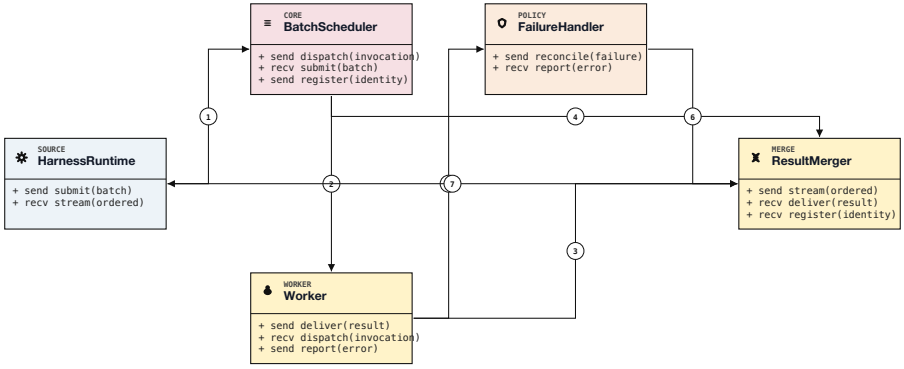
P02 Streaming concurrent batch loop

Primitive · A² A1 · fork join role collaboration

Overlap output and independent work.

STRUCTURE · PARTICIPANT COLLABORATION



PATTERN INTERFACE

context

Multiple model, tool, or batch tasks are authorized to run concurrently.

trigger

A batch is dispatched or streamed.

structure

Invocation identity, cancellation control, and result correlation.

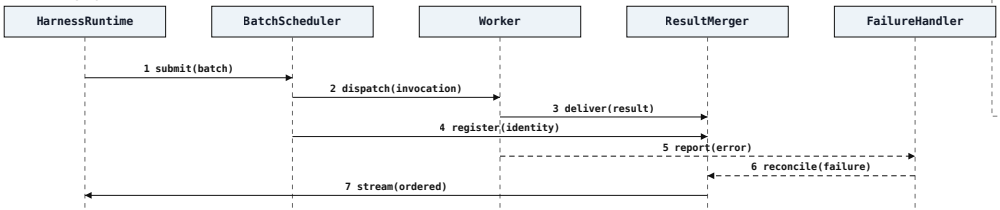
effect

Streamed or completed results are merged without losing or duplicating ownership.

CONTRACT ANNOTATIONS

requires	The runtime exposes concurrency and a way to await or cancel outstanding work.
ensures	Every accepted invocation is linked to its result or explicit failure.
invariant	The harness does not declare completion while unreconciled work remains.
violation	Partial failure and cancellation produce explicit terminal states and cleanup.

INTERACTION



MESSAGE TRACE `1 submit(batch) → 2 dispatch(invocation) → 3 deliver(result) → 4 register(identity) → 5 report(error) → 6 reconcile(failure) → 7 stream(ordered)`

Evidence: 40/41 repositories, 36/36 families; 40 trajectories (19 multi-checkpoint); exact audit: not sampled.

Variation: Batch size, asyncio or promise scheduler, streaming reducer, and ordering policy.

Negative control: Generic concurrency in an unrelated subsystem does not count.