



COMMISSIONED RESEARCH / FOR TECHNICAL TEAMS

FOUNDING RESEARCH PROGRAM / AP-00

## Program Overview

Independent research for hard problems.

What PRISM is, how we work, and what kinds of projects fit.

# PRISM in one sentence

Metriq PRISM Laboratory is a computational research laboratory. We investigate scientific, engineering, mathematical and technical questions primarily through software and computation: mathematical analysis, modeling, simulation, optimization, statistical analysis, machine learning, algorithm design, software-systems research, literature and prior-art synthesis, and reproducible computational studies.

**The important boundary**

Our research can address physical-world questions, but PRISM itself is computational. We do not operate a wet lab or execute physical experiments.

## Core research methods

| Research mode                         | What it can include                                                                                                                                           |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mathematics & formal analysis         | Proof development and checking, derivations, formalization, complexity analysis, theoretical bounds and counterexamples.                                      |
| Modeling & simulation                 | Mechanistic or data-driven models, Monte Carlo studies, scenario analysis, sensitivity analysis, digital-twin-style simulation and computational experiments. |
| Statistics & data science             | Dataset characterization, statistical inference, uncertainty quantification, causal or quasi-causal analysis when assumptions permit, and evidence synthesis. |
| Optimization & operations research    | Scheduling, routing, allocation, control, planning, combinatorial optimization, mixed-integer methods and decision support.                                   |
| Machine learning & AI evaluation      | Predictive modeling, calibration, model comparison, robustness, failure analysis, benchmark design and controlled evaluation.                                 |
| Algorithms & software systems         | Algorithm design, protocol analysis, distributed-systems research, performance experiments, reliability analysis and software prototypes.                     |
| Reproducibility & technical diligence | Replication, benchmark reconstruction, claim testing, prior-art review, model audit, sensitivity analysis and technical due diligence.                        |
| Research synthesis                    | Literature review, source-grounded evidence maps, meta-research, structured uncertainty and research-roadmap design.                                          |

# Research domains are broader than laboratory methods

PRISM can work on a question in a physical or applied domain without becoming a physical laboratory. The domain describes the subject of the research; the method describes how PRISM investigates it.

| Example domain                              | A PRISM-style computational question                                                                                                                                     |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manufacturing & robotics                    | Can a scheduling, inspection or predictive-maintenance method outperform current baselines using production data and realistic constraints?                              |
| Climate, wildfire & environment             | How well can a model forecast spread, stress or risk using public and partner data, and where does uncertainty dominate the decision?                                    |
| Ecology, conservation & reef systems        | Can existing monitoring, remote-sensing, environmental or husbandry data identify drivers, forecast outcomes or optimize interventions?                                  |
| Networks & distributed systems              | What protocol behavior, performance limit, failure mode or security property can be established through analysis, simulation or reproducible software experiments?       |
| Computational biology & health-related data | What can be inferred from lawfully available de-identified or public datasets without PRISM collecting specimens, treating participants or conducting clinical research? |
| Decision science & economics                | Which policy, capital-allocation or operational decision is supported after uncertainty, constraints, costs and alternative explanations are modeled explicitly?         |

# What PRISM does not execute

PRISM is not a wet lab, clinical lab, animal-research facility, field station, accredited testing laboratory or physical test facility. Under the standard program, PRISM does not culture organisms, handle specimens, synthesize chemicals, conduct human- or animal-subject experiments, collect field samples, fabricate experimental hardware, or run destructive or other physical tests. A project may still concern biology, ecology, manufacturing or another physical-world domain; PRISM works from existing, public, partner-generated or qualified third-party evidence.

| Outside standard PRISM execution                     | What PRISM may still do                                                                                                                                        |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wet-lab or bench experiments                         | Help frame the research question, specify data requirements, analyze data generated by a qualified partner, and report computational findings.                 |
| Human- or animal-subject research                    | Analyze permitted, appropriately governed existing data; help define computational endpoints; do not recruit, intervene on, diagnose or treat subjects.        |
| Field sampling or ecological collection              | Work with existing monitoring, remote sensing, partner-collected observations and public datasets; model where additional measurements would be most valuable. |
| Physical hardware experiments or destructive testing | Model and simulate systems; analyze partner-generated test data; design computational benchmarks; identify what a qualified physical test should measure.      |
| Accredited certification or regulatory testing       | Provide research analysis and evidence review, not certification, accreditation, compliance sign-off or regulatory approval.                                   |

## Computational experiment does not mean physical experiment

PRISM may use the term computational experiment for a controlled run of software, a simulation, a model, a benchmark or a numerical study in which inputs, assumptions and outputs are recorded reproducibly. It does not mean PRISM has physically performed the corresponding real-world experiment.

### When new physical evidence is essential

When a strong project needs new physical-world evidence, PRISM can help define the computational research design, specify the measurements needed, analyze resulting data and integrate third-party findings. The application must identify who will generate that evidence. Physical experimentation is outside PRISM’s execution scope. It must be performed by a qualified external organization under its own approvals and arrangements; PRISM’s scope remains computational.

# Good-fit and poor-fit examples

| Good fit for PRISM                                                                                                                 | Not a standard PRISM engagement                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>"Use five years of machine data to test whether acoustic features predict tool failure better than the existing alarm."</b>     | "Install sensors in our factory, collect six months of measurements and physically stress-test the machines." |
| <b>"Use public reef-monitoring and temperature data to identify predictors of bleaching and simulate intervention strategies."</b> | "Collect coral biopsies, run aquarium exposure trials and perform molecular assays."                          |
| <b>"Reproduce this algorithmic claim, benchmark it against baselines and characterize when it fails."</b>                          | "Certify that our product is safe, compliant or ready for regulated use."                                     |
| <b>"Build and validate a wildfire-spread model against historical perimeters and weather data."</b>                                | "Deploy field teams to burn test plots and collect new fuel samples."                                         |
| <b>"Analyze partner-generated experiment data and determine which mechanism best explains the result."</b>                         | "Run the physical experiment ourselves."                                                                      |

## Typical outputs

- Research question and computational protocol.
- Source register and prior-art/literature synthesis.
- Model, algorithm, simulation, optimization or statistical analysis.
- Benchmarking, uncertainty analysis and sensitivity studies.
- Publication-quality manuscript or technical report with limitations.
- Code, notebooks, reproducibility artifacts or computational certificates where permitted.
- Executive findings briefing and implementation recommendations when in scope.

**Unsure whether your question fits?**

Submit the computational question you want answered and describe any physical-world evidence it depends on. PRISM can determine during screening whether the project is computationally tractable and what must be supplied by the applicant or a qualified third party.

# Bring a question worth investigating

Metriq PRISM Laboratory supports a small number of organizations with consequential questions that can be investigated computationally. Selected projects receive a defined research engagement: PRISM helps formulate the question, performs the agreed computational research, documents the evidence and limitations, and delivers the contracted research package.

## What PRISM is

Metriq PRISM Laboratory is a computational research laboratory. We investigate scientific, engineering, mathematical and technical questions primarily through software and computation: mathematical analysis, modeling, simulation, optimization, statistical analysis, machine learning, algorithm design, software-systems research, literature and prior-art synthesis, and reproducible computational studies.

### Computational by design

PRISM conducts computational research. We do not execute wet-lab, clinical, animal-subject, field-sampling or physical test programs under the standard Founding Research Program.

## What we mean by computational research

- Mathematical and formal analysis.
- Modeling, simulation and computational experiments.
- Optimization, operations research and decision support.
- Statistical analysis, uncertainty quantification and data science.
- Machine learning, model evaluation and robustness testing.
- Algorithms, software systems, benchmarks and reproducibility studies.
- Literature, prior-art and technical evidence synthesis.

## Program pathways

| Pathway                              | Designed for                                                                                                                                                    | Typical structure                                                                                                                  |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Public-Benefit Research</b>       | Nonprofits, public-interest organizations, educational institutions and mission-aligned projects with meaningful benefit beyond the participating organization. | PRISM may underwrite part or all of a bounded computational research engagement, subject to capacity and the signed project scope. |
| <b>Industry Research Partnership</b> | For-profit or commercial organizations with a technically serious problem and a useful dissemination path.                                                      | Usually co-funded. The partner contributes an agreed fee, staff time, data or other defined resources.                             |
| <b>Grand Challenge</b>               | Unusually consequential or difficult problems that justify exceptional computational research effort.                                                           | Individually scoped and approved. There is no automatic entitlement to a particular support amount.                                |

### Examples of suitable questions

- Can an existing dataset support a useful prediction better than the appropriate baseline under realistic constraints?
- Can a simulation identify which uncertainty or measurement most affects an expensive operational decision?
- Does an optimization method generalize across the actual constraints an organization faces?
- Can a technical claim be reproduced, falsified or bounded using public or partner-supplied evidence?
- Can a new algorithm, model or decision policy improve performance enough to justify implementation?
- Can public or partner-generated scientific data clarify a real biological, ecological or environmental question without new physical experimentation by PRISM?

### What the program is not

- A wet-lab, clinical, animal-subject, field-sampling or physical testing service.
- A cash grant, stored-value credit or unrestricted consulting budget.
- A service for purchasing a favorable paper, endorsement or certification.
- A guarantee of discovery, commercial savings, journal acceptance, regulatory approval or independent peer review.
- A way to transfer confidential data before appropriate agreements and security review are in place.

# What a selected project can include

| Research component         | Examples                                                                                                                                                                                           |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question and protocol      | Research question, hypotheses, assumptions, baselines, computational methods, stopping criteria and validation plan.                                                                               |
| Evidence work              | Literature and prior-art review, dataset characterization, modeling, simulation, statistical analysis, optimization or reproducibility work.                                                       |
| Research output            | Publication-quality manuscript or technical report, figures, limitations, source register and executive findings briefing.                                                                         |
| Reproducibility            | Code, notebooks, computational certificates or documented procedures where permitted by rights, security and scope.                                                                                |
| Implementation bridge      | A bounded software prototype or implementation recommendation only when specifically included in the signed scope.                                                                                 |
| Partner-generated evidence | Analysis of physical-world measurements or experiment results supplied by the applicant or a qualified third party; PRISM does not assume responsibility for executing those physical experiments. |

## What selected applicants provide

- A real decision or research question and a sponsor who can keep the project moving.
- Accurate domain context and lawful access to the data, systems or experts required by the scope.
- If new physical measurements or experiments are required, a qualified party responsible for generating them.
- Reasonable staff availability for technical review and factual corrections.
- Acceptance that useful findings can be positive, negative, mixed or inconclusive.
- A publication/confidentiality plan that allows meaningful examination while protecting legitimate confidential material.
- Any agreed partner fee, expense contribution or in-kind commitments stated in the signed project documents.

**Support is project-specific**

A stated support value describes the approved research scope; it is not cash, cannot be transferred, has no redemption value and does not become payable if unused.

## How consideration works

1. Submit a nonconfidential application describing the organization, question, expected value, prior work, computational evidence path, available data and constraints.
2. PRISM screens the application for computational fit, scientific merit, feasibility, public benefit, data readiness and partner commitment.
3. If useful, PRISM holds a scoping discussion. Sensitive details are shared only after appropriate confidentiality and data arrangements are in place.
4. If new physical-world evidence is required, the scope identifies who will generate it and how PRISM will use it.
5. For a project PRISM wishes to pursue, PRISM prepares a bounded research scope, economics, publication terms, milestones and acceptance criteria.
6. Work begins only after the required agreement and schedules are executed and any required initial partner payment or approval is complete.

### Before you apply

Use nonconfidential information only. Do not send raw datasets, credentials, personal records, trade secrets, export-controlled information, safety-critical credentials or precise locations of vulnerable species with the preliminary application. Describe what exists and what restrictions apply; secure transfer can be addressed later if the project advances.

### Submitting an application

An application is a request for consideration. It does not create an award, partnership, exclusivity, intellectual-property transfer or obligation to perform research.

### Program inquiries

Questions about fit may be sent to [prism@metriq.org](mailto:prism@metriq.org). Submit an application through the channel supplied in your invitation, after reviewing the applicable intake privacy notice. Availability and selection remain subject to program approval; these materials are not an award.