Lifecycles and Flows

Fundamentals · https://namazustudios.com/docs/fundamentals/lifecycles-and-flows/

This page describes somecommon end-to-end flows in Elements. These flows show how features work together over time, rather than focusing on individual APIs. In these flows, authoritative code may live inside a Custom Element, which can act as the core game server.

If you are new to backend or server-side concepts, start here. You do not need to understand every API to follow these diagrams.

How to Read These Flows

Each flow is shown as a sequence of steps:

- Client – code running on the player's device (UI, input)
- Authoritative Code – your server or a Custom Element
- Elements – the platform applying and enforcing state

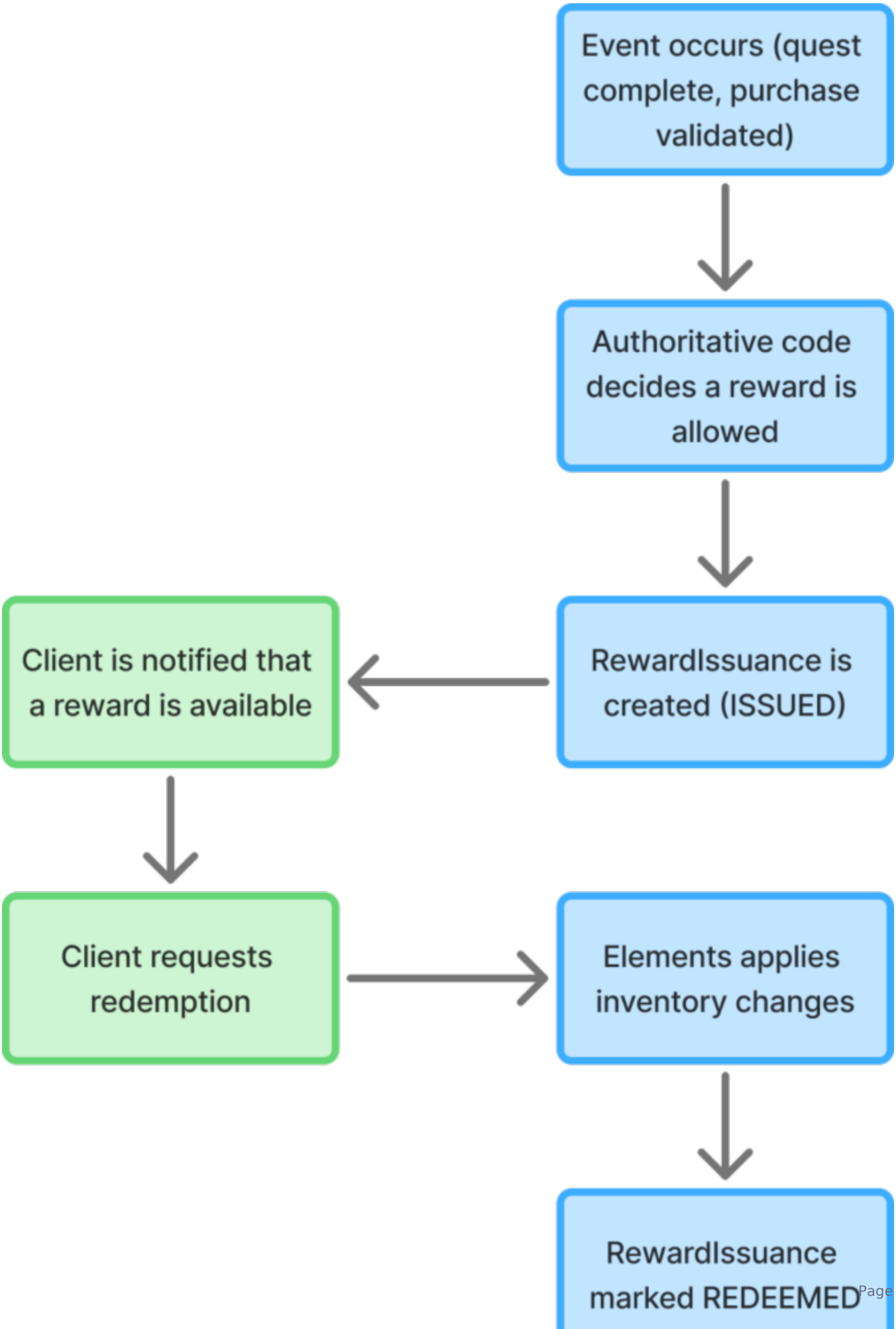
The same flow applies whether your authoritative code runs on:

- your own game server, or
- a Custom Element inside Elements

Reward Lifecycle

Rewards in Elements are deliberately split into issuance and redemption. This prevents duplication and gives you control over *when* rewards are applied.

Typical Reward Flow


Event occurs (quest complete, purchase validated)
Authoritative code decides a reward is allowed
RewardIssuance is created (ISSUED)
Client is notified that a reward is available
Client requests redemption
Elements applies inventory changes
RewardIssuance marked REDEEMED

Why This Exists

- Prevents duplicate rewards
- Allows safe retries
- Supports delayed claiming (reward screens, inboxes)
- Makes reward application auditable

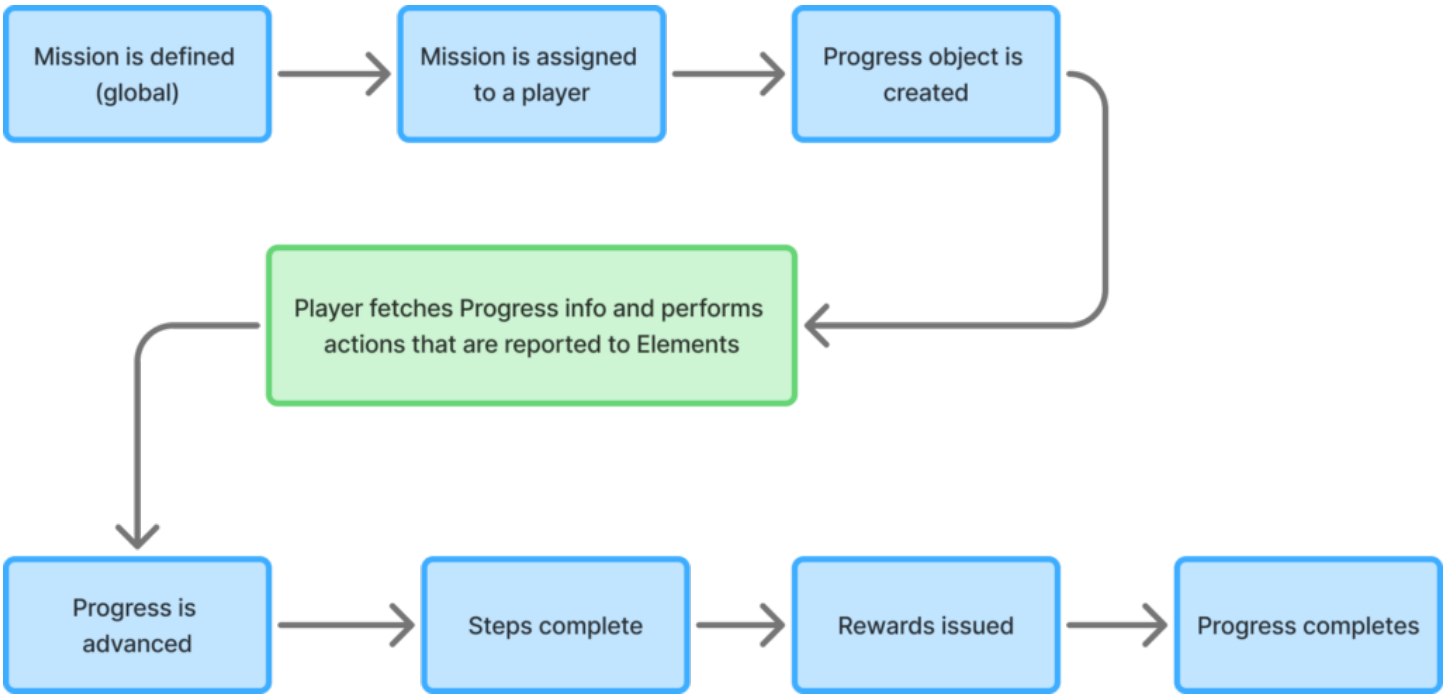
Common Variations

- Immediate rewards: issuance and redemption happen back-to-back
- Delayed rewards: issuance happens first, redemption later
- One-time rewards: persistent issuances prevent duplicates

Mission and Progress Lifecycle

Missions define what can be done. Progress tracks what a player has done.

Typical Mission Flow



Key Concepts

- Missions are copied into progress; later edits do not affect existing players
- Progress is advanced only by authoritative code
- Step completion can trigger reward issuance

Common Variations

- Repeatable missions: progress resets after completion
- Scheduled missions: assignment is controlled by Schedules
- Parallel missions: multiple missions active at the same time

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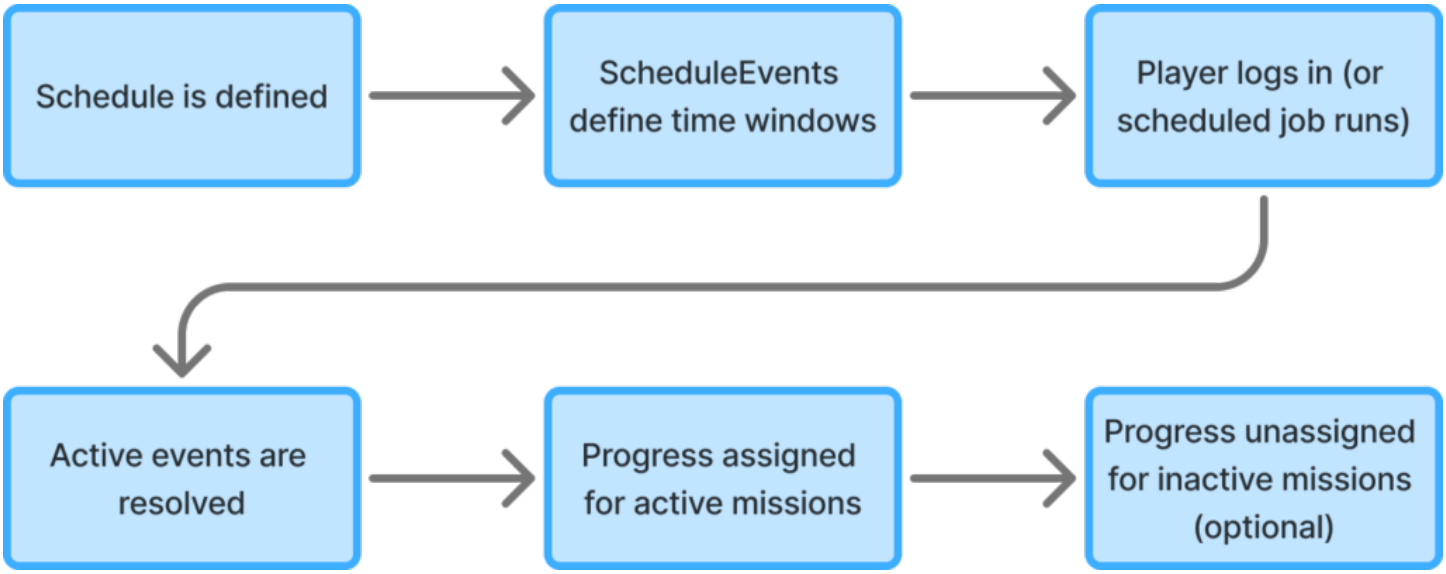
Schedule Lifecycle

Schedules control *when* missions are active.

Typical Schedule Flow



Why Scheduling Is Separate

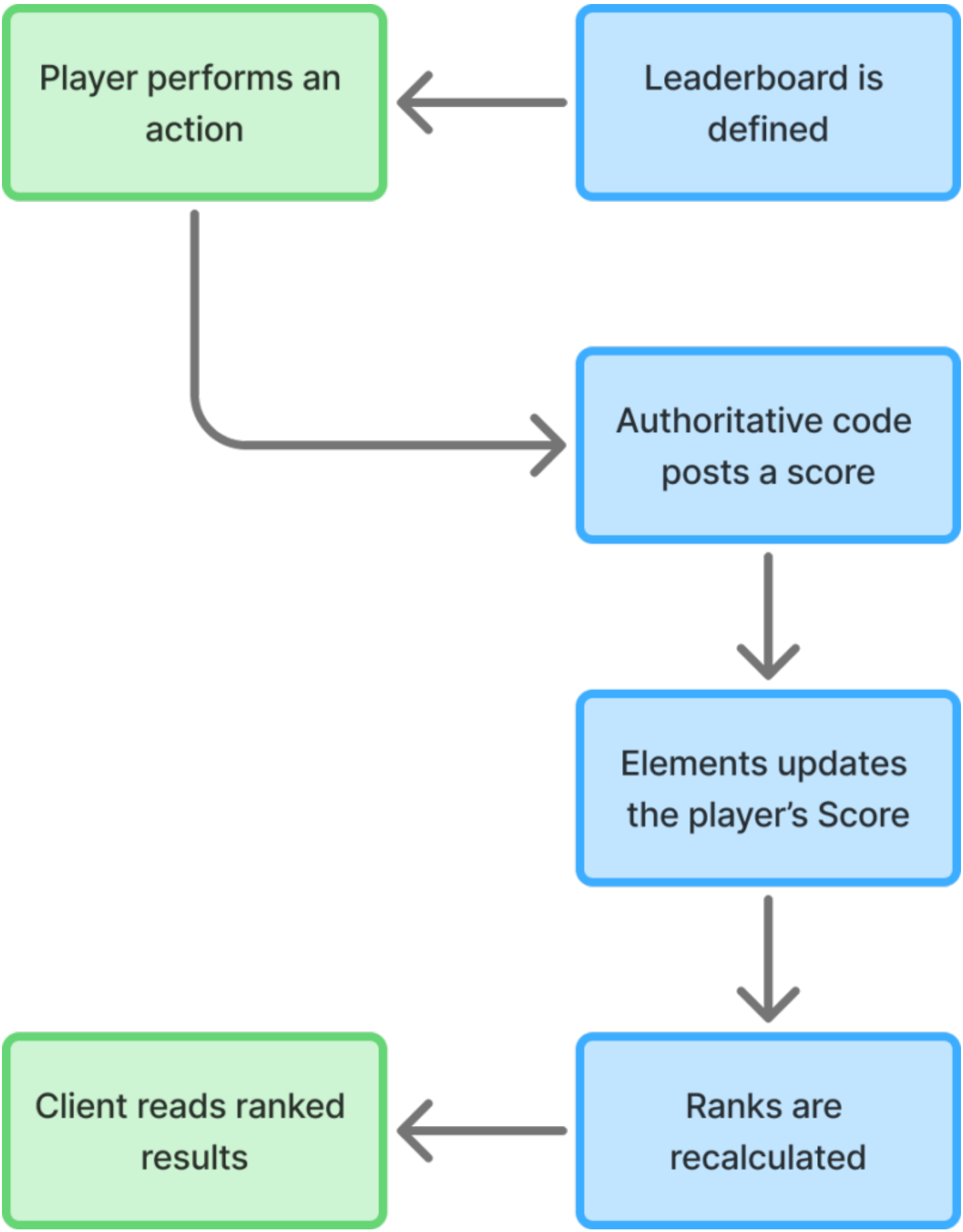
- Allows time-based content without hardcoding dates
- Supports seasonal and rotating content
- Makes mission assignment safe to repeat

Schedules do **not** track player progress themselves — they only control assignment.

Leaderboard Lifecycle

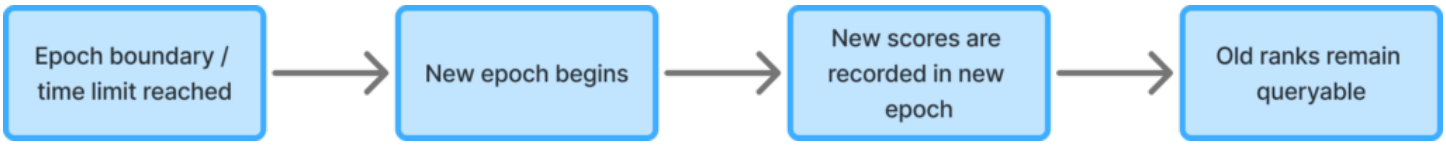
Leaderboards track and rank player scores over time.

Typical Leaderboard Flow


Leaderboard is defined
Player performs an action
Authoritative code posts a score
Elements updates the player's Score
Ranks are recalculated
Client reads ranked results

Epochal Leaderboards

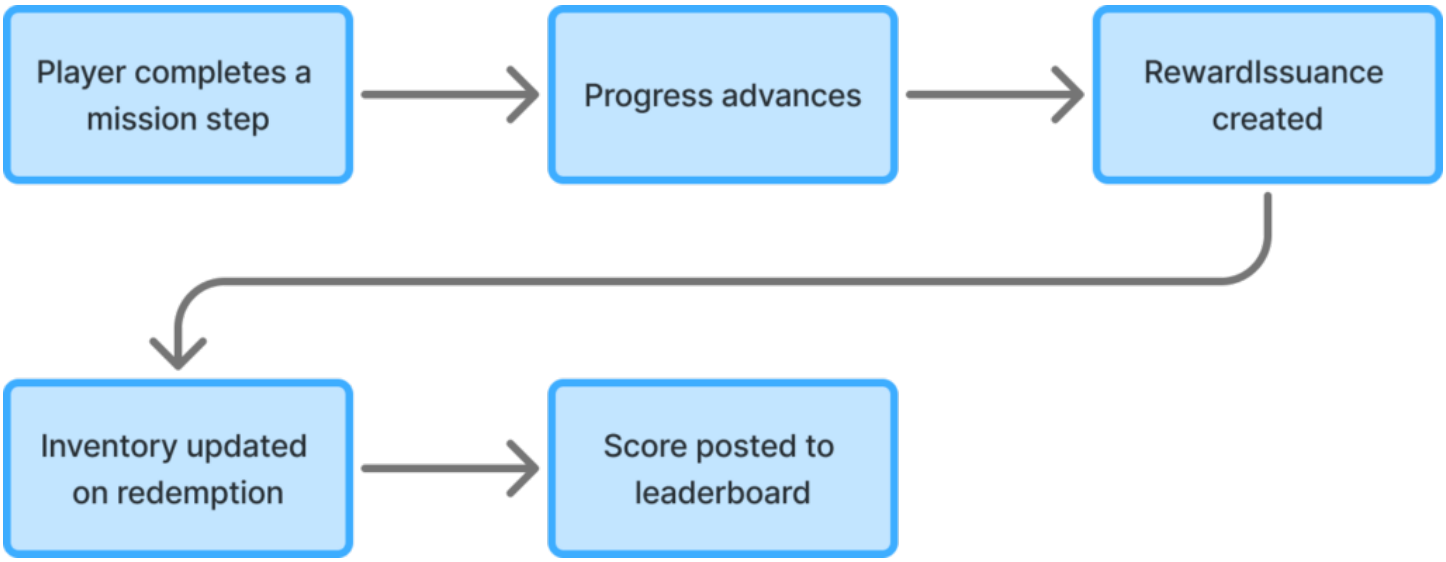
For resetting leaderboards:



Epoch handling is automatic once configured.

Putting It All Together

Many production systems combine multiple flows:



Elements is designed so these operations are:

- safe to retry
- resistant to duplication
- auditable

What to Read Next

After understanding these flows:

- See **Rewards** & **Digital Goods** to dive deeper into issuance and inventory

- See **Progress & Missions** for detailed mission configuration
- See **Leaderboards** for ranking and social queries

If you’re unsure where code should live, review **Why You Need a Server** and **Custom Elements** in General Concepts.