

XPRIZE

IBM WATSON AI XPRIZE

IBM WATSON ARTIFICIAL INTELLIGENCE XPRIZE COMPETITION GUIDELINES

Version 3

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THE IBM WATSON AI XPRIZE IS GOVERNED BY THESE COMPETITION GUIDELINES. PLEASE SEND QUESTIONS TO ai@xprize.org AND JOIN THE CONVERSATION ON OUR FORUM AT <http://forum.xprize.org/c/ibm-watson-ai-xprize>.

THE XPRIZE FOUNDATION MAY REVISE THESE GUIDELINES 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 THIS DOCUMENT. THE XPRIZE FOUNDATION RESERVES THE RIGHT TO REVISE THESE GUIDELINES AS IT, IN ITS SOLE DISCRETION, DEEMS NECESSARY OR DESIRABLE. REGISTERED TEAMS WILL BE NOTIFIED OF ANY REVISIONS.

Competition Guidelines

These Competition Guidelines describe the high-level requirements, implementation plans, and rules of the IBM Watson Artificial Intelligence XPRIZE Competition (IBM Watson AI XPRIZE). XPRIZE will publish further specifications and implementation details as Rules & Regulations from time to time as necessary during the course of the competition.

Competition Overview

The purpose of the IBM Watson AI XPRIZE is to incentivize innovative approaches to addressing humanity's grand challenges with Artificial Intelligence (AI) through AI-human collaboration. An Eligible Entry must be a solution that is originally developed and implemented by the Team. It must not violate any applicable law or regulation or infringe any third-party rights. Eligible Entries must demonstrate a compelling application of AI to create a novel outcome, demonstration, or solution to a grand challenge through machine collaboration with humanity.

Artificial Intelligence

AI is a very broad field, encompassing a wide range of disciplines. Entries in the IBM Watson AI XPRIZE may draw upon several of these disciplines to synthesize a collaborative approach to addressing a grand challenge. While the complete embodiment of a Team's Entry will include many non-AI technologies, an Entry must substantially rely on the innovative use of technologies within the AI field. AI technologies address the mechanisms underlying thought and intelligent behavior, integrating sensory inputs and actions with cognitive capabilities. These are systems that possess domain understanding, learn from experience, reason towards specific goals, or interact naturally with human collaborators.

Teams will be responsible for clearly documenting and demonstrating the AI disciplines they propose to use in their Entries. Complete Competition Plans will be submitted to the Judging Panel, and the Judging Panel has complete and absolute discretion in deciding whether a Team's Competition Plan is complete and meets the requirements of the competition. Entries that do not demonstrably use AI technologies, with clear evidence of understanding data, learning from experience, reasoning toward specific goals, and interacting with humans in a natural way, to augment human capabilities will not be accepted into the competition.

Grand Challenges

Teams are equally encouraged to be innovative in their choice of the grand challenge to which they will apply their AI Solutions. A grand challenge is one of the most significant problems that humanity currently faces. If it is not addressed, there are significant negative consequences for humanity including loss of life, reduction in health, lack of access, lack of well-being, environmental degradation, and inequality. If addressed, humanity and the planet move closer to an Age of Abundance where all species on our planet flourish. Consequently, addressing, or even solving, a grand challenge should have the potential to improve the lives of millions of people or other living beings.

Competition Structure

The IBM Watson AI XPRIZE competition will set an open challenge in AI. Rather than set a single, universal goal for all teams, this competition will invite teams of technologists in AI to each create their own goal, an application of AI to a grand challenge. Teams will then use their best available resources, along with the crowdsourced expertise of the professional AI community to develop a comprehensive Competition Plan. Each team will then demonstrate progress toward and achievement of that Plan over the course of a three-year competition culminating in a Grand Prize Competition on the TED 2020 stage in front of a live in-person/online audience. A panel of expert judges and the audience will crown a Grand Prize Winner and determine the rank of the runners up from the three finalists.

REGISTRATION

Teams must register by December 1, 2016. Registration will include:

1. Payment of a \$1,500 registration fee. Teams registering by October 15, 2016 are eligible for an Early Bird Discount of \$500.
2. Submission of a fully-completed Competitor Agreement (with XPRIZE); and
3. Submission of a fully-completed competition application.

Competition applications require submission of Application Summaries that include:

1. A grand challenge goal the team intends to achieve.
2. An explanation of the fundamental AI technologies to be used and developed by the team.
3. An overview of the team's current technology and development strategy.

COMPETITION PLAN

After completing the competition application and registering, teams will have until March 1, 2017 to develop a detailed Competition Plan. The Plan will include a more extensive project design, and will include a description of the technologies to be used/developed and the test strategies for evaluating those technologies. Competition Plans must include deployed applications with measurable benefits that include some aspect of AI technology. The Competition Plan may include either a stand-alone application or a component of a complex system, or a collaboration among multiple applications.

The Competition Plan should be clearly articulated in regards to:

- The scope of the problem to be solved
- The originality of the solutions, and their applicability in real cases addressing a grand challenge
- The test methods used to evaluate the solution, and testing scenarios
- The metrics to measure to performance of the solution

COMPETITION PLAN CONTENTS

Each Team's Competition Plan will provide its roadmap and criteria for the competition, and Teams will suggest the standards they will be measured by with the help of their reviewers. Each Competition Plan must include the following components:

Grand Challenge Goal – This is the grand challenge that the teams are choosing to address with their AI solution and how they intend to address it. The goal will be evaluated by the judging committee to ascertain its importance/benefit to humanity and the potential of the AI solution to meaningfully address the grand challenge.

Proposed Solution – Each Plan will include a detailed explanation of the approach the Team will use to achieve its proposed solution. Teams may include explanations of technological approaches and development pathways.

AI-Human Collaboration – Teams must explain how their proposed AI tool will work with humans to achieve the desired results and address the grand challenge.

AI Technologies – Plans must include a detailed explanation of the team’s approach to artificial intelligence. What functions does the technology perform? What kind of technology are they employing? And how will they themselves validate and test their technology as well as evaluate success?

Test Suites – Teams must propose their own system for testing and assessing the quality of their AI technologies and advancements.

Annual Milestone Plan – Competition Plans must include what teams propose to complete by each of the Milestones and for the final demonstration from the TED stage. Judges will review submissions with an eye towards technological advancement, impact, and creativity.

This is an open competition that encourages innovation in any form and doesn’t preclude any approach or solution compliant with these Guidelines. While Teams are encouraged to investigate and evaluate all available AI tools and services including IBM Watson, the use of IBM Watson is not required for this competition. Teams should build the best solutions they can: the use of IBM Watson technologies is not a scoring criterion and will not be an advantage or disadvantage to Teams.

XPRIZE judges and operations personnel may request additional information from teams during the development of these Plans. As a part of this process XPRIZE judges may mandate additional or alternative demonstration requirements.

TEST SUITES

Since each Team will be developing a unique solution, Teams are required to propose test plans to challenge and demonstrate the advancement of their Artificial Intelligence. Such test plans will be made public by XPRIZE as part of the contribution of the prize participants to the general community of AI and to allow independent verification of each Team’s results.

Test suites are intended to accomplish two goals. The first is to allow judges to determine the capabilities of entries by examining the tests themselves. Since the entries will not be *required* to expose their code or detailed designs, judges will need a way to independently evaluate the claimed capabilities of an entry. The second goal is to encourage competition on proposed challenges by providing a definitive test suite for measuring achievements against those challenges. By providing open source implementations of test suites, entries show both seriousness in their attempt to address a grand challenge as well as general interest in promoting the progress of the AI community at large. Motivating such long term collaboration is also a significant goal of this XPRIZE.

The specific form of the test suites (e.g., code, experimental protocol, etc.) will first be proposed by the teams, but the final requirements will be developed collaboratively with judges and XPRIZE staff. Proposing test suites early in the competition will allow judges to evaluate the progress of the team with respect to their original goals, but teams can continually reformulate their plans to find the best AI solutions to the most challenging problems. Judges are encouraged to allow teams flexibility to reformulate, but the burden of showing appropriate progress is on the competing teams.

Judges and XPRIZE staff may require teams to publicly submit test suites to GitHub or other public repositories. When technically possible, sufficient documentation must be provided to allow independent developers to install and execute the tests on suitable hardware. Tests will consist of a specified test environment which may include data sources, a set of example challenge tasks such as questions, goals, or activities, and at least one example of the results of a successful test and a failed test. Ideally, the test suite will also provide a score for the results of each task. Test suites may also include task generators that can randomly generate any number of test cases. It is understood that some grand challenges may not easily lend themselves to the use of automated test suites, and the Judges may make exceptions for this requirement in rare cases. But it is expected that even in grand challenges involving physically embodied systems such as robots, the developers will likely be using software simulation environments to test these systems which could be readily adapted and submitted as test suites. See <https://gym.openai.com> and <http://blogs.microsoft.com/next/2016/03/13/project-malmo-using-minecraft-build-intelligent-technology-for-two-excellent-examples>.

ACCEPTANCE

The Judging Panel may review all Competition Plans and decide which to accept into the competition. Acceptance will be based on the completeness of the Competition Plan, the audaciousness and utility of the proposed solution, and the comprehensiveness of the test suite. Acceptances will be announced on April 1, 2017, and Teams whose Competition Plans are accepted may proceed in the competition.

FOUR COMPETITION ROUNDS

The IBM Watson AI XPRIZE competition will take place over the course of four (4) rounds, the last of which will be held at the TED 2020 conference. Each round will take place within a calendar year, beginning with a comprehensive progress report and testing results submitted by the Team on August 1. XPRIZE staff may extend the deadline at its sole discretion.

Based on those comprehensive progress reports and other material the Judging Panel may request, the Judging Panel will eliminate 50% of Teams at the end of Round 1 on November 1, 2017. If there are more than 200 Teams participating, more than 50% will be eliminated, leaving a maximum of 100 Teams. On November 1, 2018, the Judging Panel will again eliminate teams until a maximum of 30 teams remain, concluding Round 2. In Round 3, all Teams must submit proposals for public demonstrations that will not be used as a basis for advancement in the competition, but will serve as a basis for an award. Up to 10 Round 3 Semi-finalists will be selected by the Judging Panel in September, 2019, and all other Teams will be eliminated. Those 10 Semi-finalists will compete at the end of 2019 at a live event, and three Finalists will be selected.

MILESTONE PRIZES

The first two rounds will also feature separate Milestone Prizes. Any Team nominated and interested in competing for that year's Milestone Prize will attend a Milestone event specified by XPRIZE staff. In November, the Judging Panel will announce up to 10 Teams selected to publicly demonstrate their work. A 1st and 2nd place Milestone Award will be given by the Judging Panel to the best of those demonstrations.

WILD CARD ENTRIES

As AI is such a rapidly advancing field, substantial innovations are likely to occur during the course of the competition. Two Wild Card rounds will permit new Teams with groundbreaking ideas to enter the competition. Unlike original entrants, it is expected that very few – if any – Wild Card Teams will be accepted. They must not only show a complete Competition Plan but also show that their Plan incorporates radical new ideas for solving extremely important grand challenges.

Registration for the first Wild Card Round will open on August 1, 2017 and close on December 20, 2017. Completed Competition Plans are due on March 1, 2018 and acceptances into the general competition will be announced following review from the judges. The registration fee for the first Wild Card Round is \$3,000 and may be assessed on teams reviewed by judges. Accepted Wild Card teams will submit their progress reports on August 1, 2018 along with continuing Teams. Teams eliminated from competition may include continuing and Wild Card Teams.

Registration for the second Wild Card Round will open on August 1, 2018 and close on December 20, 2018. Completed Competition Plans are due on March 1, 2019 and acceptances will be announced following review from the judges. The registration fee for the second Wild Card Round is \$5,000. Accepted Wild Card teams will submit their progress reports on August 1, 2019 along with continuing Teams. In September 2019, Wild Card teams may be invited to participate among the 10 Semi-finalists. All Teams not selected as Semi-finalists are eliminated from competition.

Any Team, including Teams previously eliminated from the competition, may register for either or both Wild Card Rounds.

Table 1 summarizes the competition elements by Round.

Table 1 – Summary of Competition Elements

	Round 1	Round 2	Round 3	Round 4
Year	2017	2018	2019	2020
Demonstration Event	NIPS December, 2017	To be determined	To be determined	TED 2020
Number of Winners	2	2	3	3
Awards Given	Milestone Prizes for 1 st and 2 nd Place	Milestone Prizes for 1 st and 2 nd Place	Three Finalists selected to present in the final competition at TED 2020.	Grand Prize (1 st Place), Runners Up (2 nd and 3 rd Places)
Teams Eliminated from Competition	50% or more, leaving no more than 100 Teams	50% or more, leaving no more than 30 Teams	Of 10 teams, all but 3 are eliminated.	N/A

Table 2 – Prize Designations

Award Type	Description
Milestone Prize	Two teams (1 st and 2 nd Places) will each win a cash prize for the best public demonstrations.
Semi-finalists	During Round 3, up to 10 Semi-finalist Teams – both continuing and Wild Card Teams – will be selected by the Judging Panel to demonstrate their technologies.
Finalists	At the conclusion of a live judging event in 2019, 3 of the 10 Semi-finalists will be selected by the Judging Panel as Finalists to proceed to the Grand Prize competition at TED 2020.
Grand Prize Winner	In Round 4, one Grand Prize Winner will be selected.
Runners Up	In Round 4, the other two Finalists will be awarded 2 nd and 3 rd place prizes.

Rounds 1-3

Each Round will follow a similar schedule:

- **Development Phase** (Timeline varies, up to 9 months) – Teams will work on developing/refining their technologies.
- **Progress Report** – Each August 1, Teams will submit comprehensive Progress Reports that show their accomplishments to date. The Judges will use this information to determine which Teams may continue in the competition at the end of the Round. The Judges may discuss the reports with each Team and ask for additional information. Teams may not initiate contact with judges. The Progress Report may also include any updates to the Team’s original project plan, including changes to the following year’s goals.
- **Milestone Prize Proposal** – In Rounds 1 and 2, Teams may compete in the Milestone Prize competitions. The Judges will select up to 10 Teams to participate in the competition, and 1st and 2nd Place Milestone Prizes will be awarded.

Judging and Scoring

- **Rounds 1-3** – In the first three rounds, the Judges will evaluate each Team’s Progress Report. Judges will look for substantive progress and continued innovation. Judges may discuss the reports with Teams,

the Advisory Board, or outside experts. All Progress Reports must include complete automated testing results in accordance with the Team’s Test Plan.

- **Milestone Prizes** – Based on their assessments, the Judges will select up to 10 Teams to compete for that year’s Milestone Prizes. Prizes will be awarded by the Judges with a procedure that can include audience feedback.
- **Round 4** – In Round 4, the 3 Finalist Teams will demonstrate from the TED stage before a live and online audience. The Judges will select the Grand Prize, Second Place and Third Place winners based on their own assessments and the votes of the TED audience. The guidelines for scoring criteria will be established and finalized by the Judging Panel prior to the TED Grand Prize competition.

Prize Purses

All prize purses are denominated and will be awarded in United States dollars (USD).

- **Grand Prizes** – Grand Prize, 2nd Place, and 3rd Place purses will be awarded at the end of competition Round 4 at TED 2020, for a total of \$4.5 million.
- **Milestone and Special Prizes** – Two Milestone Competition prize purses will be awarded at the end of each of the first two rounds of competition, and the Judges may award additional Special Prizes to recognize special accomplishments. A total of \$500,000 is available for these prizes and will be allocated by the Judges at their sole discretion. One Milestone prize of \$100,000 will be designated the "Watson Prize," and will be awarded by the judges.

Competition Timeline

The IBM Watson AI XPRIZE competition will take place over the course of four (4) rounds. Table 3 outlines the different competition activities and timeline for the competition.

DATE	EVENT
June 2016	Release of Competition Guidelines, registration opens
July 2016	Guidelines closed for public comment
October 2016	IBM Watson World of Watson Event
November 15, 2016	Deadline for discounted (\$1,000) Early Bird registration

November 1 2016	30-day notice of registration closing
November 15 2016	IBM developer conference, last call for registration
January 19 2016	Registration closes
ROUND 1	
March 1 2017	Teams submit complete Competition Plans
May 2017	XPRIZE announces Official Teams
September 1 2017	Wild Card Round 1 registration opens
September 1 2017	Progress reports due for first judging round Milestone Award applications due
October 23 2017	Judges announce 10 teams invited to demo at Milestone Award Event
December 2017	Teams continuing to Round 2 are announced
December 2017	NIPS Milestone Competition 1 Milestone Award Event
December 20 2017	Wild Card Round 1 registration closes
ROUND 2	
March 1 2018	Wild Card Round 1 Competition Plans due

May 1 2018	Judges announce accepted Wild Card teams
August 1 2018	Wild Card Round 2 registration opens
September 1 2018	Progress reports due for second judging round Milestone Award applications due
November 2018	Judges announce 10 teams invited to Milestone Award Event
November 2018	Teams continuing to Round 3 are announced
December 2018	Milestone Competition 2 Award Event
December 20 2018	Wild Card Round 2 registration closes
ROUND 3	
March 1 2019	Wild Card Round 1 Competition Plans due
May 2019	Judges announce accepted Wild Card teams
September 1 2019	Entries due for third judging round
November 2019	Judges announce their selection of 10 Semi-finalist Teams.All other teams are eliminated.
December 2019	Semi-finalist Competition 10 Semi-finalists compete 3 Finalists are selected

ROUND 4: GRAND PRIZE COMPETITION	
April 2020	Grand Prize Competition at TED Grand, 2 nd Place, and 3 rd Place Prizes awarded

Selection of Advisors

XPRIZE will form panels of relevant Advisors to serve on Advisory Boards for the Competition. These Boards will remain in place throughout the Competition to advise XPRIZE regarding all aspects of the design and implementation of the Competition. Each Advisor will enter into an Agreement with XPRIZE that will: (i) outline Advisor’s duties and obligations; (ii) require Advisor to maintain confidentiality of XPRIZE’s and Teams’ Confidential Information, in accordance with the Agreement; and (iii) require Advisor to acknowledge that he or she shall make no claim to any Team’s Intellectual Property.

These panels will be independent of XPRIZE and all Teams and Team Members. No Advisor, nor any member of Advisor’s immediate family, shall participate, nor have any financial or other material interest, in any Team or Team Member. All Advisors shall promptly disclose to XPRIZE any such current, former, or expected future conflict of interest with XPRIZE, the Title Donor, and/or any Team or Team Member.

Advisory Board

The duties and responsibilities of the Advisory Board may include, but not be limited to: (i) assisting with the establishment of qualifications for prospective Judges; (ii) recommending members of the Judging Panel; (iii) providing input related to testing protocols and judging criteria, including the standard technical specifications and economic values; (iv) and providing input toward the development of these Competition Guidelines.

Judging Panel

The Judging Panel (as defined in the Agreement) will be comprised of highly qualified and impartial Judges. XPRIZE, in its sole and absolute discretion, will recommend Judging Panel candidates to the Advisory Board for its review and consideration. The Advisory Board will recommend the candidates it believes are best suited to serve on the Judging Panel. Judges will be subject to the same standards of impartiality and confidentiality applied to Advisors.

Role of Judging Panel

The duties and responsibilities of the Judging Panel will include, but not be limited to: (i) evaluating Teams’ compliance with the Agreement, these Guidelines, and the Rules and Regulations for the purposes of the Competition; and (ii) the awarding of points and selection of Teams and Entries that will proceed to each subsequent phase of the Competition.

Grounds for Judging Panel Decisions

Official decisions made by the Judging Panel will be approved by a majority of the Judges that vote on each decision after careful consideration of the testing protocols, procedures, guidelines, rules, regulations, criteria, results, and scores set forth in the Agreement, these Competition Guidelines (including the Rules and Regulations to be attached hereto), and all other applicable Exhibits to the Agreement. If any vote of the Judges results in a tie, then the Judging Panel shall determine, in its sole and absolute discretion, the mechanism to settle the tie. Similarly, if one or more Teams or Entries are tied at any stage during the competition, the Judging Panel shall

have the sole and absolute discretion to settle the tie. If no Entry meets the criteria for an Award, then the Judging Panel will retain sole and absolute discretion to declare or not declare a winner of the Competition and/or otherwise allocate or choose not to allocate one or more of the Awards and/or any other Award associated with the Competition.

Decisions of Judging Panel Are Final

The Judging Panel shall have sole and absolute discretion: (i) to allocate duties among the Judges; (ii) to determine the degree of accuracy and error rate that is acceptable to the Judging Panel for all Competition calculations, measurements, and results, where not specified in the Rules and Regulations; (iii) to determine the methodology used by the Judging Panel to render its decisions; (iv) to declare the winners of the Competition; and (v) to award the Prize Purses and other Awards. Decisions of the Judging Panel shall be binding on XPRIZE, the Team, and each Team Member. XPRIZE and the Team agree not to dispute any decision or ruling of the Judging Panel, including decisions regarding the degree of accuracy or error rate of any Competition calculations, measurements, and results. The Team shall have no right to observe other Teams' testing or evaluation, or to be informed of other Teams' calculations, measurements, and results, unless such information is made publicly available by XPRIZE.

Team Audits

XPRIZE or judges may require teams to supply additional evidence at any time supporting the claims made by the team in current or past competition rounds. All teams potentially invited into the final round of the competition will be required to substantiate the claims of their current and past reports. These auditors may be XPRIZE staff, judges, or an outside contractor bound by confidentiality and conflict of interest requirements. Judges will be provided the results of audits and may remove teams from the competition at any time on the basis of the audit results.