

DEFENSIVE INFRASTRUCTURE FOR ADDITIVE MANUFACTURING

Keep the promise of *3D printing.* Guard the boundary.

PrintGuard identifies firearm-related risk before a file is published, queued, or fabricated—locally, quickly, and with an auditable record.

96.75%

FIREARM DETECTION

0.06%

FALSE-POSITIVE RATE

<1 sec

PER-FILE SCORING

10,000

HELD-OUT FILES

01

WHY NOW

Additive manufacturing is becoming ordinary infrastructure.

Schools, labs, manufacturers, marketplaces, makerspaces, and homes are gaining extraordinary new creative capacity. The same accessibility also opens a public-safety gap: restricted components can move from digital file to physical object outside traditional compliance checkpoints.

Policy is moving toward performance-based safeguards. The market needs a standard that reduces risk, withstands public scrutiny, and protects lawful making.

Safety without surveillance.

PrintGuard creates a practical middle path: local screening and evidence-backed review without centralizing every design or treating lawful makers as suspects.

A geometry problem cannot be solved by a list of names.

A / NAME

```
school_project_v8.stl  
final_final_part.stl  
untitled_mesh_03.stl
```

Filenames are fragile

Names can be changed in seconds.
Keyword filters confuse intent with a label.

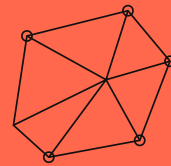
B / HASH

```
6e9a 14f3 03b8 7a21
```

Hashes are brittle

Small file edits break static matches, even
when the underlying geometry remains
recognizable.

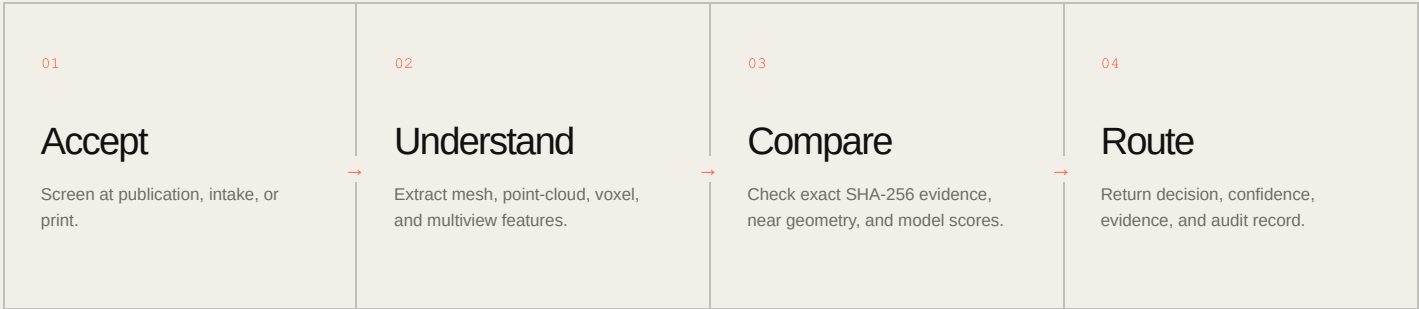
C / SHAPE



Shape is the evidence

PrintGuard reads the file itself—its mesh,
point cloud, volume, views, and known
geometry.

Known-file evidence and shape-aware classification, in one auditable workflow.



Local processing

Files can remain inside the customer's controlled environment.

Layered evidence

Known-file matches and geometry scoring reinforce review decisions.

Policy routing

Organizations configure screening and review rules for their own workflow.

Reproducible records

Hashes, scores, evidence, and decisions remain available for audit.

Human review

Ambiguous and high-impact results can be routed to a reviewer.

Multiple surfaces

CLI, Python package, local web portal, and JSON reports support integration.

SUPPORTED INTAKE

Common mesh formats

STL

OBJ

AMF

3MF

OFF

STEP and STP CAD files are cataloged and routed for conversion before geometry scoring.

Safety that works at the speed of a workflow.

DETECTION	FALSE POSITIVE	SCORING	EVALUATION
96.75%	0.06%	<1 sec	10,000
Firearm-related files successfully flagged.	Benign files incorrectly flagged.	Per file for average file sizes.	Source-separated held-out files.

MEASURED OUTCOMES

Source-separated evaluation

Risk detection

96.75%

Benign specificity

99.94%

The held-out evaluation spans firearm-related files, dual-use parts, near-firearm geometry, and random benign designs. Source-separated testing helps reduce leakage between related model families and packages.

CURRENT V1 FOUNDATION	
Binary training manifest	113,368 rows
Hard-negative mechanical examples	99,848
Restricted positive examples	13,520
Evidence layer	Exact + near match
Review surfaces	CLI · portal · JSON

V1 benchmark · July 2026. The held-out set spans firearm, dual-use, near-firearm, and benign files. Results will evolve with continued independent testing. Restricted positive examples are sourced through authorized channels and are not redistributed.

A safety control only earns trust when it can explain itself.

01 / LOCAL Local-first Screen where files already live, without centralizing every design.	02 / AUDIT Auditable by design Hashes, model scores, evidence, and decisions form a reproducible record.
03 / REVIEW Human where it matters Ambiguous and high-impact decisions can move into a review workflow.	04 / IMPROVE Designed to improve Manifested data, source-separated evaluation, and regular updates support scrutiny.

Risk screening—not a legal determination.

No classifier can guarantee that no firearm-related object will ever be printed. PrintGuard reduces risk, creates friction, improves consistency, and preserves a defensible review workflow. Technical risk labels remain distinct from jurisdiction-specific legal conclusions.

One safety layer. Many points of integration.

- 01

Printer OEMs

A credible path from policy requirements to product-level safeguards.
- 02

Slicers & marketplaces

Pre-print and pre-publication screening without a centralized file repository.
- 03

Labs & fabrication

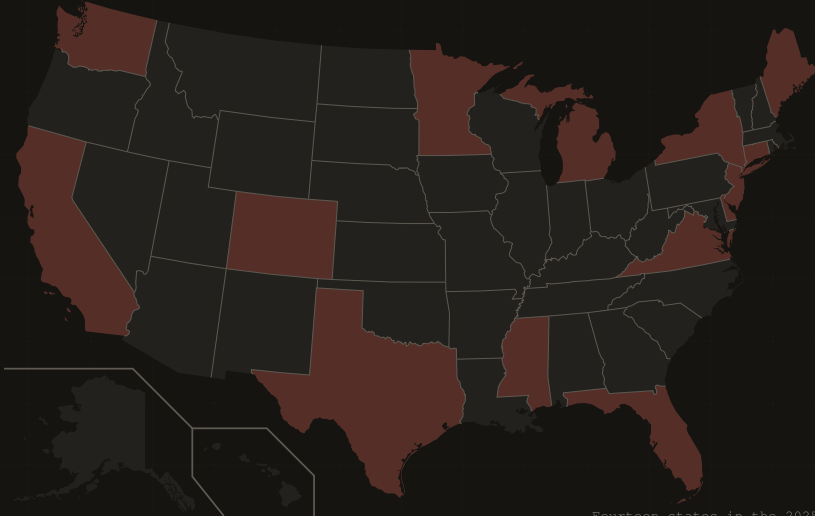
Job-level intake controls for universities, makerspaces, print bureaus, and enterprise teams.
- 04

Public safety

Reproducible file review without broadly distributing restricted CAD data.

Standalone gate Inline screening before publication, queueing, or fabrication.	Review layer First-stage triage for a higher-volume human review operation.	Controlled pilot Benchmark and workflow evaluation inside a partner environment.
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Policy is moving state by state.



Fourteen states in the 2025-26 scan · reviewed July 17, 2026

CALIFORNIA AB 2047 ACTIVE · COMMITTEE	NEW YORK Ch. 55 · S5952 ENACTED + ACTIVE	WASHINGTON ESHB 2320 · HB 2321 ENACTED + INTRODUCED	COLORADO HB26-1144 ENACTED · MANUFACTURE
CONNECTICUT PA 26-41 / HB 5043 ENACTED · GHOST GUNS	DELAWARE HB 399 · Ch. 246 ACTIVE + ENACTED	MAINE PL 2025 c.537 ENACTED · SERIALIZATION	NEW JERSEY A4975 / S3894 PL 2025 C.255 · ENACTED
VIRGINIA HB 40 / SB 323 CH. 531-532 · ENACTED	MINNESOTA HF 3407 / SF 3661 · HF 4882 / SF 5066 ACTIVE + INTRODUCED	MICHIGAN SB 331 / SB 332 PASSED SENATE	FLORIDA SB 1096 + related CONCLUDED · 2025
MISSISSIPPI HB 434 DIED IN COMMITTEE	TEXAS SB 1711 CONCLUDED · 2025		

Make 3D printing safer. *Keep innovation open.*

Build the reference implementation with us.

PrintGuard is seeking pilot partners, public-sector sponsors, technical reviewers, and investment support to establish a practical benchmark for emerging performance standards.

Pilot partners

Validate integration, latency, review routing, and user experience in controlled workflows.

Technical reviewers

Pressure-test methodology, false-positive control, robustness, and auditability.

Project

printguard.cv
contact@printguard.cv

Defensive research and development. Restricted positive CAD is not distributed through public project materials.

Public-sector sponsors

Support credible benchmarks, governance, and standards-oriented evaluation.

Investment support

Advance the product, evaluation program, integrations, and partner deployments.

Selected official sources

- [California AB 2047 bill record](#)
- [New York S9005C / Chapter 55](#)
- [Washington ESHB 2320 bill summary](#)
- [Delaware HB 399 bill record](#)

Scope and full official-source links appear at printguard.cv. Reviewed July 17, 2026; informational, potentially non-exhaustive, and not legal advice.