

# General-purpose Reality.eth Oracle

## Question Resolution Policy

Reality.eth is a crowd-sourced on-chain smart contract oracle using a bond escalation mechanism for verifying real-world events on-chain. Combined with Kleros decentralized dispute resolution services, it provides a subjective oracle solution able to answer absolutely any question with a publicly verifiable answer. This policy serves one main purpose:

**Ensuring that general-purpose Reality.eth questions  
going to arbitration are resolved correctly.**

These rules define the basic principles that must be observed when participating as a juror in the arbitration of a general-purpose Reality.eth question. It is intended to gather the rules and assumptions applicable to all types of questions so that they don't have to be included in the statement of the Reality.eth question itself.

In the event of any direct logical conflict between this policy and a condition or another document referenced in the Reality.eth question statement, the latter shall supersede the current policy (with the exception of the rule about violent immoral behaviour).

## How to interpret a Reality.eth question?

The Reality.eth question statement shall take the form of a sentence worded or expressed so as to elicit an answer and be associated with an opening date and a question type.

To determine the answer to this question statement, a juror should take into account the meaning of the question, the availability of a publicly verifiable answer at the opening date, the fact that the answer can be expressed via one of the types of answers provided, and the following guidelines.

## Question Resolution Guidelines

### Questions that should be resolved as “Invalid”

- If the answer to the question is not known by its Opening Date, whether it is due to a wrong setting of the opening date or an unexpected event delaying the knowledge of the result, it will be resolved as invalid.
  - **Valid:** *“Will Trump get reelected in the 2020 United States presidential election?” with 06/11/2021 as a resolution date.*

- **Invalid:** *“Will Trump get reelected in the 2020 United States presidential election?” with 02/09/2020 as a resolution date. (assuming the election process is kept as initially planned).*
- If the question’s statement references relative dates, it will be resolved as invalid.
  - **Invalid:** *Who will be the president of the United States in 6 months? (“in 6 months depends on the current time”).*
- If the question is about moral values and not facts, it will be resolved as invalid.
  - **Invalid:** *“Is it ethical to eat meat?”.*
- If none of the answers provided to answer the question are valid, the question will be resolved as invalid.
  - **Invalid:** *“What is the result of 1+1?” with the outcomes “0” and “1”.*
- If the question provides multiple answers that are valid and the question type was not “Multiple Choice”, it will be resolved as invalid.
  - **Invalid:** *“Who will be the Time person of the year 1937?” with answers “Chiang Kai-shek” and “Soong Mei-ling” (they got the prize jointly).*
- If the question directly incentivizes immoral violent (such as murder, rape or unjust imprisonment) actions that could likely be performed by any participant, it will be resolved as invalid.
  - **Invalid:** *Will Donald Trump be alive on 01/12/2021? (Anyone could bet on “No” and kill him for a guaranteed profit. Anyone could bet on “Yes” to effectively put a bounty on his head).*
  - **Invalid:** *Will Hera be a victim of swatting in 2020? (Anyone could falsely call the emergency services on him in order to win the bet).*
  - This does not prevent questions:
    - Whose topics are violent events not caused by conscious beings.
      - **Valid:** *How many people will die from COVID19 in 2020? (Viruses don’t use oracles).*
    - Whose main source of uncertainty is not related to a potential violent action.
      - **Valid:** *Will Trump win the 2020 US presidential election? (The main source of uncertainty is the vote of US citizens, not a potential murder of a presidential candidate).*
    - Which could give an incentive only to specific participants to commit an immoral violent action, but are in practice unlikely.
      - **Valid:** *Will the US be engaged in a military conflict with a UN member state in 2021? (It’s unlikely for the US to declare war in order to resolve this question).*
      - **Valid:** *Will Derek Chauvin go to jail for the murder of George Floyd? (It’s unlikely that the jurors would collude to make a wrong verdict in order to resolve this question).*

## Default assumptions

Reality.eth question submitters are encouraged to make their questions as clear as possible. However, in order to avoid insufficiently detailed questions to resolve as invalid, the following assumptions shall be made:

- All dates default to UTC with the 24h clock.
  - *Ex: “Will Ethereum 2.0 be launched before the 2030-01-01?” will be interpreted as “Will Ethereum 2.0 be launched before 2030-01-01 00:00 UTC?”.*
- Dates using “/” are assumed to be written in the DD/MM/YYYY or DD/MM/YY format. In case centuries are omitted (DD/MM/YY), centuries are assumed to be the same as the resolution time.
  - *Ex: “Will Ethereum 2.0 be launched before the 01/01/30?” will be interpreted as “Will Ethereum 2.0 be launched before the 1st January 2030” (assuming the resolution date is in the 21th century).*
- If no specific event date is given in a question, it is assumed that the resolution date will be considered the event date.
  - *Ex: “Will there be a human living on Mars?” With a resolution date of 01/01/2030 will be interpreted as “Will there be a human living on Mars on 01/01/2030?”.*
- Entities are assumed to reference the most obvious entity with that name, taking the context into account.
  - *Ex: “Will Michael Jordan receive the 2021 Turing award?” refers to the computer scientist Michael I. Jordan whereas “How many points will Michael Jordan score in the FIBA Americas Championship?” refers to Michael J. Jordan, the basketball player.*
- In case units are omitted, they are assumed to be the units that are the most often used in this particular situation.
  - *Ex: “Will a NFT be sold for more than one million in 2021?” will be interpreted as “Will a NFT be sold for more than 1 000 000 USD in 2021?”.*
- If no specific rounding method is given, values are to be rounded to the nearest proposed value or range, middle toward 0.
  - *Ex: With choices -100, 0 and 100. 77->100, 50->0, -50 -> 0. Ex: With choices A: 0-2, B: 3-5 and C: 6+. 1->A, 8->C, 5.5->B, 2.2->A.*
- For questions of the “Number” type, the maximum possible value in base units is ( $2^{256} - 2$ ). If the answer to the question is greater than this value, this value should be returned. The minimum value is 0. If the answer to the question is lower than this value, 0 should be returned.
  - *Ex: “What is the estimated amount of atoms in the universe?” will have for answer ( $2^{256} - 2$ ).*
- For questions of the “Date” type, the maximum possible value is ( $2^{256}-2$ ) after 1970-01-01 00:00 UTC (approximately year  $10^{77}$ ). If the answer to the question is greater than this value, this value should be returned. The minimum value is 1970-01-01

00:00 UTC. If the answer to the question is lower than this value, 1970-01-01 00:00 UTC. should be returned.

- *Ex: "When was the first programmable computer built?" will have for answer 1970-01-01 00:00 UTC.*

## How to resolve unclear questions?

In general, if the question does not break a rule of the Invalid Question section, reasonable efforts should be made to determine its answer, even if the question is not 100% technically perfect.

- If the question contains some grammar or orthographic errors, it should resolve as if it didn't contain those errors, as long as the meaning of the question is still clear.
  - *Ex: "Will Donald Treump win the US presidential election?" should resolve in the same manner as "Will Donald Trump win the US presidential election?"*
- If the question makes an assumption that appears to be incorrect, it should resolve as if this assumption hasn't been made, as long as the meaning of the question is still clear.
  - *Ex: "Will Vitalik tweet about Omen by Wednesday, July 7, 2020?" with July 8th as a resolution date should resolve in the same manner as "Will Vitalik tweet about Omen by July 7, 2020?", even if July 7, 2020 is actually a Tuesday.*
  - *Ex: "Will president Kim Jong-un publicly announce a direct military action against the US?" should resolve in the same manner as "Will Kim Jong-un publicly announce a direct military action against the US?" even if Kim Jong-un is the supreme leader of North Korea but not its president (the official president of North Korea is Kim Il-sung despite him being dead).*
- If the question doesn't mention a specific source, the most credible outcome should be reported. In order to determine the credibility of an outcome, the number of sources and their credibility are to be taken into account. Credibility of sources and of outcomes should be assessed according to facts, not unproven beliefs.
  - *Ex: "Will extraterrestrial lifeforms visit planet earth?" will resolve to No, unless a number of credible sources announce it, despite some people reporting having experienced such encounters.*
  - *Ex: "How many people will die of COVID19 in 2020?" should be answered according to numbers reported by renowned health organizations and not according to some public figures claiming COVID19 to be a hoax.*
- If a question can have different interpretations, but all those interpretations lead to the same outcome, this outcome should be reported. If no interpretation is clearly more reasonable than the others, the question should be reported as invalid.
  - *Ex: "Which party will win the October 2012 Czeck elections?" Should be reported as "Czech Social Democratic Party". Even if there were both senatorial and regional elections at the same date and the election the question refers to is ambiguous, the "Czech Social Democratic Party" won both of them.*
  - *Ex: "Which party will win the October 2015 Czech elections?" Should be reported as invalid because "Christian and Democratic Union – Czechoslovak People's Party" won the senatorial election but "ANO 2011" won the regional ones.*

- The fact that multiple outcomes could be valid at the same time does not make the question invalid if only one of those outcomes occurs.
  - *Ex: “How many seats will the European Pirate Party win in the 2014 European elections?” with answers “0”, “1-10”, and “10+” will only be invalid if the pirate party wins exactly 10 seats.*

## How to consult documents referenced in a Reality.eth question?

A question statement can potentially reference a document describing more in detail the specific resolution guidelines for a question because those were too long to fit in the question statement. This is how to consult this type of document:

- If the document referenced in the question is an IPFS URI (*ipfs://[DocumentHash]*), you can access it by opening it with an IPFS-compatible browser or by using a public IPFS gateway host and browsing to this address: *https://ipfs.io/ipfs/[DocumentHash]*
- If the document referenced in the question is an ENS domain (example.eth), you can consult the Text Records linked to it by looking up the ENS domain on Etherscan ([Ethereum Name Lookup](#)), then click on “Click to see more” in the Overview section to display the Text Records fields where the document IPFS URI should be recorded. You can then use the above explanation to access it.