# Feature Proposal Document – Echo

**Project**: Online Multiplayer Board Game Platform (OMG)

**Date**: March 21, 2025

## Feature 1: Turn Timer and Anti-Stalling System

### High-Level Description

In the current platform, there is no mechanism to prevent players from delaying or abandoning their turns indefinitely, leading to frustration and incomplete games. To ensure fairness and maintain steady pacing, we propose a Turn Timer and Anti-Stalling System that limits the duration of each turn and penalizes repeated inactivity. This feature enforces timely decision-making and guarantees that games cannot be stalled indefinitely.

### Expected Impact on the System

- Maintains consistent game flow and prevents disruption due to inactive players.
- Improves user experience and encourages fair play across all game modes.
- Reduces match abandonment and dropouts.
- Increases system robustness by auto-resolving inactivity.

### Suggestions for Implementation or Design

**Turn Timer Integration**: A visible timer (default 30 seconds) is shown for each player's turn, with backend synchronization to prevent manipulation.

**Grace Periods & Auto-Move**: Players exceeding the timer receive one warning. A second violation results in an automatic default move or turn skip.

**Stalling Penalties**: Three consecutive expired turns trigger an auto-forfeit, and the game proceeds.

**UI Elements**: Countdown overlay, turn alerts, and inactivity warnings should be integrated into the game board UI.

**Repeat Offender Handling**: Players with frequent inactivity may be flagged and restricted in matchmaking for a cooldown period.

This feature is applicable to all three games (Checkers, Connect Four, and Whist) and aligns with Team Echo's goals of providing competitive, uninterrupted multiplayer gameplay.

## Feature 2: Advanced Leaderboard Filtration System

### High level description:

The current leaderboard system provides a general ranking of players but lacks filtering capabilities for more detailed insights. Enhanced leaderboard system will also enhance usability and competitiveness. We propose an advanced leaderboard filtration system that allows players to view and sort data based on different criteria's such as different skill levels, region, time played, etc. This ensures that players have more areas that they can specialize in.

### Expected impact on system

- Enhances player engagement by allowing users to view rankings based on preferred criteria.
- Encourages competition between specific groups. E.g. Regional leaderboards, specific skill levels etc.
- Provides more dynamic viewing of data without affecting the backend too much.
- Could also potentially improve matchmaking by selecting players from similar places on specific leaderboards such as activity level.

### Suggestions for implementation

**Filter Categories:**

- Skill-Based Tiers: Allow sorting by rank brackets (e.g., Beginner, Intermediate, Expert).
- Regional Filters: View rankings based on geographic location. View leaderboards by country, state, or city for more localized competition.
- Recent Performance: Display rankings for the last 24 hours, 7 days, 30 days, or all-time.
- Win/Loss Ratio Sorting: Option to rank players based on efficiency rather than total wins.

**Backend Optimization & Performance Considerations:**

To maintain system efficiency:

- Leaderboard data caching will reduce database load for most accessed filters.
- Asynchronous processing to ensure fast, seamless updates. Updates to the leaderboard can happen in the background or get added to a queue.
- Indexing ranking data to improve retrieval speed.

- Pagination & lazy loading to display rankings in batches rather than loading the entire dataset at once.

**Competitive Rewards Integration:**

- Special recognition for top players in filtered categories.
- Weekly or monthly leaderboards that reset for fresh competition.

This feature would be applicable for all games and has great scalability and with almost endless categories, every player has a different category that they can excel in which also makes the games more fun and adds a unique competitive edge.