A DEVALOK VERIFICATION NOTE

# How the Muhurat engine works

A verification note — gaṇita, then phalita

01

## The method: gaṇita, then phalita

This tool answers one question — is a given moment auspicious to begin a given act — and it answers it by **computing the sky, never by scraping an almanac**. The order is deliberate: get the astronomy and the faithful application of the rules (the gaṇita) right first; the interpretation (phalita) is built on top of it. A crack in the gaṇita would propagate into every verdict, so the gaṇita is where the rigour lives.

Three properties make it checkable. It is **stateless** — nothing about you is stored; your birth date, time and place are passed per request and derived in-request, then discarded. Every timing and interpretation decision **traces to a primary text** (listed at the end). And the numbers are **cross-verified** against independent oracles, not asserted.

02

## The sky, computed two ways

The engine runs two independent tiers. **Tier A** needs only the Sun's geometry: sunrise and sunset by the standard NOAA algorithm at the refraction-corrected zenith of 90.833°, and from those the day's eight-part divisions — the five kaalas, the horas, Abhijit, the choghaḍiyā. **Tier B** needs the planets' real positions: tithi, karaṇa, nakṣatra, yoga, rāśi and lagna, from the Sun's and Moon's true longitudes.

Planetary positions come from **Skyfield with the bundled JPL DE421 ephemeris** — the same ephemeris family used in professional astronomy, shipped inside the app so nothing is downloaded at runtime. Sidereal (nirayana) longitudes are obtained by subtracting the ayanāṁśa, computed from a precession polynomial. Sidereal position is what every nakṣatra- and rāśi-based rule reads.

> Honest flag: the ayanāṁśa zero-point is an **open decision**. The current value differs slightly from a strict true-Citrā anchor; it is documented, not hidden, and it only shifts nakṣatra-boundary-sensitive timings by a minute or two — it does not affect tithi.

03

## The five limbs of the day (pañcāṅga)

नक्षत्राणि मुहूर्ताश्च पक्षाहोरात्रसन्धयः ।
संवत्सरा दिनेशाश्च कलाः काष्ठाः क्षणा लवा ॥

बृहत्संहिता ४७।५९ · Bṛhatsaṃhitā 47.59 (Varāhamihira)

"The nakṣatras and the muhūrtas, the fortnights, the hora, the day-and-night junctions; the years and the days, the kalā, kāṣṭhā, kṣaṇa and lava" — Varāhamihira names the limbs (avayava) of Time itself. Every one of these divisions is what the engine computes; none is guessed.

A pañcāṅga is literally "five limbs": **tithi** (lunar day), **vāra** (weekday), **nakṣatra** (Moon's asterism), **yoga** and **karaṇa**. Each is a precise astronomical quantity. The tithi is the elongation of Moon from Sun in steps of 12° — the Sūrya Siddhānta defines it as one-thirtieth of the lunar month, the time in which the Moon gains 12° on the Sun. The nakṣatra is the Moon's sidereal longitude in steps of 13°20′ (360°/27). The yoga is (Sun + Moon) longitude in the same 13°20′ steps; the karaṇa is half a tithi.

Citation: Sūrya Siddhānta (tr. Burgess, 1860), on the tithi as 1/30 lunar month = 12° elongation. This single definition grounds the engine's tithi, karaṇa, yoga and Amāvāsyā/Pūrṇimā computation.

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## The muhūrta factors, and where each is written

दिग्देशचेष्टास्वरवासरर्क्षमुहूर्तहोराकरणोदयांशान् ।
चरस्थिरोन्मिश्रबलाबलं च बुद्ध्वा फलानि प्रवदेद् द्रुतज्ञः ॥

बृहत्संहिता ९५।१ · Bṛhatsaṃhitā 95.1

The knower reads the weekday (vāsara), the asterism (ṛkṣa), the muhūrta, the hora and the karaṇa — weighing each one's strength and weakness — and only then speaks the result. The engine's verdict is exactly this reading, made deterministic.

### Time-of-day bars — the kaalas

Daylight is split into eight equal parts; a shifting part each day belongs to Rāhu, to Yamagaṇḍa and to Gulika, by weekday. The engine tiers them by how unconditional the classical condemnation is: **Rāhu Kāla = hard block** (the only unconditional one); **Yamagaṇḍa and Kāla = strong avoid**; **Gulika and Ardhaprahara = soft** (Gulika carries a benefic carve-out and nullifiers). Source: Kalaprakāśikā; re-tiering reasoned in ADJUDICATION.md.

Stated plainly: the Rāhu Kāla / Gulika / Yamagaṇḍa kaalas and the choghaḍiyā are pañcāṅga **convention** (strongest in the South-Indian tradition), lighter in the oldest Sanskrit corpus than tithi and nakṣatra muhūrta. The engine says so, and never lets a "good" choghaḍiyā slot override a hard kaala on the same minutes. The choghaḍiyā has no classical Sanskrit root at all.

### The day's own grades — tithi, nakṣatra, yoga, karaṇa

**Tithi:** the fortnight's days fall into Nanda / Bhadrā / Jayā / Riktā / Pūrṇā; the **Riktā** tithis (4, 9, 14) are "empty" and avoided for new work, as is Amāvāsyā. The defective set (4, 6, 8, 9, 12, 14) is **Pakṣa-Chhidra** (छिद्र, "hole/defect"), a lighter caution. Source: Kalaprakāśikā, lines 10798–10821.

**Vāra-Nakṣatra grade:** each weekday pairs well or badly with the day's Moon-nakṣatra. The top grade is **Siddha / Amṛta**; the destructive grade is **Nāśa / Mṛtyu / Dagdha**. The hard canonical combinations (Amṛta-Siddhi, Mṛtyu, Dagdha) are confirmed across three sources; the full per-weekday lists follow Kalaprakāśikā Ch. XXXV. **Yoga:** of the 27 nitya-yogas, Vyatīpāta (17) and Vaidhṛti (27) are blocked for their whole span; seven others are malefic only in their opening nāḍīs. **Karaṇa:** Viṣṭi (Bhadrā) is avoided, with the four fixed karaṇas.

### Personal factors — only if you give a birth star

**Tārābala** counts nakṣatras from your janma-nakṣatra to today's, mod 9: favourable at 2, 4, 6, 8, 9. A source conflict was adjudicated here — the "22nd = Vaināśika" belief is **rejected**: by the standard Navatāra formula the 22nd is Kṣema (favourable), and B.V. Raman explicitly debunks the 22nd-as-destructive superstition. **Chandrāṣṭama** flags the ~2 days a month the Moon transits the 8th rāśi from your natal Moon sign. Both are optional; the engine works fully without birth data.

### Travel factors, and the ephemeris doṣas

For travel: **Diśā-Śūla** is the weekday's forbidden direction of setting out (Mon/Sat East, Thu South, Sun/Fri West, Tue/Wed North), with the book's ghaṭikā-since-sunrise relaxation; and **Pañcaka-South** bars southward journeys while the Moon is past 300° (Dhaniṣṭhā's later part → Revatī), Yama's direction. The precise ephemeris doṣas — **gandānta** (Moon/Sun/lagna at the 0°/120°/240° seams), **saṅkrānti** (Sun at an ingress), **combustion and retrogression** of the act's kāraka planet — carry exact orbs from BPHS, Wilhelm and Kalaprakāśikā.

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## The verdict: a cascade, not a score

Every fired factor is tagged with a tier, and the verdict is **tier-first, not additive**. A moment falls through gates in order: (1) any **hard block** (T0 — Rāhu Kāla, Viṣṭi, Amāvāsyā, Vyatīpāta/Vaidhṛti, gandānta) → **Blocked**. (2) else any **strong, time-bound avoid** (T1) → **Avoid**. (3) else the net of supports minus soft cautions grades it Excellent / Good / Neutral / Weak.

Two structural rules protect honesty. A day-long routine caution (a Riktā or adverse-nakṣatra **day**) caps the verdict at "workable" rather than blocking the whole day — it keeps a live day alive. And **Abhijit**, the 8th of the day's 15 muhūrtas across local noon, lifts a moment to at least Good when no hard or strong bar is present — but it can **never** override a T0/T1. The small integers only ever grade Good↔Neutral; they never cross a tier. Correctness here is structural, not numeric.

06

## Sources, and where we say 'convention'

The ground truth is the primary texts, not a model's memory. The primary muhūrta reference is **Kalaprakāśikā** (N.P.S. Iyer, 1917, public domain); astronomy from the **Sūrya Siddhānta** (Burgess,

1860); graha and hora nature from the **Bṛhatsaṃhitā** (Varāhamihira); the canonical muhūrta corpus **Muhūrtacintāmaṇi** (Rāma Daivajña, 1601) and **Muhūrta Mārtaṇḍa**; and, for verification of readings, BPHS and Ernst Wilhelm's Muhūrta compilation.

OCR honesty: the held Muhūrtacintāmaṇi copies are OCR-grade Devanāgarī. A śloka from them is treated as **proxied**, cited by verse, until it passes a human multi-witness proof-pass — the engine's math runs on verified English (Wilhelm / BPHS / Kalaprakāśikā), not raw OCR. The two ślokas quoted in this document are from clean witnesses (Bṛhatsaṃhitā typeset Devanāgarī).

07

## Why you can check it, not just trust it

The engine carries a regression suite of **336 assertions** that must pass before any change ships — fixture tests (a rule fires at the correct tier), invariant tests (tier boundaries are never crossed by a stack of supports), and cross-checks against at least two independent oracles (an offline astronomy library and a live pañcāṅga). Its localized reasoning in seven languages is held **byte-identical** to the engine's own prose by a parity gate, so a translation can never quietly say something the engine did not.

Timings may differ from another pañcāṅga by a minute or two — that is a convention difference (sunrise definition, ayanāṁśa school), not an error, and it is stated wherever it matters. Everything above is open to your checking: recompute a sunrise, re-derive a tithi, follow a verdict factor by factor back to its verse.

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This is an informational, traditional muhūrta reference — not professional (financial, legal, or medical) advice, and it makes no scientific claim. Timings may differ slightly from other pañcāṅgas by convention. Built by Devalok · muhurat.day