

PUBLIC TECHNICAL OVERVIEW • 23 OCTOBER 2026

TP-CERT

From a finite scenario to a bounded, traceable certification result

TP-CERT public architecture view

Engine stays inside the protected boundary



Publicly explainable:

scope • assumptions • status • nonclaims • provenance

Not published:

protected derivations • internal proof structure • signing cus

A public view of the architecture - not access to the engine.

Core idea

TP-CERT is designed to certify only the obligations it is explicitly prepared to close. Unsupported, incomplete or unauthorized evidence is not promoted into a stronger claim.

This document explains the public architecture and a finite Gaussian example. It intentionally omits protected derivations, internal proof structures, private signing material, custody information and restricted research details.

01 · WHY TP-CERT EXISTS

A calculation is not automatically a certificate

Many technical systems can compute a number. Fewer can state, in a disciplined way, what was checked, under which assumptions, what remains outside scope, and which evidence supports the result.

Ordinary computation

Input → algorithm → output. Useful, but the meaning of the output can be broader than what the program actually established.

Bounded certification

Input → admitted capability → explicit obligation set → evidence → result with scope and nonclaims.

TP-CERT is an internally developed certification substrate. It is not a universal theorem prover and it is not presented as an oracle. Its purpose is to make the boundary between “computed”, “verified”, “certified”, “open” and “unsupported” explicit.

- Admit only supported scenario families and representations.
- Translate a domain problem into a controlled internal obligation set.
- Execute only certification primitives available to the protected core.
- Return a bounded status together with assumptions, provenance and nonclaims.
- Fail closed when the input, evidence or authority is insufficient.

Public claim boundary

A public explanation may describe the architecture, status vocabulary and finite examples. It does not disclose the protected theorem-development archive or proprietary certification logic.

02 · ARCHITECTURE

Five layers, one protected core

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Experience & admission

A user or integration selects an admitted capability and supplies an exact, structured scenario. The public surface should not offer arbitrary code execution.

Evidence & governance

The result is projected into a bounded, inspectable form. Release, distribution and stronger claims remain separate governance decisions.

Internally, domain-specific capability packs can change the vocabulary of the input. They must not silently strengthen what the certification core has actually established.

Engine stays internal

The protected boundary contains implementation detail that is not needed to understand the public product concept: internal obligation compilation, protected proof structures, security-sensitive controls and signing custody remain private.

03 · CERTIFICATION FLOW

What a bounded result means

1

Scenario - A finite, structured input is supplied in the representation required by the selected capability.

2

Admission - The capability layer checks whether the request lies inside a supported family and scope.

3

Protected certification - TP-CERT executes the internal obligation set. The internal derivation is not part of the public interface.

4

Evidence projection - Only the evidence needed to interpret the public result is exposed: status, scope, assumptions, nonclaims and provenance.

5

Governed use - A technical PASS does not automatically create legal, deployment or distribution authority.

Status vocabulary

CERTIFIED means the admitted obligation set closed within its stated assumptions. OPEN means closure is not established. REJECTED means the request is outside the admitted contract. An operational failure is not a mathematical counterexample.

04 · FINITE GAUSSIAN EXAMPLE

A public numerical object can enter a protected certification flow

The public Gaussian Double-Grid Explorer already uses the standard finite Gaussian collocation matrix

$$K_{jk} = \exp(-\pi (x_j - y_k)^2)$$

The browser demonstrator lets a visitor shift two finite grids and inspect ordinary numerical sensitivity. That is intentionally not a theorem and not a TP-CERT certificate.

Public Explorer

Finite numerical illustration. Browser-only. No data upload. Useful for intuition and visual comparison.

TP-CERT capability

A supported finite scenario can be admitted into a protected exact-certification path. The public interface need not expose the underlying derivation.

A safe public TP-CERT demonstrator can therefore use fixed finite Gaussian examples and show only the certification flow. It can present a specimen bounded result without connecting the public website to the real engine.

Example public-safe capability language

Finite Gaussian matrix enclosure · finite nonsingularity · selected finite structural checks. No universal double-grid invertibility theorem and no upgrade from a finite example to an unrelated global claim.

05 · SPECIMEN RESULT

What the public may see - without seeing the proof machinery

Requested capability	Finite Gaussian nonsingularity
Input	Fixed public finite example
Admission	SUPPORTED
Result	SPECIMEN: CERTIFIED - finite scope only
Assumptions	Exact finite input; admitted capability family
Does not imply	Infinite-grid invertibility; universal Gaussian theorem; protected threshold result
Provenance	Public specimen receipt / demonstrator fixture

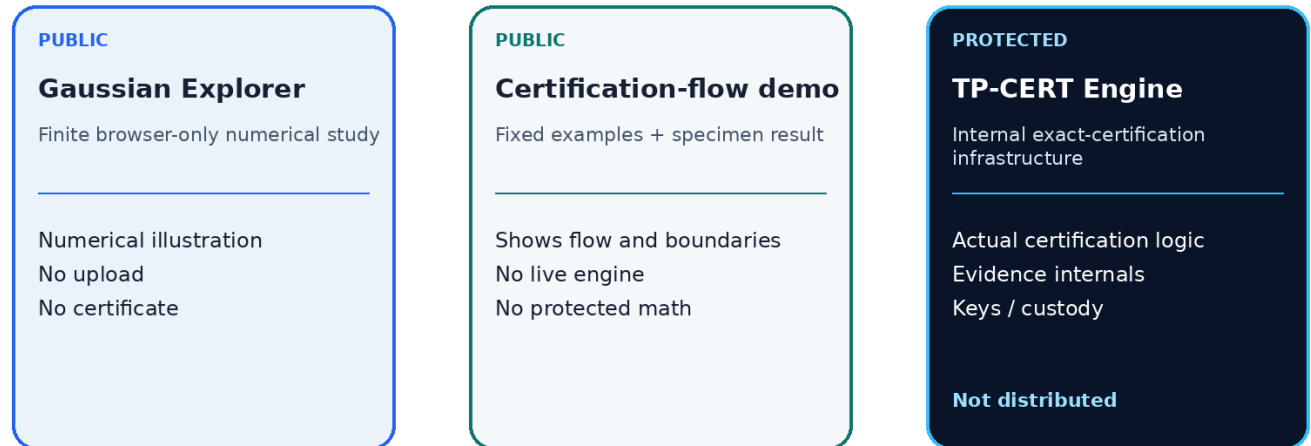
The important property is not the word CERTIFIED by itself. The important property is that the status travels with its finite scope, assumptions and explicit nonclaims.

Demo rule
A public specimen must be clearly labeled as a demonstrator fixture or precomputed public example. It must not be presented as live access to TP-CERT or as proof of a stronger theorem.

06 · PUBLIC / PROTECTED BOUNDARY

Three interfaces should remain visibly separate

Three interfaces - three different access boundaries



This separation is deliberate. The public Explorer explains a mathematical object. The public certification-flow demonstrator explains how TP-CERT thinks about scope and evidence. The protected system performs the actual internal certification work.

- No protected theorem chain or restricted proof/reviewer material in the public demo.
- No internal obligation tree, proprietary constants or sensitive adapter details.
- No private keys, signing custody or operational credentials.
- No public engine endpoint merely to make the demonstrator feel “live”.
- No statement that a browser visualization reproduces a private proof.

Recommended website extension

Keep the existing Gaussian Explorer. Add a second “See the certification flow” area using fixed finite examples and precomputed specimen results. The real engine remains disconnected from the public site.

07 · CURRENT PUBLIC STATUS

Defined local scope complete, external access governed

The current development line has reached a deliberate governance boundary. Local engineering validation has been completed for the defined gateway development scope, while external access and product distribution remain separately controlled.

What can be shown publicly

Architecture · finite Gaussian illustration · status semantics · scope/nonclaim model · specimen result · research provenance.

What remains controlled

Actual engine access · protected mathematics · internal evidence structures · signing custody · customer-specific deployment and distribution authority.

This is not a contradiction. A system can be technically ready for its defined internal development scope while still withholding public access or distribution until separate governance conditions are satisfied.

Bottom line

TP-CERT is best understood as a protected certification engine behind a narrow, explainable interface. The public story should show the discipline of the boundary - not dissolve it.

Explore the public research showcase: <https://www.interlink-bridge.org/>

Public demonstration ≠ proof certification ≠ access to protected systems.