

Architecture

The knowledge context

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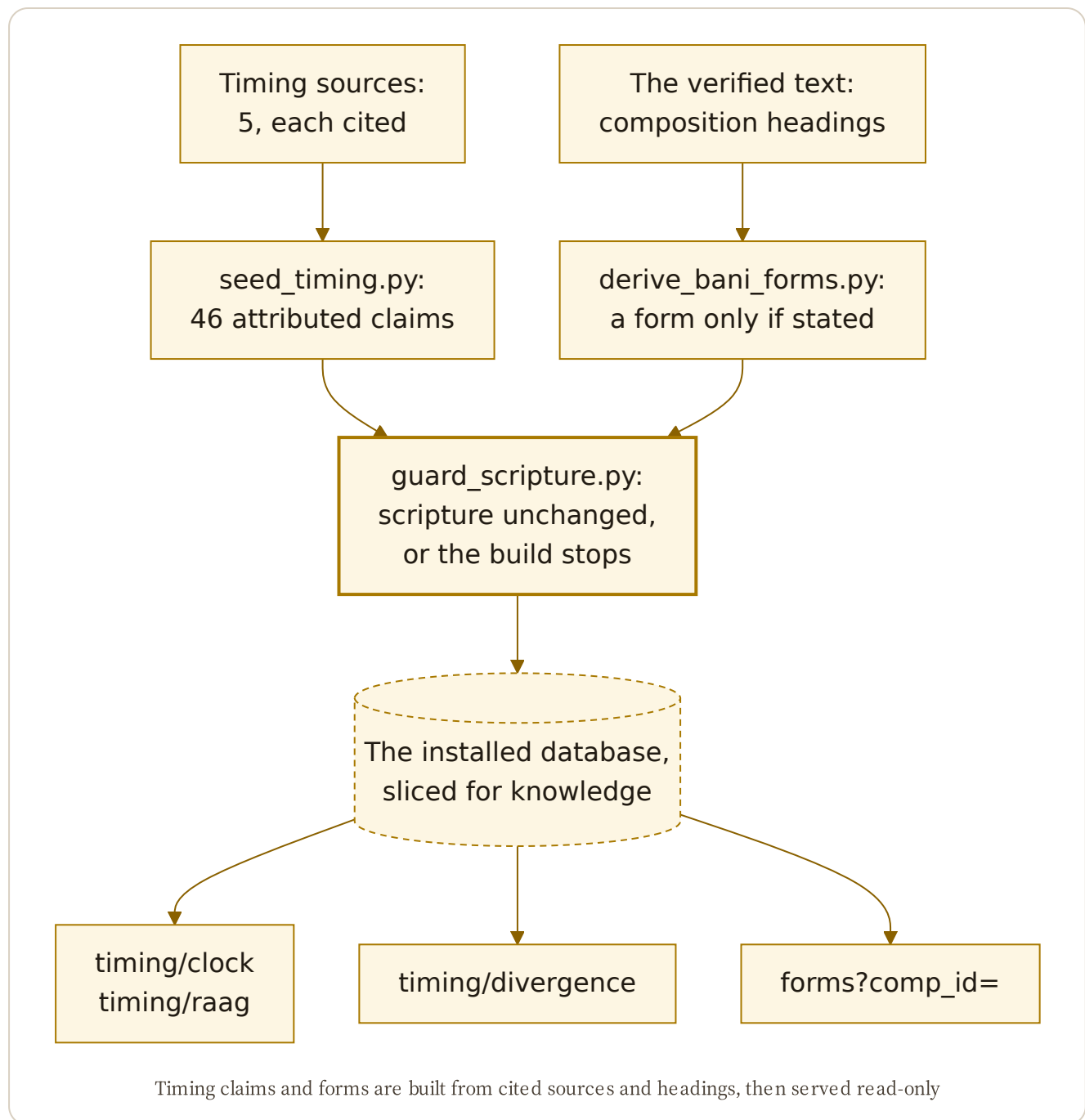
The raag clock's attributed timing claims (divergence preserved, never adjudicated) and the composition form metadata read only from headings, never guessed.

<https://docs.gurbanisoul.com/architecture/knowledge-context/>

The knowledge context holds scholarship *about* the Granth that is not in the printed text. It has two parts:

- **Raag timing.** When in the day or season each raag is traditionally sung. The website's raag clock and divergence pages read it.
- **Composition forms.** What a composition's own heading says it is: a pauri, a salok, an ashtpadi, which ghar, whether it has a rahao.

Both follow one rule: **record what a source says, never decide what is true.** Timing is stored as attributed claims with a citation each, and disagreement between traditions is kept side by side. A form is recorded only when the heading states it; otherwise the field stays empty. The service is `webapp/siggs/knowledge.py`; the tables are built by `sggs-data's pipeline/timing/`.



Raag timing

What is stored

Table	Holds
timing_sources	5 sources, each with a tradition (<code>gurmat_sangeet</code> or <code>hindustani</code>), a URL where one exists, and notes on where it came from
raag_timing_claims	46 claims over the 31 raags, each tied to a source (NOT NULL)

Each claim has a `claim_type`:

Type	Count	Meaning
primary	32	The main placement in a tradition
variant	5	A different placement recorded by another source
seasonal	2	A raag tied to a season rather than an hour
ceremonial	7	A liturgical or ceremonial use

confidence is consistent (sources agree), majority (the dominant placement where variants exist) or disputed (a recorded disagreement). Sources that could not be tied to a verifiable publication are labelled “(compiled)” and their notes say where they came from. No citation is invented.

The pahar convention

A pahar is a three-hour watch. Claims store pahars 1 to 8 counted from 6 AM: pahar 1 is 06:00–09:00 and pahar 8 is 03:00–06:00. **Pahar 7 (00:00–03:00) deliberately has no raags**, and the clock shows that silence as content rather than as a gap. The fixed-clock reading is a rendering choice; traditionally the watches follow sunrise and sunset.

The routes

- `/api/timing/clock` returns every claim grouped by type, the pahar convention, and the note “divergence is preserved, never adjudicated”. The claims change only with a dataset, so the response is cached in the process (`core._TIMING_CACHE`) after the first request.
- `/api/timing/raag?name=` returns one raag’s claims. It accepts the raag’s Gurmukhi name or its roman name; an unknown name returns an empty list with the note “no such raag”, and a missing name is a 400.
- `/api/timing/divergence` lists the raags where sources disagree, with every claim and its citation. Currently 5 raags qualify.

What counts as a divergence. A raag qualifies if it has a variant claim, or if two *different* sources place it in different pahars. One source giving a raag a span across two pahars is an extension, not a disagreement, and does not qualify. The query encodes this (`COUNT(DISTINCT source_id) > 1`), so the page never shows a source disagreeing with itself.

Composition forms

What is stored

Four tables keyed by `comp_id`, one row per composition (4,527):

Table	Holds	Stated for
<code>shabd_raag_map</code>	The raag, first Ang and first line of the composition	every composition

Table	Holds	Stated for
shabd_structural_form	form (pada, ashtpadi, solahe, chhant, vaar, pauri, salok) and pada_count	1,378; the other 3,149 are NULL
shabd_musical_markers	ghar (1-17), partaal, has_rahao, has_rahao_dooja, dhunni, jati	ghar on 403, rahao on 2,525, partaal on 17
shabd_poetic_genre	A named genre stated in the heading (barah_maha, bavan_akhri, ...)	57

Every row carries a `source_label` recording which heading it came from.

The rules

`derive_bani_forms.py` in `sggs-data` reads the verified text and applies these rules:

- **Only a title-like heading counts.** A composition's first line is sometimes verse, so matching applies only to headings that carry a Mahala marker, a raag name, or a title word.
- **comp_type is never trusted alone.** That pipeline column is known to be mislabelled (see [known issues](#)); it is kept only as a hint inside `source_label`.
- **Matching is on NFC-normalised text.**
- **Anything unmatched stays NULL and is counted in the build report.** **NULL** means “the heading does not say”, not “unknown to us, fill in later”.

`/api/forms?comp_id=` joins the four tables for one composition. It returns `forms: null` for a `comp_id` that has no row (the id gaps are permanent, see the [line record](#)), and a 400 when `comp_id` is missing or 0.

Guarantees

- **Scripture is untouched.** The timing layer's migration runs only `CREATE TABLE` and `CREATE INDEX` statements for the tables it adds, and aborts on anything else. Every writer checks a committed baseline (row counts, data and schema hashes of every pre-existing table) before and after it runs, and `guard_scripture.py` is the standing gate in the rebuild.
- **Read-only and declared.** The module's `TABLES` lists exactly the seven tables it reads, and the service's database slice is cut from that list; `webapp/tests/test_declared_tables.py` refuses any other read ([bounded contexts and the gateway](#)).
- **Degrades instead of failing.** Without the timing layer, each route returns `available: false` rather than an error.
- **Tested end to end.** The golden contract replays the clock, every raag with claims (by both names), the divergences, and one composition per form and genre, so a dataset that changes any of them fails CI until the change is intended and re-baselined.

Changing a claim

A new source, a corrected time or a new variant is a dataset change. Add it to sggs-data's `pipeline/timing/timing_seed.json` with its citation, rebuild, and bring it here with a `dataset.lock.json` bump (**the three repositories and their pins**). Never replace an existing claim because another source disagrees: add the second claim as a **variant**, and the divergence page will show both.

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