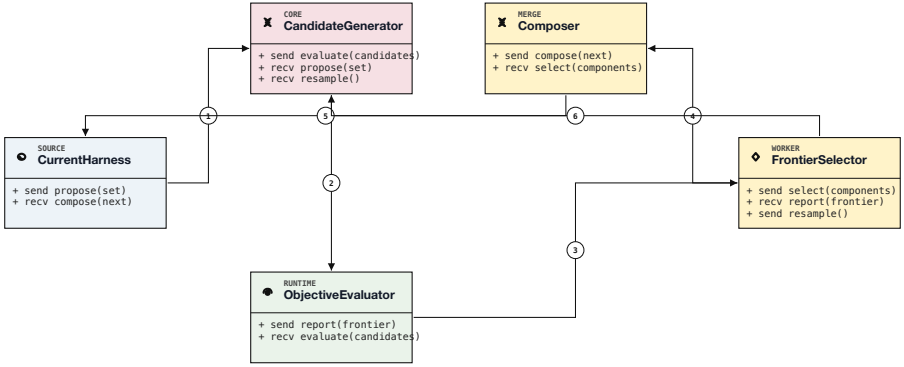
E04 Multi-objective evolution and composition

Evolution · A² A2/A3 · fork join role collaboration

Search among competing objectives.

STRUCTURE · PARTICIPANT COLLABORATION



PATTERN INTERFACE

context
Candidate harnesses differ across at least two measured objectives.

trigger
Evaluation yields an objective vector.

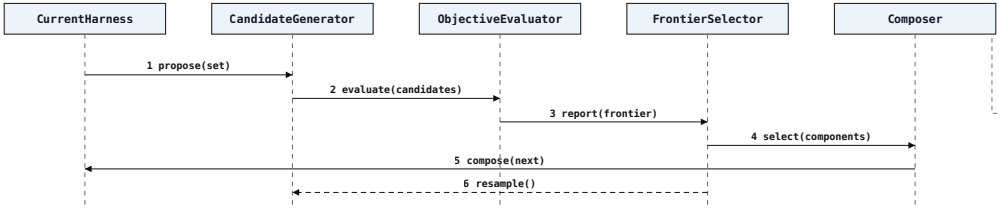
structure
Declared objectives, constraints, candidate set, and Pareto or scalar selection.

effect
Selected candidates preserve documented trade-offs rather than one hidden score.

CONTRACT ANNOTATIONS

requires	Objective direction, weight, and constraints are explicit.
ensures	Selection records candidate vectors and dominance or scoring rationale.
invariant	A hard constraint failure cannot be hidden by strong average quality.
violation	Missing objective or incomparable candidate is marked ineligible or ambiguous.

INTERACTION



MESSAGE TRACE `1 propose(set) → 2 evaluate(candidates) → 3 report(frontier) → 4 select(components) → 5 compose(next) → 6 resample()`

Evidence: 9/41 repositories, 8/36 families; 9 trajectories (7 multi-checkpoint); exact audit: not sampled.

Variation: Quality-cost trade-off, Pareto front, weighted fitness, and constraints.

Negative control: A single accuracy score is not multi-objective selection.