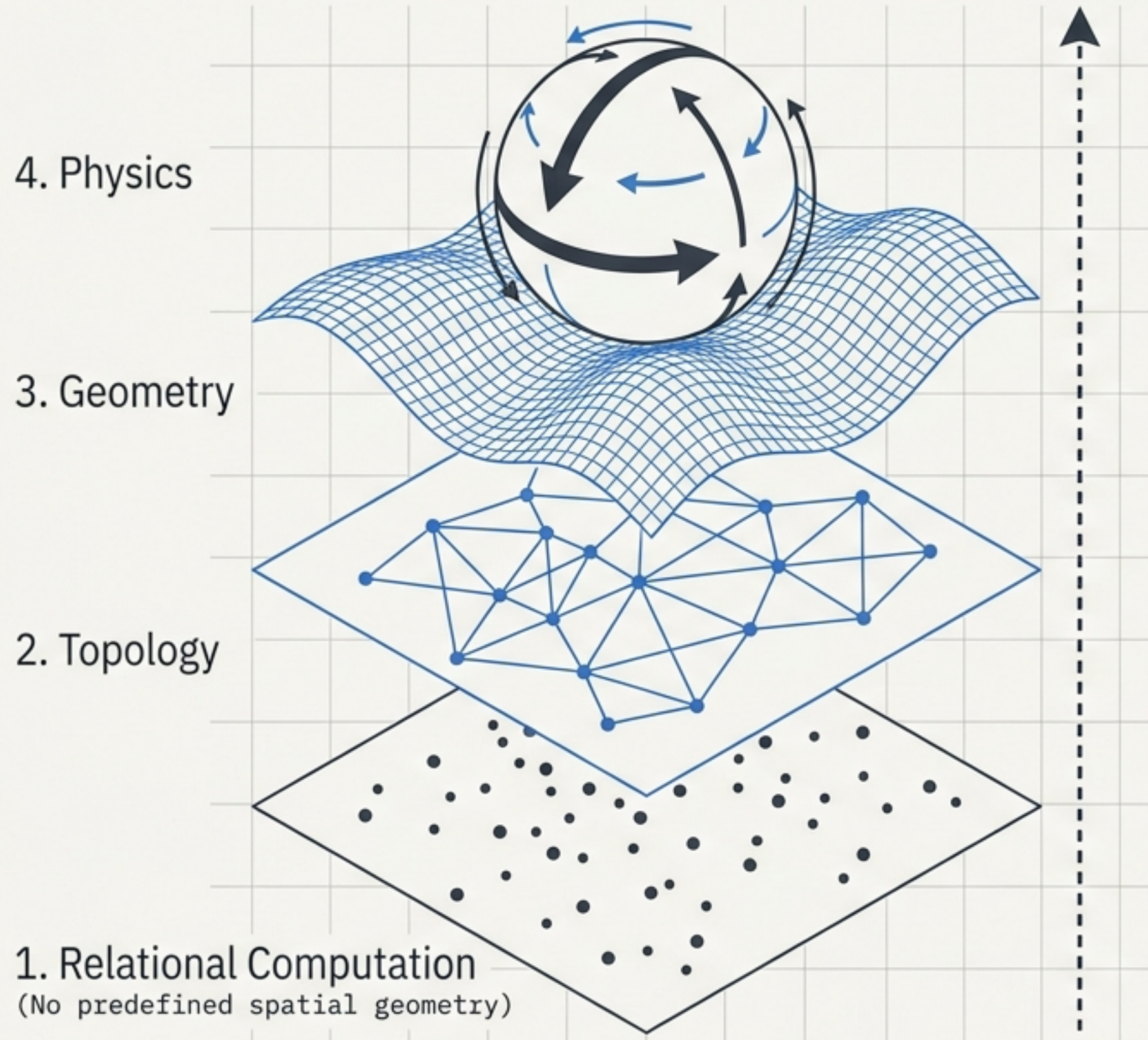


Protocol for the CBR Open Experimental Network

Making Compute-Based Reality Testable

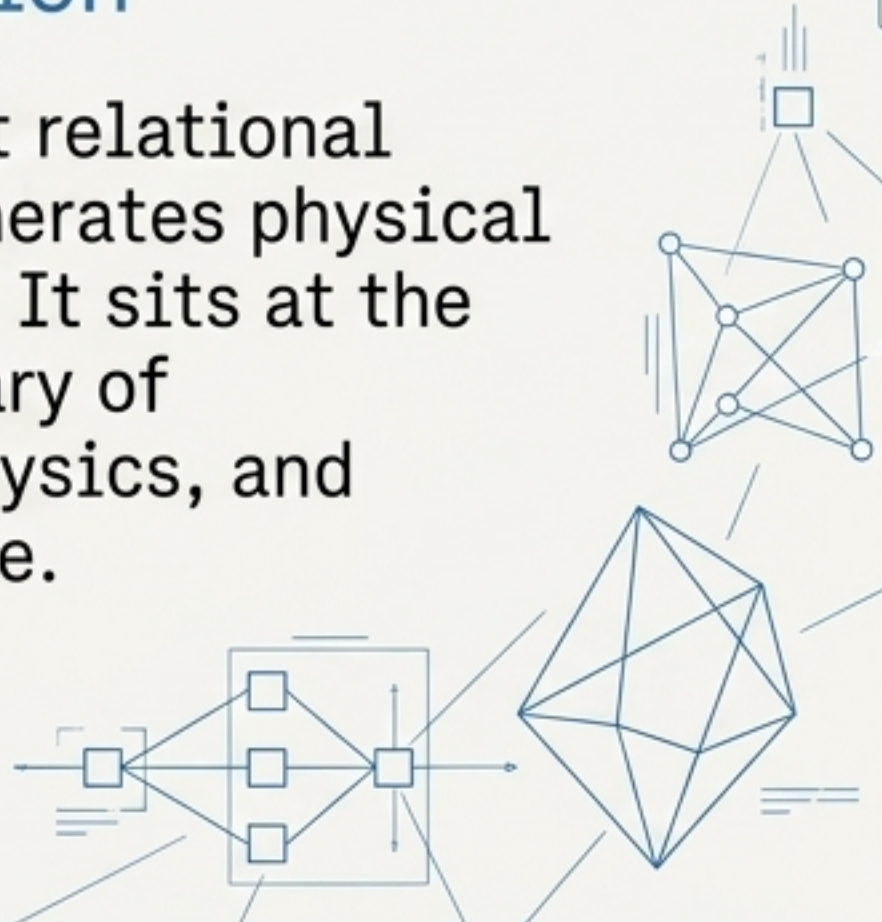


Can spatial and physical structures emerge as effective descriptions of deep computational organization?

The Scientific Friction at the Boundary of Physics

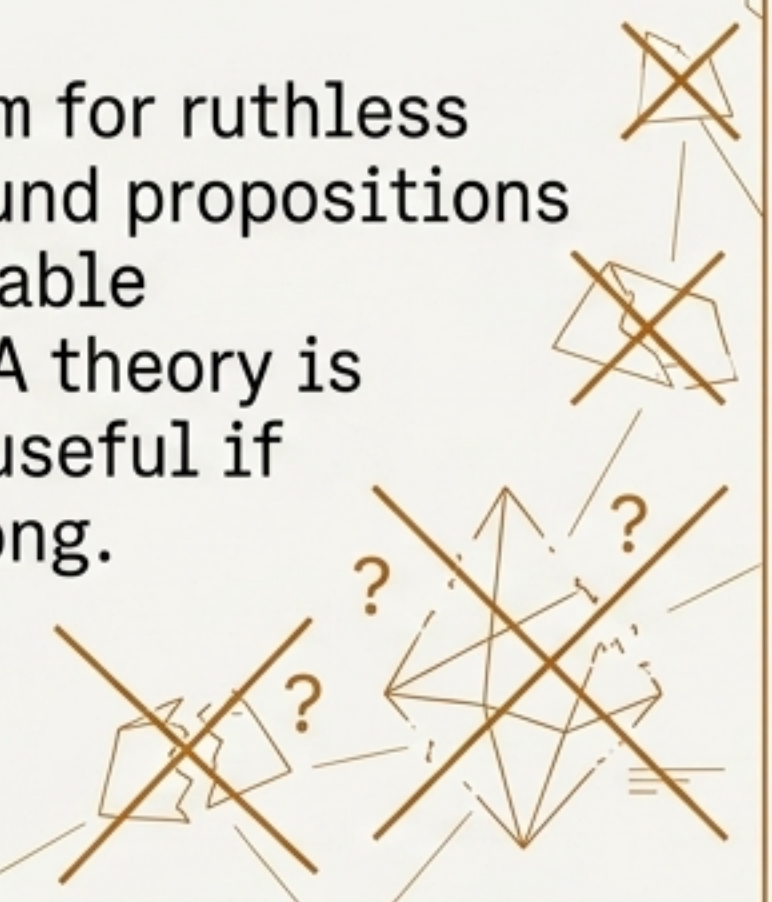
The Proposition

The premise that relational computation generates physical law is profound. It sits at the absolute boundary of mathematics, physics, and computer science.



The Danger

Without a mechanism for ruthless falsification, profound propositions degrade into untestable theoretical dogma. A theory is only scientifically useful if it can be proven wrong.

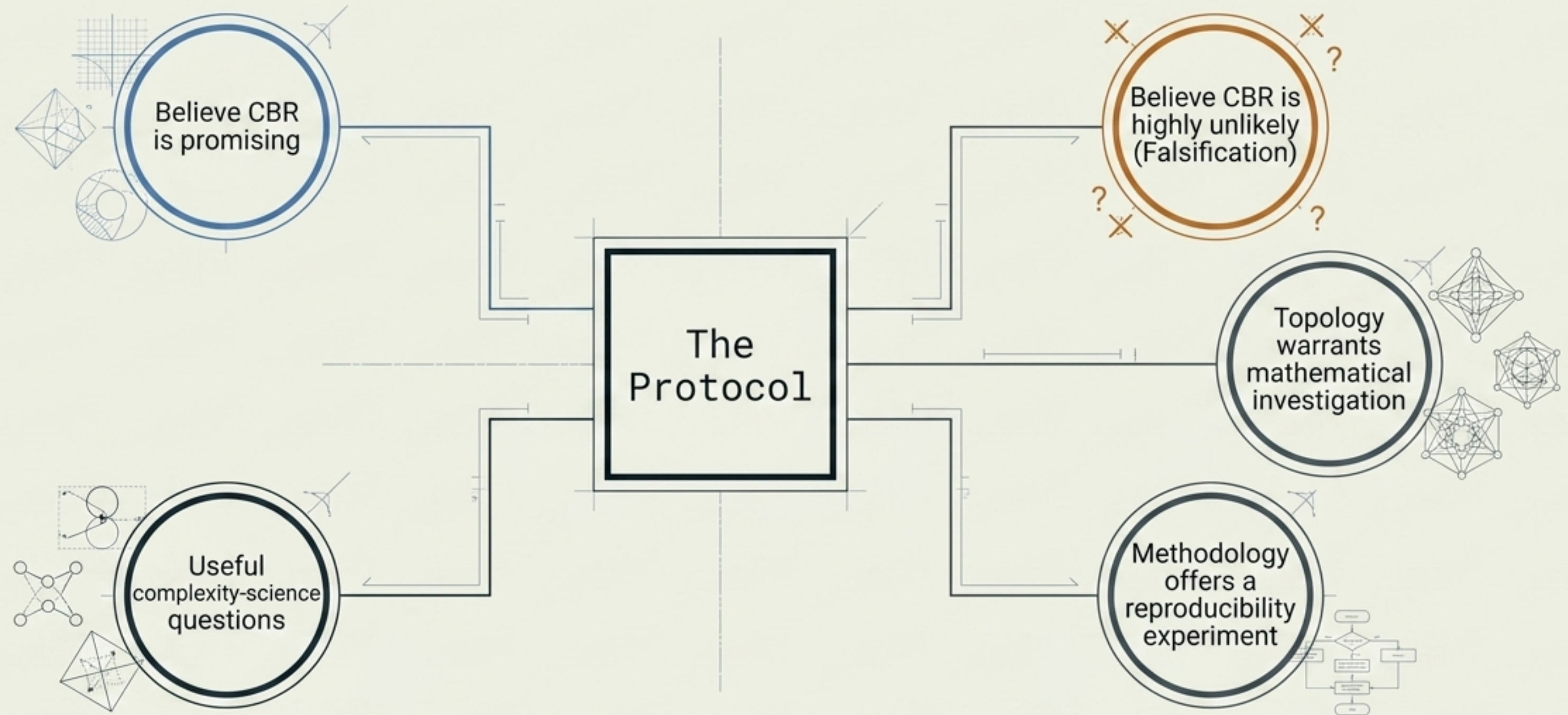


THE THEORY IS ONLY USEFUL IF IT CAN BE RUTHLESSLY FALSIFIED.

**CBR-OEN does not exist to ~~prove~~
Compute-Based Reality. It exists
to make Compute-Based Reality
testable.**

A Network Built on Cooperative Disagreement

Participation requires zero theoretical consensus.



Agreement on the protocol is everything.

The Ten Founding Principles

01



Testability
before advocacy

02



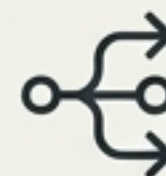
Specification
before execution

03



Independence of
implementation

04



Separation of
roles

09



Open evidence
defaults

05



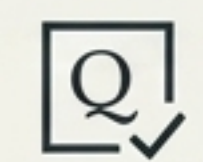
Negative results
are first-class
results

06



Provenance is
part of the
evidence

07



Mathematical
criticism is
encouraged

08



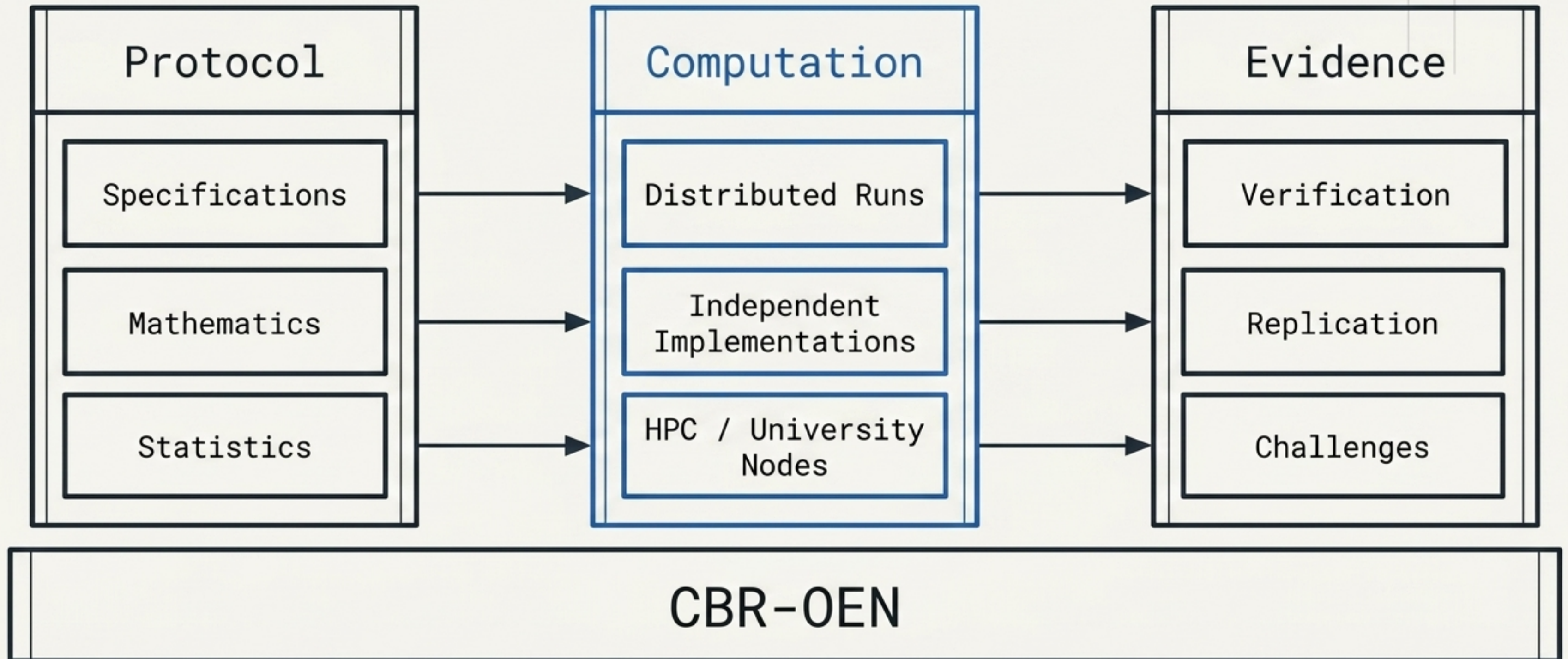
Institutional
autonomy

10

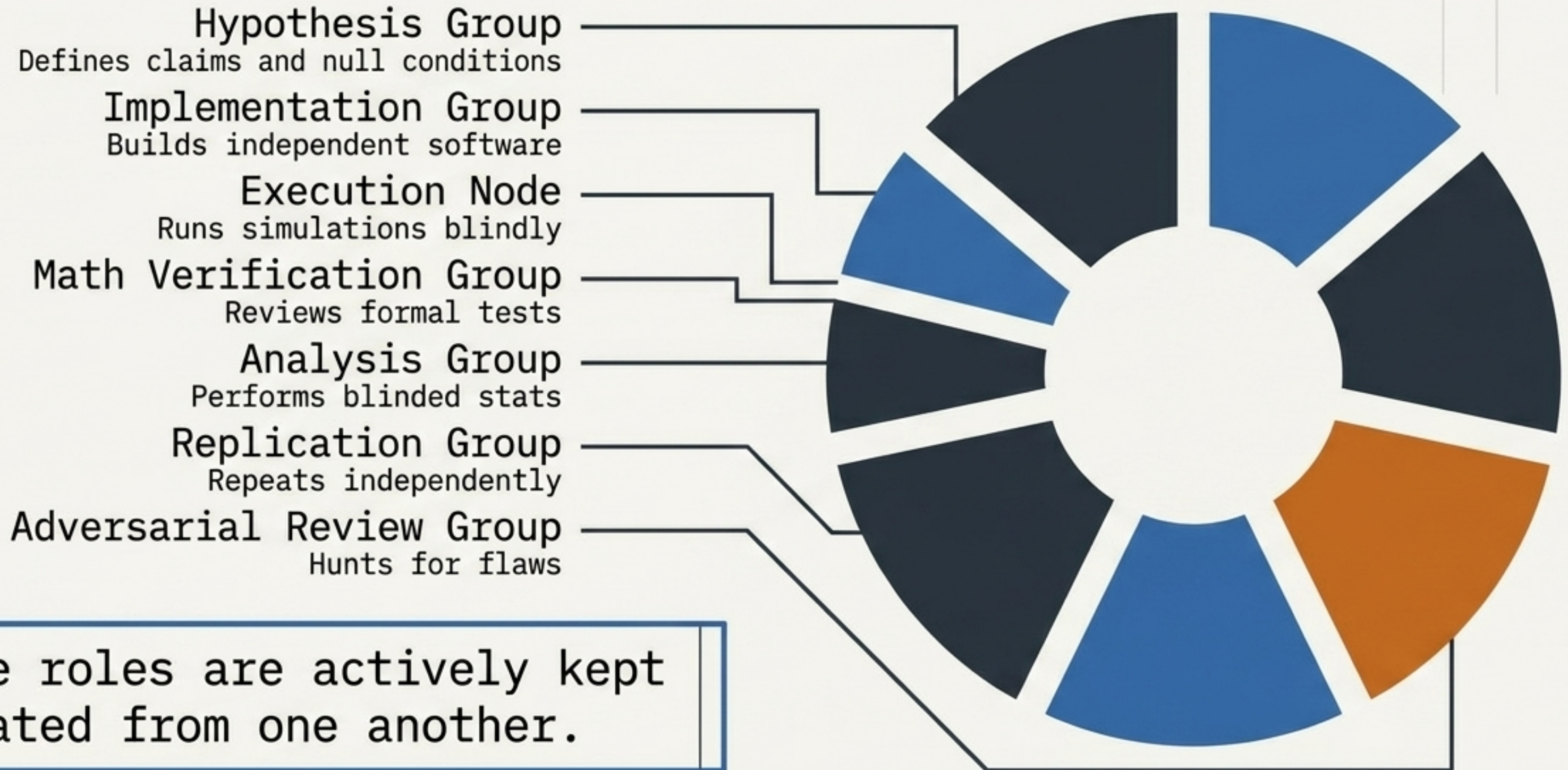


No experiment
proves the whole
theory

Decoupling the Science: The Federation Model



The Active Separation of Scientific Roles



Adversarial Collaboration: The Tension Triad

No major experiment begins without pre-agreed failure criteria.

Proponent

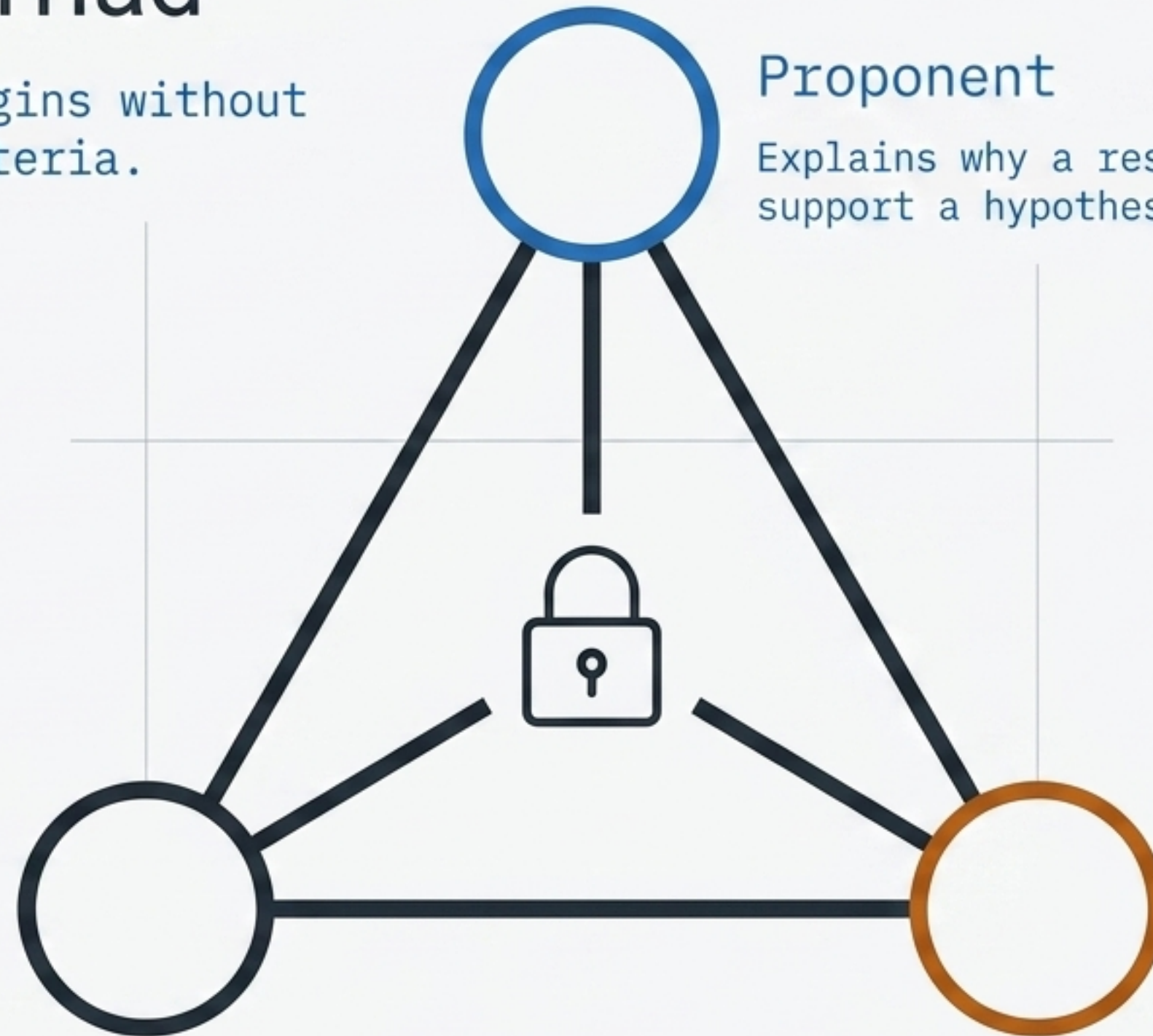
Explains why a result may support a hypothesis.

Verifier

Determines whether the agreed mathematical test was actually satisfied.

Sceptic

Defines competing explanations and exact failure criteria.

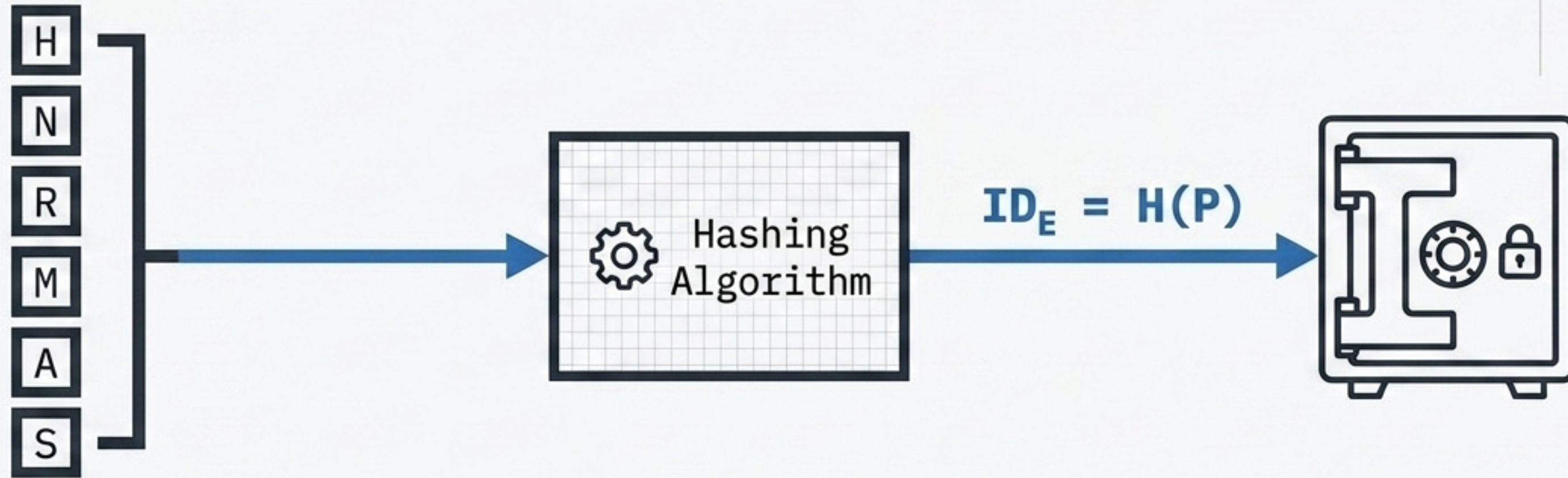


The Specification is the Experiment (Not the Code)

Implementations change. The scientific artefact remains immutable.

```
experiment: CBR-E001
  geometry_encoded: false
  excluded_selection_objectives: [spatial_dimension, manifold_score]
  randomness:
    deterministic_from_seed: true
```

Cryptographic Preregistration



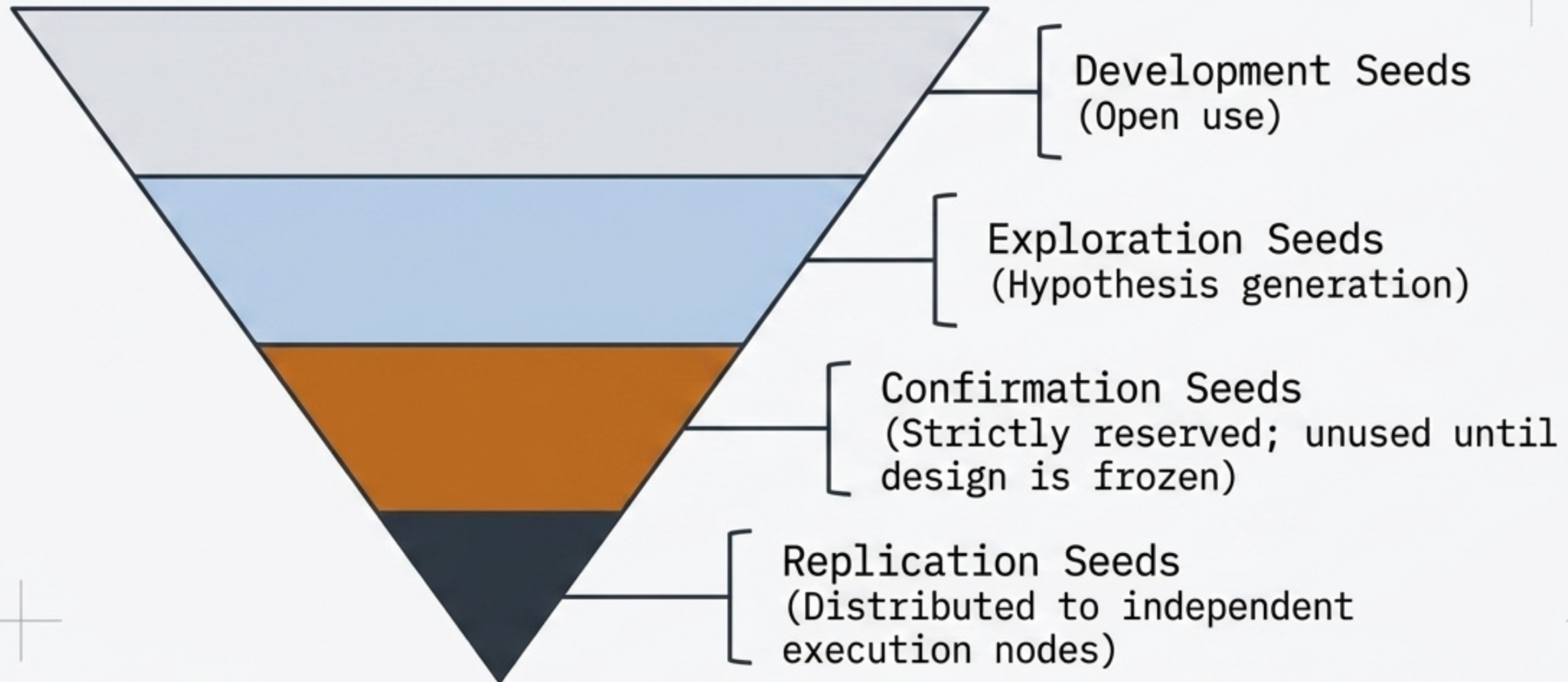
1. Package Formulation:
Freeze Hypothesis (H), Null (N),
Rules (R), Measurements (M),
Analysis (A), Seeds (S).

2. Cryptographic Digest:
Generate $ID_E = H(P)$.

3. Timestamp & Publish:
The digest is sealed. Changes
after this point create a
completely new experimental
! version. **Exploratory analysis** is
permitted but strictly labeled.

The Hierarchy of Randomness

Randomness must itself be mathematically reproducible.



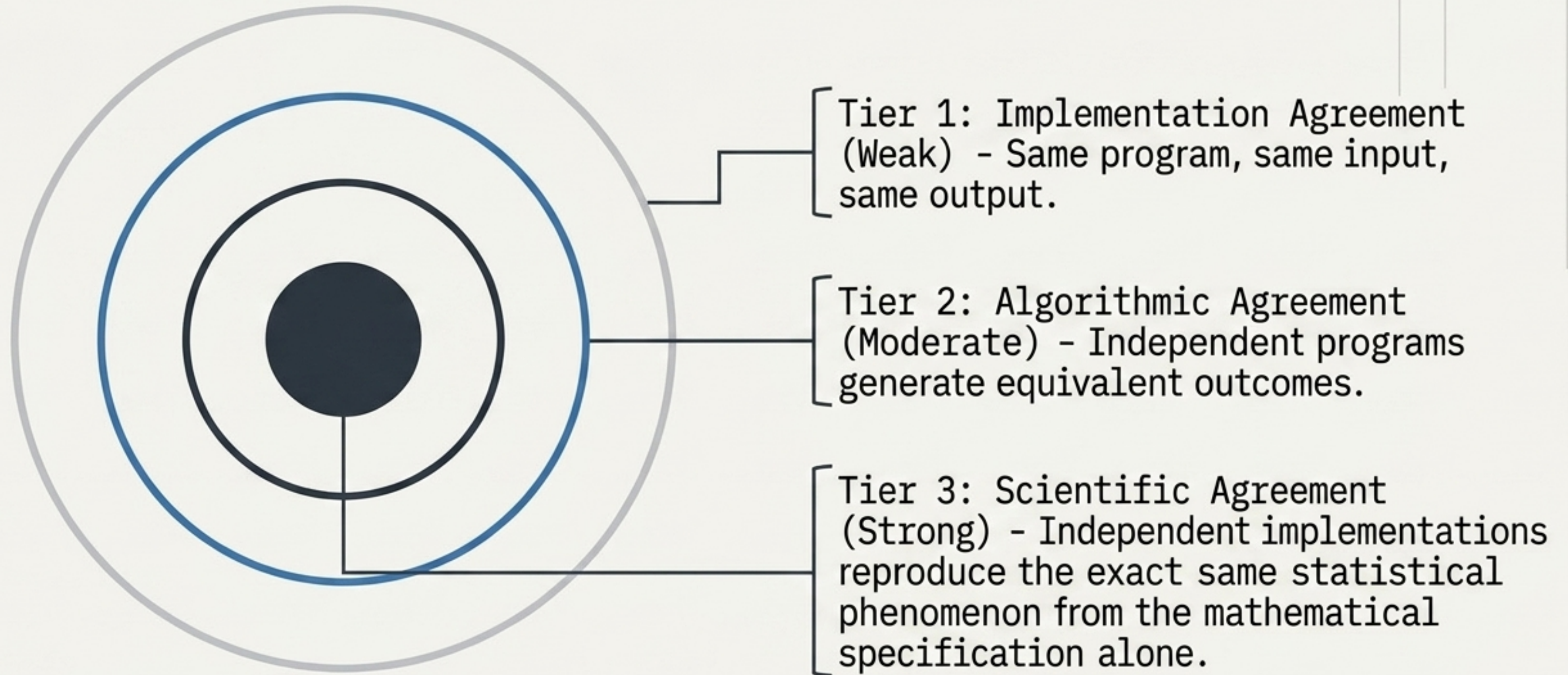
The Run Manifest: Proof of Event

A run is not an output file. It is an immutable mathematical proof.

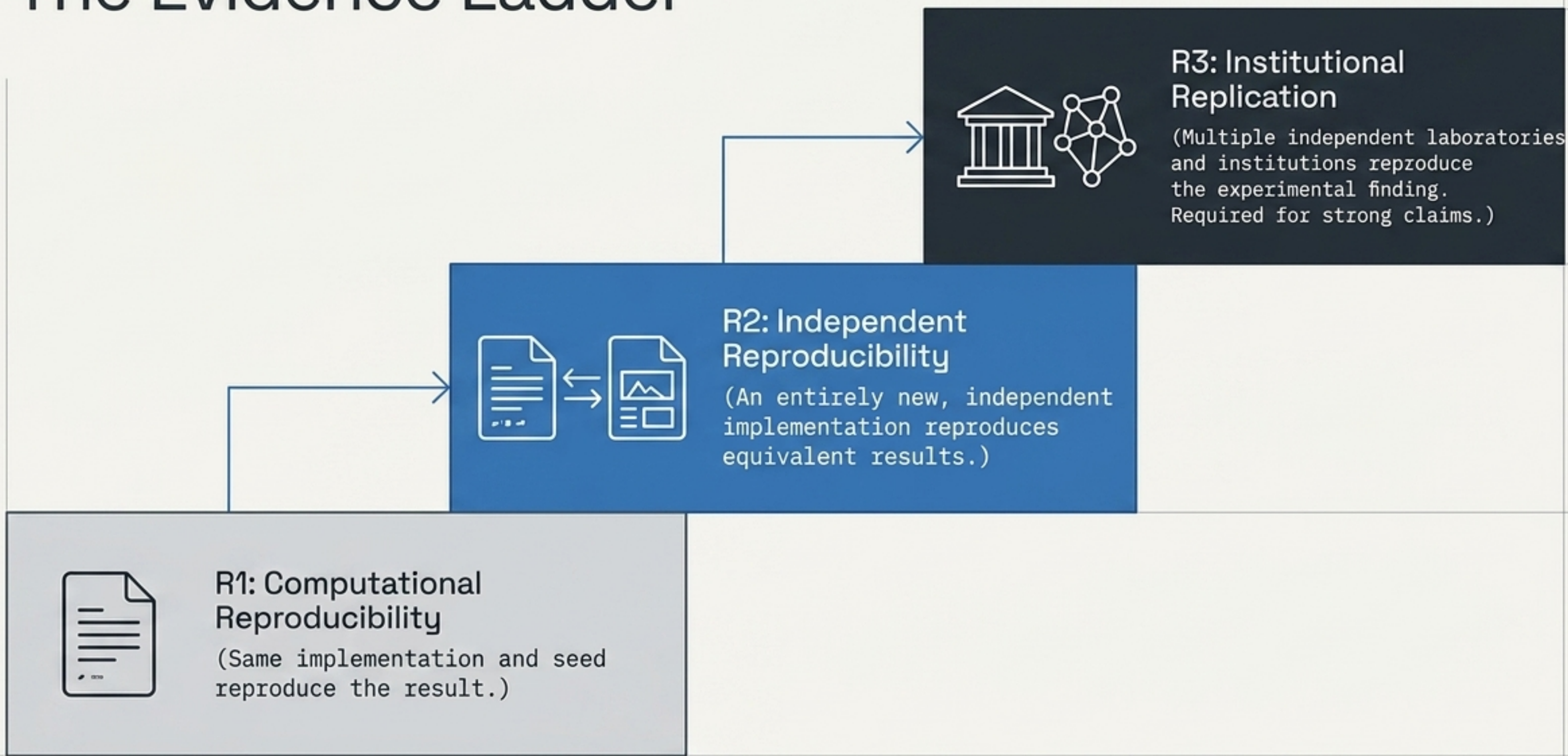
$$R_i = H(E_i, C_i, S_i, ENV_i, O_i)$$



The Independent Implementation Protocol

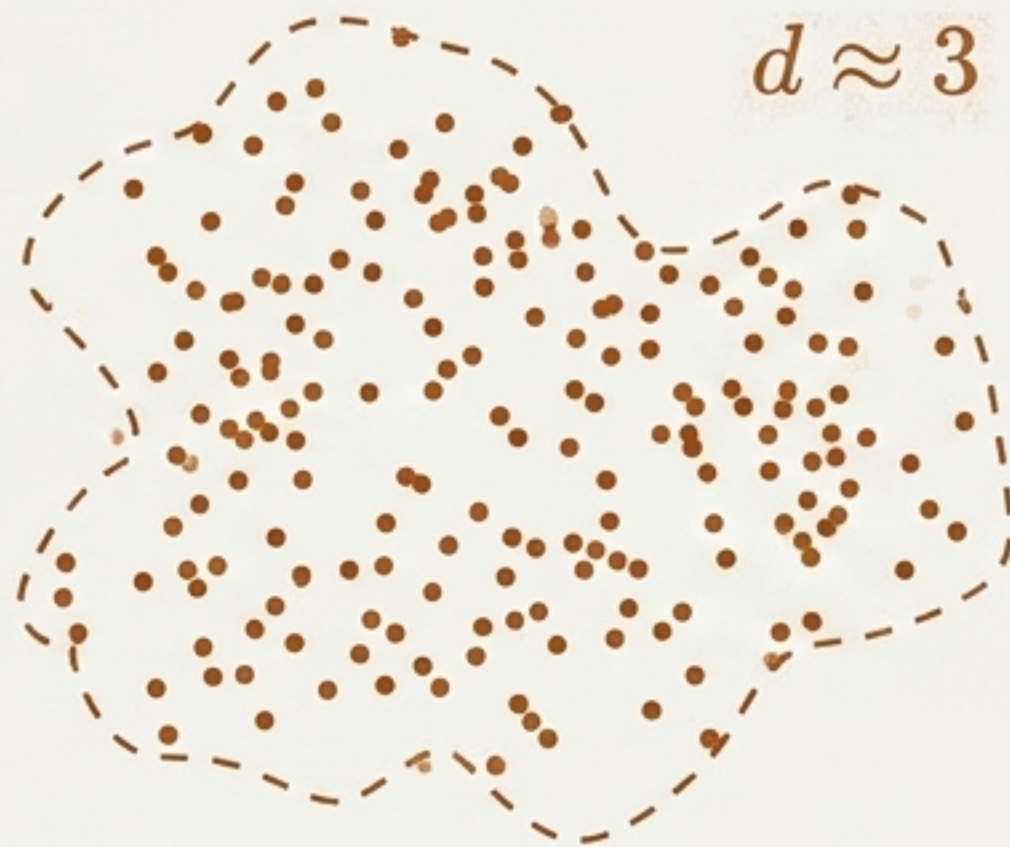


The Evidence Ladder



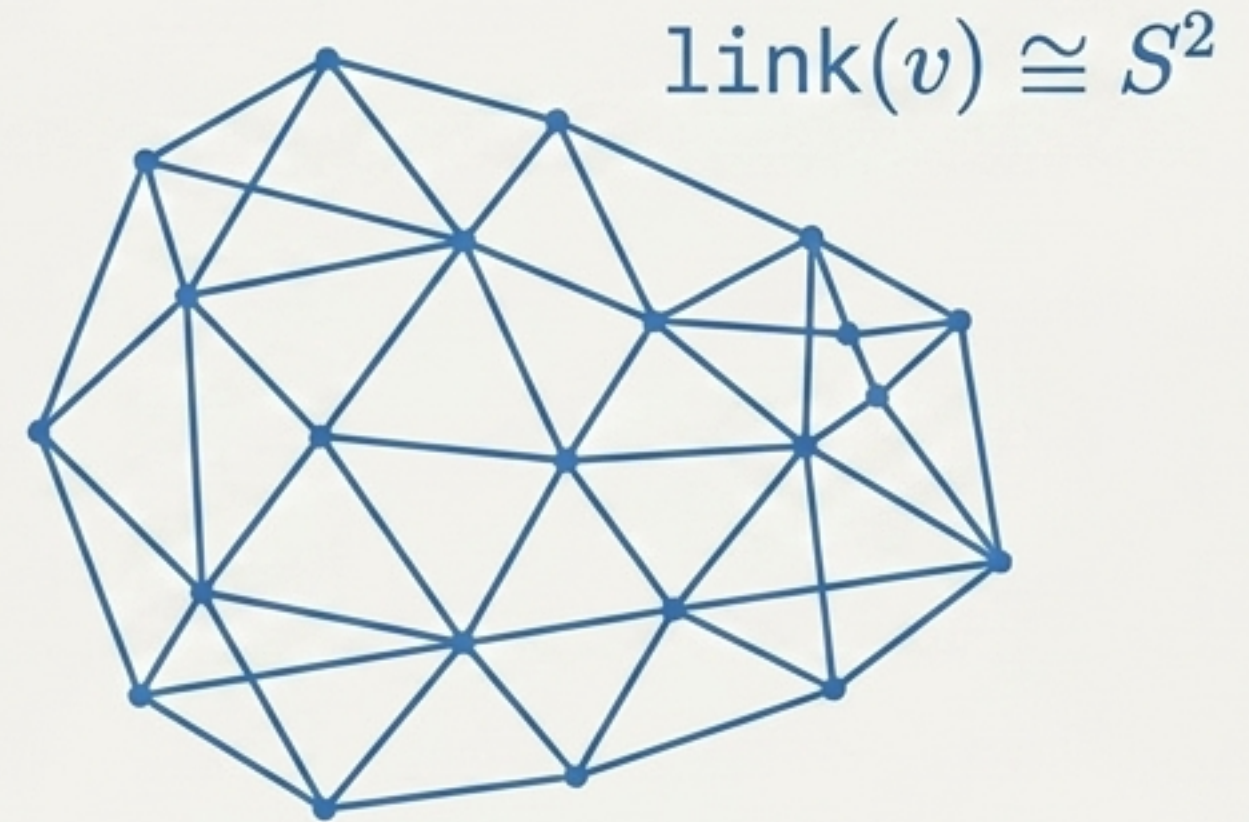
Numerical Resemblance vs. Mathematical Validation

Insufficient Validation



Numerical findings like $d \approx 3$ do not imply a structure is a 3-manifold. Rule discovery cannot double as confirmation.

Mathematical Validation



A 3-manifold candidate requires mathematical tests for local homology, Euler characteristic, and simplex incidence. Example condition: $\text{link}(v) \cong S^2$ for interior vertices.

Eradicating Publication Bias

Negative findings are indexed as first-class scientific results.

Traditional Publication

- ~~Consensus-driven~~
- ~~File-drawer problem hides failures~~
- ~~Disagreements suppressed~~
- ~~PDF-based.~~

CBR-OEN Protocol

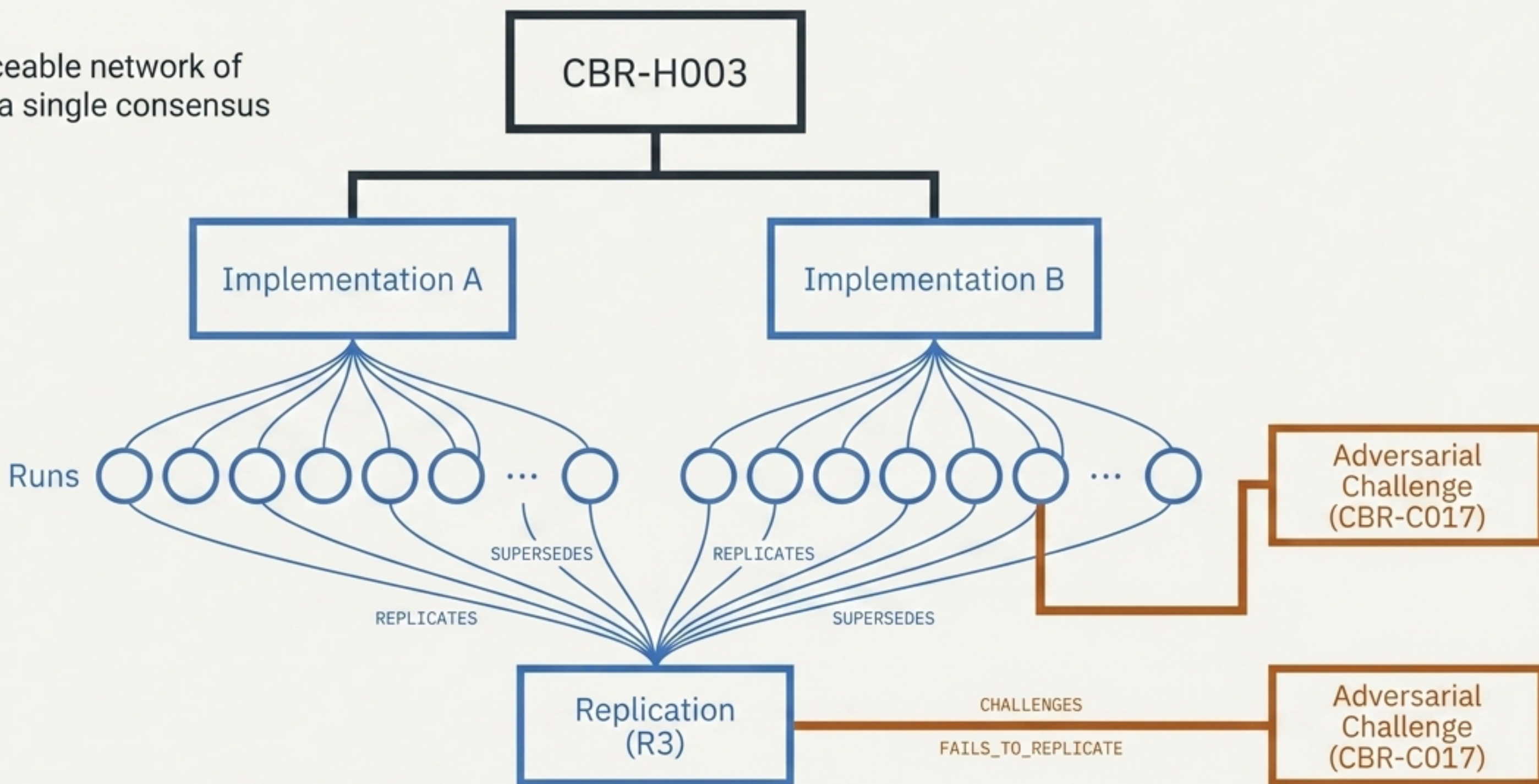
- Distributed evidence graph
- Explicit public failure states (/negative-results)
- Explicit distinction between discovery and confirmation runs
- Disagreements mapped mathematically.

Apparent $d=3$ behaviour disappeared with increased system size is a first-class result.

The Evidence Graph: Replacing the PDF

Science as a traceable network of provenance.

Science as a traceable network of provenance, not a single consensus statement.



The Initial Experimental Programme

Each stage is an independent opportunity for falsification.



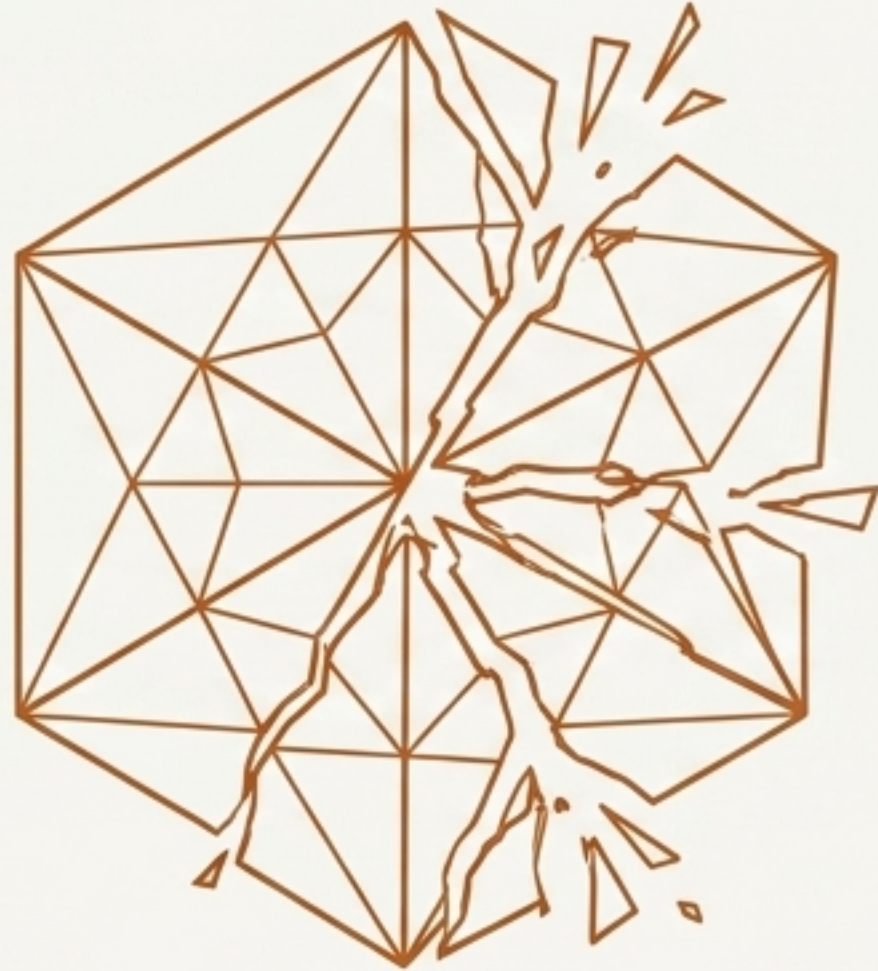
Modular Institutional Participation

Contribute expertise without endorsing theoretical interpretations.

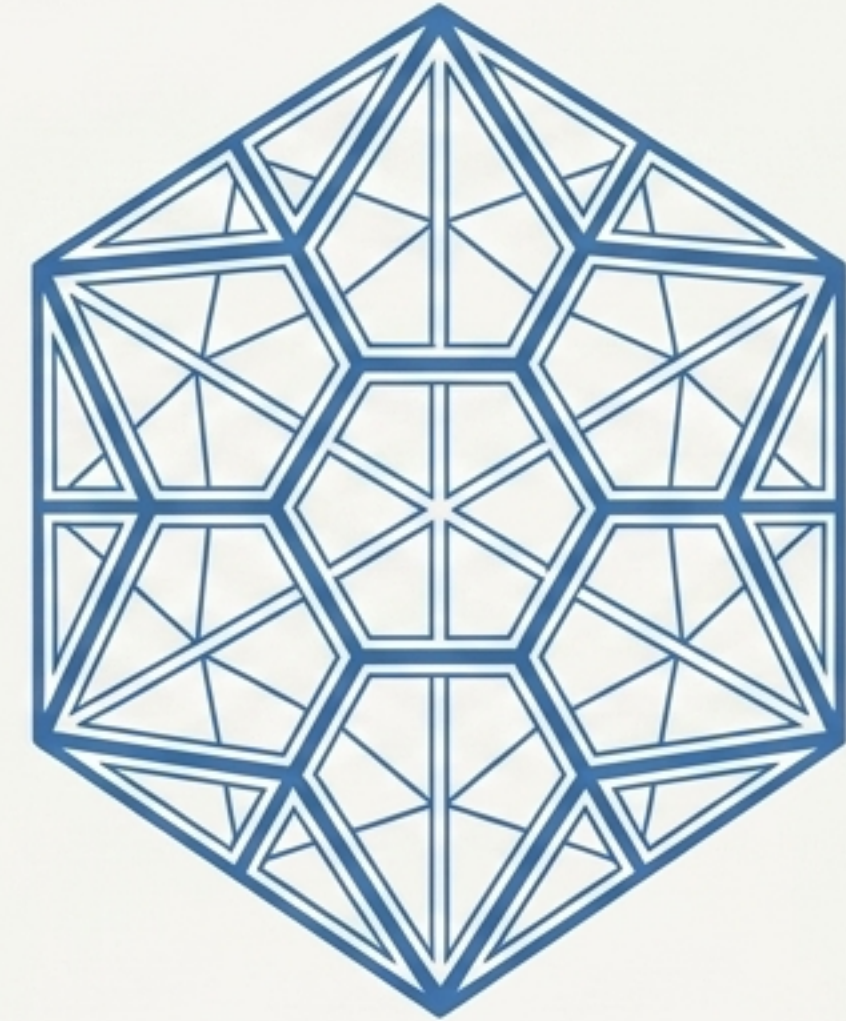
	Action / Input Required	
Mathematics Dept	✓	Reviews manifold tests.
CS Laboratory	✓	Builds independent Rust/Julia implementation.
HPC Center	✓	Executes registered R3 replication batches.
Skeptical Team	⊕	Attempts to falsify methodology.

The Ultimate Success Criteria

The network serves the inquiry, not a preferred answer.



CBR hypotheses are rigorously falsified, exposing exactly why computation alone cannot yield physical geometry.



CBR hypotheses survive repeated, adversarial, independent challenge.

Where a claim about the foundations of reality can be converted into a reproducible mathematical experiment, it should be tested openly, independently, and adversarially.