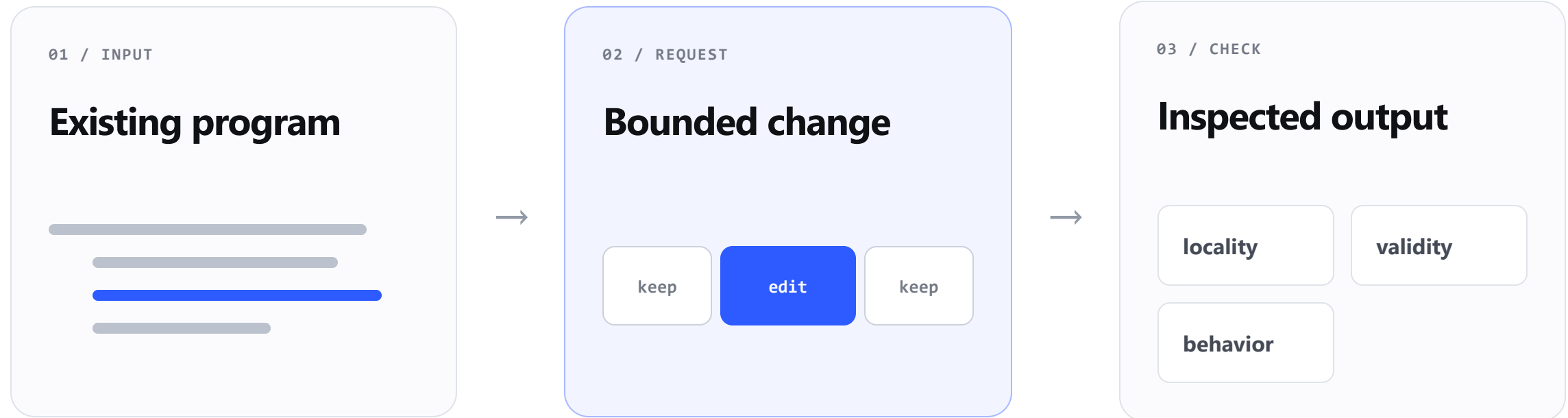


Can an AI change one region without rewriting everything?

Localized editing is a preservation problem as much as a generation problem.



Editing needs an explicit boundary

A useful editor balances protected structure with enough freedom to solve the requested task.

PROTECTED

Selected coarse positions



Defines the experimental preservation boundary.

EDITABLE

Masked positions



Retains enough freedom to produce a real change.

copy everything



rewrite everything

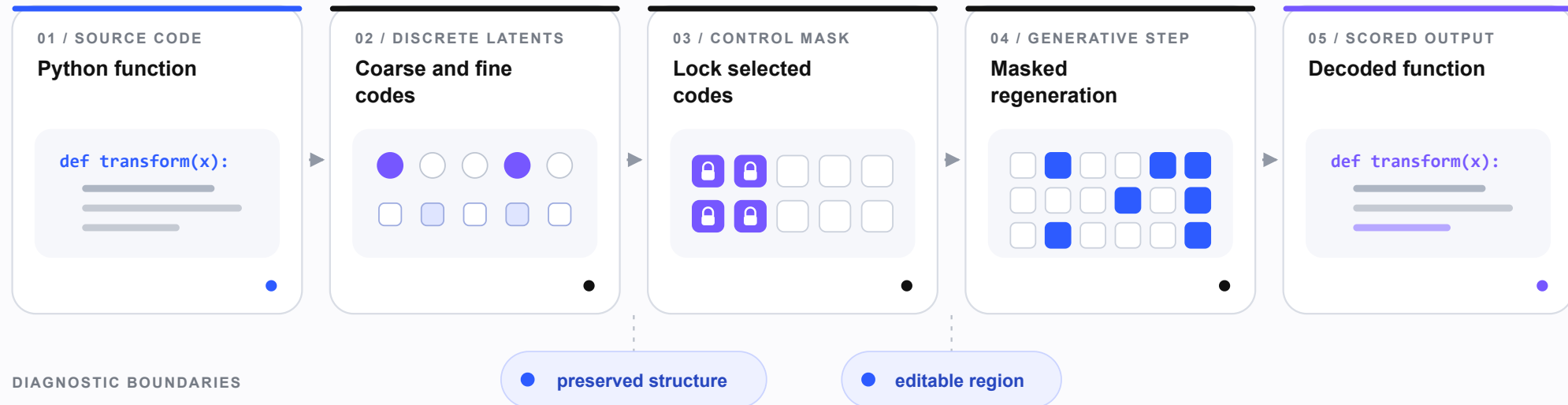
Encode, lock, regenerate, inspect

Control is applied to a learned hierarchy above the token level.

METHOD MAP

Separate preserved structure from editable region

5 CHECKPOINTS



Stability rises without collapsing edit freedom

The central result is a measured trade-off in one small experimental setting.

01

0.453 → 0.591

parse rate after locking four top-level codes

02

0.936

change rate in unlocked positions

03

0.998

conditional sample uniqueness

2,000 preprocessed Python functions

64-token maximum

argmax decoding

What the result supports

Hierarchical discrete latents can act as an inspectable control surface.

SUPPORTED

Explicit control points above tokens

Selected latent positions remain fixed while others are regenerated.

MEASURED

Stability and freedom together

Validity rises without collapsing unlocked change or uniqueness.

HYPOTHESIS

Coarse-to-fine control

Promising, but latent positions are not guaranteed semantic regions.

What the experiment does not prove

Syntactic and structural proxies are not functional guarantees.

01 No exact AST-preservation guarantee.	02 No semantic-equivalence or functional-correctness guarantee.
03 No repository-scale repair result.	04 No confidence intervals or multi-seed statistical analysis in the two-page paper.

Evidence boundary

short Python functions

syntactic + structural proxies

point estimates

Evaluate change and preservation together

Measure **change** and **preservation** together.

- Use the paper when discussing explicit control over what code may change.
- Keep the DOI as the primary bibliographic identifier.
- Read the full manuscript and result tables on the canonical paper page.

A bounded editor should be judged on locality, validity, structure, behavior, diversity, and uncertainty.

PRIMARY IDENTIFIER

DOI

10.1145/3803437.3807386

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