</b>	<b># Teams</b>
<i>Qualifying Submission and Competitor Agreement Deadline</i>	October 31, 2019	Complete written submission on POP (See Section 9.1) and sign the Competitor Agreement	Up to 150 will be selected
<i>Semifinalist Selection Submission</i>	November 2020	Submit written and video portions (See Section 9.2)	Up to 75 will be selected
<i>Semifinalist Verification</i>	March 2021	Complete Semifinals Technical Enrollment; video submission (See Section 9.3)	Up to 75 will advance to Semifinals testing

<b>Competition Milestone</b>	<b>Date</b>	<b>Requirements</b>	<b># Teams</b>
<i>Semifinals Testing</i>	June 2021	Transport Avatar Systems to testing facility; demonstrate Avatar capabilities to Judging Panel (See Section 10.1)	Up to 75 will test at Semifinals; Up to 20 will advance to the finals and split \$2 Million prize purse
<i>Finals Verification</i>	January 2022	Details pending (See Section 10.2.3)	Up to 20 will advance to Finals testing
<i>Finals Testing</i>	March 2022	Details pending (See Section 10.2.4)	Up to 20 will test at Finals
<i>Announce Competition Winners</i>	March 2022	(See Section 11)	First, Second, and Third place prizes will be awarded

## 9.1. Qualifying Submission

Registered Teams will be required to fill out the online **Qualifying Submission** form in POP by October 31<sup>st</sup>, 2019. This submission comprises a series of questions to be answered that outline the expertise, capabilities and plans for the functional Avatar Solution that each Team will be creating. An Executive Summary up to two pages of text, and any supporting images, diagrams, or charts must also be submitted as part of the Qualifying Submission.

Judges will use the information provided by Teams to determine, at their sole discretion, if a Team is qualified to continue forward in the Competition as one of the up to 150 Qualified Teams. If a Team is determined to be “Qualified” by the Judging Panel, their status changes from “Registered” to “Qualified.”

## 9.2 Semifinalist Selection

At **Semifinalist Selection**, Qualified Teams will be required to demonstrate they are sufficiently advanced to progress in the Competition as a Semifinalist Team (up to 75 teams will be selected). The Semifinalist Selection submission deadline is tentatively scheduled for November 2020. Details pertaining to the Semifinalist Selection, including the submission process, and format and length will be provided during the Team Summit in Spring 2020.

Teams must devise a **Sample Scenario** consisting of a number of tasks that demonstrate the capabilities of their system. The capabilities being demonstrated should be aligned with the overall spirit and goals of the Competition. This demonstration must include actions or tasks that illustrate all of the following elements:

- Operator controlling the Avatar through the interface to be used at Semifinals.
- The Avatar System to be used at Semifinals performing the task.
- The Recipient interacting with the Avatar.
- The Operator's actions initiating movement of the Avatar to interact with the Recipient or environment.
- Include a segment of the video that demonstrates the Avatar's emergency stop function and other safety features.
- View of what the Operator is seeing through the Operator's part of the system.

*An example of a Sample Scenario task would be for the Recipient to ask the Operator to "slide the purple block to my right". The demonstration should be set up such that the Operator is not in the same physical space as the Avatar or Recipient. For example, for this video capture, the Operator and Avatar should be either in separate rooms, or be separated by at least 5 meters with an opaque visual barrier in between them. This video should emulate the conditions of the testing site where the operator and robotic Avatar will be separated by a simulated physical distance.*

The Semifinalist Selection submission will consist of two portions as detailed below.

### 9.2.1 Written Portion

The written portion will consist of an update to the Qualifying Submission that will outline a Team's progress in developing their Solution. Additionally, Teams should explain their Sample Scenario and objectives of tasks and should showcase any special capabilities of their system. The written portion should also include the details of the Operator interface equipment, the Avatar System components, the Team's safety protocols, and the communication technology to be used for the test. Additional details such as system diagrams and network architectures are welcome.

### 9.2.2 Video Portion

The video of the Sample Scenario demonstration should show the tasks described in the written portion of the submission from the perspectives of the *Recipient* as well as the *Operator*. The videos collected are to be of the same Trial and should be shown in *real time* (without any editing, speeding up or slowing down). Demonstrating multiple attempts in the video is allowed. Further requirements for the Semifinalist Selection

video such as video format and length, will be provided during the Team Summit in Spring 2020.

**Note:** The Sample Scenario videos of Semifinalist Selection will be scored on a pass/fail basis.

### 9.3 Semifinalist Verification

At **Semifinalist Verification**, Teams will be required to submit materials to verify they are prepared to proceed to the Semifinals round of the competition. The Semifinalist Verification submission deadline is tentatively scheduled for March 2021.

Teams will be required to submit a video of a Sample Scenario they define that best shows off their Avatar System capabilities. The video will count for 10% of a Team's score during Semifinals testing, as described in more detail below.

The video may be the same Sample Scenario as submitted in Semifinalist Selection but should be updated to demonstrate that improvements to the system have been made. It should include the same elements as the Semifinalist Selection submission, namely:

1. Operator controlling the Avatar through the interface to be used at Semifinals.
2. The Avatar System to be used at Semifinals performing the task.
3. The Recipient interacting with the Avatar.
4. The Operator's actions initiating movement of the Avatar to interact with the Recipient or environment.
5. Include a segment of the video that demonstrates the Avatar's emergency stop function and other safety features.
6. View of what the Operator is seeing through the Operator's part of the system.

Teams must provide a written description (up to two pages) that defines the Sample Scenario being demonstrated.

Additionally, teams will need to complete the **Semifinals Technical Enrollment** for the Avatar System, which includes personnel enrollment of their Semifinals attendees.

Further details pertaining to the Semifinalist Verification will be provided at an appropriate date to be determined.

**Note:** Only Teams whose Insurance and Eligibility Requirements have been fulfilled and confirmed by XPRIZE (as per the Competitor Agreement) will be permitted to submit verification materials.

## 10. Competition Testing

The following sections cover the details of testing for the in-person Competition events.

### 10.1. Semifinals Testing

#### 10.1.1. Semifinals Location and Facilities

Teams will be invited to a single testing location. The testing site will be selected by XPRIZE and the location will be released by December 2020. All testing will be done indoors.

At least one member of the Team is required to be present onsite during their allotted test slots. Additionally, we will be limiting the number of overall Team members that may attend testing. This number will be based on space, configuration, and safety considerations at the testing center and will be defined in the Semifinals **Operations Guide**.

XPRIZE will publish the Operations Guide approximately 180 days before Semifinals testing. The Operations Guide will detail the policies and procedures for testing including test scenarios, event operations, logistics, shipping, safety and other details to effectively participate in Semifinals.

#### 10.1.2. Semifinals Date

Semifinals testing is tentatively scheduled for June 2021. The exact testing dates for each individual Team will be provided no later than April 2021 after Semifinalist Verification.

#### 10.1.3. Semifinals Schedule

The testing schedule will be provided in April 2021. Teams should plan to be onsite for at least three (3) days including setup, evaluations and move-out. Day one will include move-in, unpacking and assembly; days two and three will be dedicated to testing, packing, and move-out.

#### 10.1.4. Semifinals Testing Procedures

During Semifinals testing each Team will be given two (2) **Slots** on the schedule over the course of the two (2) testing days. Each Slot will be two (2) hours in duration with one (1) hour for equipment setup and operator training and one (1) hour for the **Scored Trial**.

##### *Semifinals Testing Breakdown*

	<b>Day #1 - Slot #1</b>	<b>Day #2 - Slot #2</b>
Hour 1	Setup & Training	Setup & Training
Hour 2 <u>Scored Trial</u>	Scenario #1 Scenario #2 Scenario #3	Scenario #1 Scenario #2 Scenario #3

#### 10.1.5. Semifinals Scoring

Each Scored Trial will contain three (3) different scenarios. Teams will be given two (2) Slots to attempt the scenarios over the course of two (2) days. The Judges will take the best score for each individual scenario over the two Slots. For example, a team may have its best score on Scenario 1 and Scenario 3 during their 2nd Slot, and their best score from Scenario 2 on their 1st Slot. The Team's performance during the scenarios will account for 90% of their overall score, with each scenario accounting for 30%. The remaining 10% will be based on the Team-provided Semifinalist Verification video of their Sample Scenario as described in Section 9.3.

During testing the Judges will evaluate the Avatar System based on the following four (4) components. The initial evaluation criteria for each category are listed below, but may be subject to change. These criteria will be finalized approximately six (6) months prior to Semifinals testing.

1. **Operator Experience** – this measure is based on the following criteria, and is worth up to 12 points in each scenario.
  - a. Did the Operator feel a sense of Presence in the scenario?
  - b. Was the Operator able to complete the tasks?
  - c. Was the Operator able to understand the Recipient?
  - d. Did the Operator feel fatigue or disorientation?
  - e. Did the Operator feel the system was easy to use?

2. **Recipient Experience** – this measure is based on the following criteria, and is worth 8 points in each scenario.
  - a. Did the Recipient effectively understand the Operator?
  - b. Did the Recipient feel present with the Operator?
  - c. Was the Recipient able to Interact with the Avatar?
  - d. Did the Recipient feel safe?
  
3. **Avatar Ability** - this measure is based on the following criteria, and is worth 8 points in each scenario.
  - a. Did the Avatar complete all the tasks?
  - b. Did the Avatar move in a safe and controlled manner?
  
4. **Overall System Capability** – this measure is based on the following criteria, and is worth 2 points in each scenario.
  - a. Was the System (hardware, software and any other elements) reliable during the entire testing?
  - b. Did any part of the system introduce unintended latency?

The Team scores for Semifinals will not be released to the Teams or made public during or after testing, although the overall rankings may be released.

*Sample Semifinals Scoring Diagram*

<b>SCENARIO</b>	<b>Operator Experience</b>	<b>Recipient Experience</b>	<b>Avatar Ability</b>	<b>Overall System</b>	<b>Total</b>
#1	12	8	8	2	30
#2	12	8	8	2	30
#3	12	8	8	2	30
Semifinalist Verification Video	-	-	-	-	10
<b>TOTAL</b>					<b>100</b>

### 10.1.6. Semifinals Scored Trial

During a Scored Trial, a member of the Judging Panel will serve as the Operator to control the system and evaluate the experience. Another Judge will act as the Recipient to interact with the Avatar and evaluate the system and the interactions. During the first hour of each Slot, Teams will train the Operator and the Recipient on the operation of the system. Teams should plan for a different set of Judges during each Slot.

**Note:** The setup will be such that the Operator, and the Recipient with the Avatar, will be in discrete spaces. There will be no communication between the Operator and the Recipient other than through the Avatar System. For example, the Operator would not be able to hear or see what is going on in the Avatar location directly.

### 10.1.7. Semifinals Scenarios

During each Trial, the Team's system will be evaluated by the Judges in three (3) XPRIZE defined scenarios. Each scenario is currently estimated to take no more than ten (10) minutes for Judges to complete. A Team may elect to retry a scenario as long as it can be done in the allotted slot. Future details of each scenario will be provided at the Team Summit in Spring 2020. It is anticipated that at least one (1) of the scenarios will require mobility for the Avatar.

### 10.1.8. Semifinals Team Video

As part of Semifinals Verification (See Section 9.3) Teams will have provided XPRIZE a video of their system operating in a scenario of their choosing. The intention of this is for the Teams to demonstrate the best capability features of their system. The video should be captured and presented in the same manner as described in Semifinals Selection (See Section 9.2.2) and Semifinals Verification (See Section 9.3). This video submission will count for 10% of the Team's Semifinals score.

## 10.2. Finals Testing

### 10.2.1. Finals Location and Facilities

Teams will be invited to a single testing location. The testing site will be selected by XPRIZE staff and the location will be released by October 2021.

At least one member of the Team is required to be present onsite during their allotted test slots. Additionally, we will be limiting the number of overall Team Members that may attend. This number will be based on space, configuration, and safety considerations at the testing center and will be defined in the Finals Operations Guide.

XPRIZE will publish the Finals Operations Guide approximately 180 days before Finals testing. The Operations Guide will detail the policies and procedures for testing including test scenarios, event operations, logistics, shipping, safety and other details to effectively participate in Finals testing.



### 10.2.2. Finals Date

Finals testing is tentatively scheduled for March 2022. The exact testing dates for each individual Team will be provided no later than December 2021 after **Finals Verification**.

### 10.2.3. Finals Verification

Ahead of Finals testing, XPRIZE will conduct a Final Verification consisting of a written and filmed update to ensure Teams are prepared to proceed to the final round of the Competition. More details to be provided ahead of Finals testing.

### 10.2.4. Finals Testing Procedure

It is currently anticipated that Finals testing will be structured similarly to Semifinals testing, with the addition of the **Team-Selected Scenario** (as defined below in Section 10.2.8).

### 10.2.5. Finals Scoring

Details of Finals scoring may change, and further details will be provided later in the Competition, but is currently envisioned as follows:

- It is expected that the Team's performance during the XPRIZE scenarios will account for 90% of their overall score.
- The remaining 10% will be based on a Team-Selected Scenario. Details on how the Team-Selected Scenario will be created, operated and judged will be provided to Finalist Teams.

Similar to Semifinals, Judges will evaluate the Avatar Solution based on the following four (4) components. The initial evaluation criteria for each category are listed below, but may be subject to change. These criteria will be finalized approximately six (6) months prior to Finals. The measures and criteria are expected to remain the same as Semifinals (See Section 10.1.5) though the Scenarios will likely be different in Finals testing.

Teams scores and rankings for Finals may or may not be made public during or after testing.

### Sample Finals Scoring Diagram

<b>SCENARIO</b>	<b>Operator Experience</b>	<b>Recipient Experience</b>	<b>Avatar Ability</b>	<b>Overall System</b>	<b>Total</b>
#1	12	8	8	2	30
#2	12	8	8	2	30
#3	12	8	8	2	30
#4 (Team-Selected Scenario)	-	-	-	-	10
<b>TOTAL</b>					<b>100</b>

#### 10.2.6. Finals Scored Trial

During Finals testing, a member of the Judging Panel will serve as the Operator to control the system throughout the Trial and evaluate the experience. Another Judge will act as the Recipient to interact with the Avatar and evaluate the system and the interactions. During the first hour of each Slot, Teams will train the Operator and the Recipient on the operation of the system. Teams should plan for a new set of Judges during each Slot.

**Note:** The setup will be such that the Operator, and the Recipient with the Avatar, will be in discrete spaces. There will be no communication between the Operator and the Recipient other than through the Avatar System. For example, the Operator would not be able to hear or see what is going on in the Avatar location directly.

#### 10.2.7. Finals Scenarios

During each Trial, the Team's system will be evaluated by the Judges in three (3) XPRIZE defined scenarios. Future details of each scenario will be provided at the Team Summit in late 2021. It is anticipated that at least two (2) of the scenarios will require mobility for the Avatar.

#### 10.2.8. Finals Team-Selected Scenario

The intention of the Team-selected Scenario is for the Teams to demonstrate the best capability features of their system. The Scenario will be required to be described by the Teams and approved by XPRIZE prior to Finals testing. Further details of this process will be defined in late 2021. This scenario will count for 10% of the Team's Finals score.

# 11. Awards

There will be \$10,000,000 (Ten Million USD) in total **Prize Purses** available:

- **Semifinals Prize Purse**

There will be \$2,000,000 (Two Million USD) to be shared equally among all Teams (up to 20) selected as Finalists.

- **Finals Prize Purse**

There will be a Finals Prize Purse in the amount of \$8,000,000 (Eight Million USD). The Finals Prize Purse will be divided among the top ranking Teams as First, Second, and Third Place Awards.

- First Place: \$5,000,000 (Five Million USD)
- Second Place: \$2,000,000 (Two Million USD)
- Third Place: \$1,000,000 (One Million USD)

# 12. Operational Health and Safety

Operational health and safety are fundamental concerns in this Competition. Teams must design their systems with operational health and safety for Operators, Recipients, and bystanders in mind. Teams will document their approach to health and safety compliance in their Qualifying Submission and also in Semifinalist Selection. Teams are responsible for operating safely and in compliance with local, regional, or national occupational health and safety regulations relevant to their technology during both Semifinals and Finals on-site testing.

Safety checks will be conducted before formal testing begins and additional safety details will be provided well in advance of Finals testing. XPRIZE staff, Judges, and/or third-party measurement and verification teams may refuse to test Teams whose submissions are deemed unsafe until such time as the Teams submission can be rendered safe. XPRIZE will make all final determinations on safe and acceptable operating conditions for Competition operations.

# GLOSSARY

**Avatar Ability:** This refers to the actual performance and capabilities of the robotic Avatar during testing.

**Avatar Network Architecture:** This refers to the XPRIZE-supplied setup and data communications network that message traffic will use during testing events.

**Avatar Robot:** This is the actual physical robot part of a Teams Avatar Solution.

**Avatar Solution:** This refers to a Team's specific Avatar System (including the operator interface, the robotic Avatar and all sensors, software and mechanical parts) that will be used in the Competition.

**Avatar System:** This refers to the complete and total system consisting of the Operator and operator interface, the Robotic Avatar and all sensors, software and mechanical parts, and the environment or Recipient with which the Operator interacts.

**Brain Computer Interface (BCI):** This is any mechanism by which the Robotic Avatar uses signals measured directly from an Operator's brain as part of the overall system. Also known as BMI, or Brain Machine Interface.

**Competitor Agreement:** A legal and binding document that details the responsibilities of competitors for the prize.

**Finals:** The last set of testing events for the prize that will determine the overall winners.

**Finals Verification:** This is a mandatory update to ensure Teams are prepared to proceed to the Finals round of the Competition and consists of written and filmed components.

**Mobility:** This refers to the Robotic Avatar's ability to physically move and/or navigate in a space.

**Operator:** The person in the Avatar System who is controlling the actions of the Robotic Avatar through some form of Operator Interface.

**Operator Experience:** This is both the objective and subjective involvement of the Operator controlling the robotic Avatar, by which they feel a sense of actual Presence in the remote location.

**Operator Interface:** The means (equipment, software, control devices) by which an Operator interfaces with the robotic Avatar at a distance.

**Operations Guide:** The Operations Guide will detail the policies and procedures for testing including test scenarios, event operations, logistics, shipping, safety and other

details to effectively participate in testing events. There will be separate Operations Guides for Semifinals and Finals testing.

**Overall System Capability:** This term refers to the measure of the reliability of the system hardware, software, and any other elements, such as latency issues.

**Prize Operations Platform (POP):** The standard internal XPRIZE portal for Teams to input data for use in this Competition.

**Presence:** This is the sense that one's actions and senses feel as if they are truly experiencing a location other than the one where the user's physical body currently resides.

**Prize Purse:** This refers to money offered, won, or received as a prize. It also refers to the overall amount of funds allocated to all prizes in this Competition.

**Qualifying Submission:** This is a form in POP that must be completed by Teams no later than October 31<sup>st</sup>, 2019. It consists of a series of questions to be answered that outline the expertise, capabilities and plans for the functional Avatar Solution that each Team will be creating. It will also require an Executive Summary of up to two pages of text, and any supporting images, diagrams, or charts.

**Recipient:** The person receiving the actions of the Operator via the robotic Avatar.

**Recipient Experience:** This refers to the experience of the person receiving the actions of the Operator via the robotic Avatar.

**Sample Scenario:** This is a Team-defined scenario consisting of a number of tasks that demonstrate the capabilities of their Avatar System. Video documentation of a Team's Avatar performing these tasks is part of the Semifinalist Selection process.

**Scenario:** See Testing Scenario.

**Scored Trial:** The testing activity by which a Team's Avatar Solution will be scored during Semifinals and Finals, and comprises a series of scenarios and tasks to be completed.

**Semifinals:** The set of testing events for the prize that will help determine which Teams progress to Finals testing.

**Semifinal Technical Enrollment:** This enrollment will include certain steps and questions to be answered by the Teams, such as proof of insurance, attending Team member lists, and other details about the logistics of Semifinals testing.

**Semifinalist Selection:** The process by which Qualified Teams demonstrate they are sufficiently advanced to progress in the Competition as a Semifinalist Team.

**Semifinals Verification:** This is a Team-provided update to ensure Teams are prepared to proceed to the Semifinals round of the Competition and consists of written and filmed components which will be reviewed by the Judging Panel.

**Simulated Distance:** The goal of the Avatar System is to teleport one's senses and actions to a remote location. This distance, or separation, including any resulting technical circumstances such as networking delays, may be simulated rather than being an actual physical distance.

**Slot:** The two-hour timeframe allocated to Teams during testing events.

#### **Team Definitions:**

- **Interested Team:** A Team or individual that is interested in participating in the Competition and has created a profile in the XPRIZE internal POP system.
- **Registered Team:** A Team that has paid the required registration fee and is eligible to submit a **Qualifying Submission** for Judge review.
- **Qualified Team (up to 150 Teams):** A Team that has been selected by the Judging Panel from the pool of Registered Teams based on the strength of their Qualifying Submission.
- **Semifinalist Team (up to 75 Teams):** A Team that has successfully completed the **Semifinalist Selection** and is selected by the Judges to proceed in the Competition.
- **Finalist Team (up to 20 Teams):** A Team that has successfully completed Semifinals testing and is chosen by the Judging Panel to attend Finals testing.

**Team-Selected Scenario:** This is a Team-defined scenario which includes tasks that can demonstrate the best capability features of their specific Avatar System. The

Scenario will be required to be described by the Teams and approved by XPRIZE prior to Finals testing. Further details of this process will be defined in late 2021.

**Testing Scenario:** This is the set of actions that a Team's Avatar Solution will complete and by which they will be judged.

**Trial:** See Scored Trial.