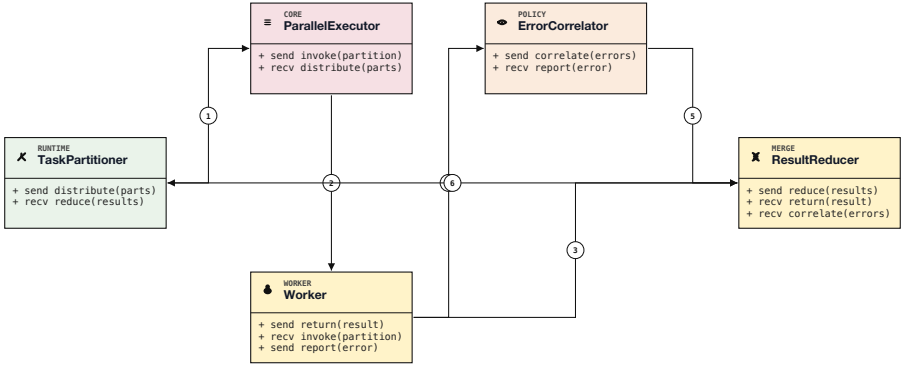
W03 Parallelization

Workflow · A² A1 · fork join role collaboration

Run independent work or alternative judgments concurrently.

STRUCTURE · PARTICIPANT COLLABORATION



PATTERN INTERFACE

context

Independent tasks or alternative judgments can run concurrently.

trigger

A coordinator fans work out and later aggregates it.

structure

Partition contract, worker identity, result correlation, and reducer.

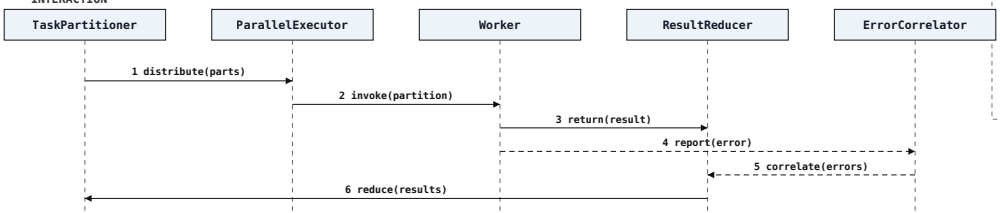
effect

All selected results are reconciled into a declared aggregate or failure.

CONTRACT ANNOTATIONS

requires	Work partitions are independent enough for concurrency.
ensures	Aggregation includes every expected result or records its absence.
invariant	Partial completion is never represented as full agreement.
violation	Failures, timeouts, and cancellation follow declared quorum or terminal policy.

INTERACTION



MESSAGE TRACE 1 distribute(parts) → 2 invoke(partition) → 3 return(result) → 4 report(error) → 5 correlate(errors) → 6 reduce(results)

Evidence: 28/41 repositories, 24/36 families; 28 trajectories (13 multi-checkpoint); exact audit: not sampled.

Variation: Sectioning, voting, map-reduce, and parallel tool calls.

Negative control: Bare Promise.all without a fan-in contract is only a cue.