Case Studies: Navigation, Ice■Phase, and Bio Translation

Navigation (marsLanding)

GAE attests NGD with timing/safety witnesses; CEC requires evidence pins (atm_density_known,dv_budget_known). LD emits NTER until supplied, then OPEN, commit, ledger, residues■only replay.

Ice■Phase (iceVII)

GAE NGD includes phase witnesses and evidence pins (pressure≥2.0 GPa, temp≥10°C). Until measured facts are attached, LD CLOSE with NTER; once satisfied, legality checks (Type■II, pal) must still pass before OPEN.

Codon Pairing & Duplex Twin

Scratch■only simulation of codon–anticodon duplexes and peptide bond formation framed as contracts; demonstrates symbolic→physical gating without hallucination: STOP where real■world chemistry is needed; OPEN only with admissible witnesses.