# 🟢 CCSL – Cricket Card Strategy League

## 🗡️ Stakeholder Requirements Document (BOT Edition)

## 📌 1. Functional Requirements

### 🎮 1.1 Game Setup

- **Game Modes:**

    - Player vs AI *(BOT Edition)*

    - *(Player vs Player mode optional for future release)*

- **Match Formats:**

    - Predefined: 1 Over, 2 Overs, 3 Overs, 5 Overs, 10 Overs

    - Custom: User-defined over count

- **Toss Logic:**

    - Toss decides who bats or bowls first

### 🃏 1.2 Card Play Mechanics

- **Card Set:**
  Values from 0 to 6

    - Power Cards: 4 and 6

    - Cooldown for 6 after play (2 turns)

- **Batsman Tools:**

  - Strategic Pass *(1 per innings)*

  - Run Streak Bonus *(after 4 valid scores)*

  - Anticipation Bonus *(if bowler's card predicted)*

  - *(Hidden Card removed in BOT Edition)*

- **Bowler Tools:**

  - No Ball & Free Hit logic *(for duplicate cards)*

  - Defense Mode *(reduce 4s and 6s)*

  - Trap Mode *(auto-out on trap cards)*

  - Power Blocker *(nullify 4/6)*

  - Field Shift Bonus *(force even cards only)*

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## ⚖️ 1.3 Special Rules & Conditions

- **No Ball:** Same card twice → +1 run, next ball = Free Hit

- **Free Hit:** No Out even if cards match

- **Economy Reward:** 3-ball economy → force batsman to play 0 or 1

- **Cooldown Rule:** No two 6s consecutively

- **Tool Usage Limits:**

  - Per over and match based on format (1/2/3+ overs)

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## 🔁 1.4 Turn Simulation

- Each over = 6 turns

- Role switches after first innings

- **Real-time validation** of special rules

- Live commentary/message log for each turn outcome

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## 🏁 1.5 Endgame Conditions

- Match ends after:

  - All overs played

  - OR all wickets lost

- **Scoreboard Includes:**

  - Runs, Wickets, Overs, Extras

- **Result Types:** Win / Lose / Tie / Draw

- (*Super Over = Optional enhancement*)

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# 🎨 2. UI/UX Requirements

## 🏠 2.1 Home Screen / Dashboard

- Match Format Selector

- Start Game button

- Buttons: *View Rules*, *About CCSL*

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## 🕹️ 2.2 In-Match UI

- **Top Panel:** Score, Over Count, Wicket Count

- **Center Panel:** Card Picker UI

- **Side Panel:** Power Mode Buttons + Status (usage left, cooldowns)

- **Bottom:** Commentary Box / Turn Logs

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## 🧩 2.3 Card Selection Panel

- **For Batsman:** Buttons for 0–6 + Strategic Pass

- **For Bowler:** Buttons for 0–6 + Trap Mode Toggle

- Visual indicators for:

    - Active Modes: Defense, Power Blocker

    - Cooldowns and One-time-use states

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## 🏆 2.4 Result Screen

- Final Summary:

    - Runs, Overs, Wickets, Extras

- Player of the Match highlight

- Buttons: *Replay*, *Return to Home*

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## 🖼️ 2.5 Visual & Accessibility

- Card-style UI with animations

- Power Moves → unique color / effect

- Theme toggle: Dark Mode / Light Mode

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# ⚙️ 3. Technical Requirements

## 📱 3.1 Platform

- Developed in **Flutter (Dart)**

- Supports: Android, iOS, Web

- Local-first; Backend optional (for multiplayer or analytics)

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## 🧠 3.2 Game Logic

- **Class-based Architecture:**

  - `Batsman`, `Bowler`, `MatchEngine`

- Real-time validation for:

  - Cooldowns

  - Rule violations (e.g., repeated card)

- **Track & Persist:**

  - Power Card Usage

  - Economy Runs

  - Tool Activation Counters

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## 🗄️ 3.3 Storage

- **Local Storage:**

    - Use `shared_preferences` or `Hive`

    - Store: Match History, Tool Usage, Player Stats

- **Optional Backend (Firebase):**

    - Real-time sync (for future multiplayer mode)

    - Q-table or analytics tracking

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## 🚀 3.4 Performance

- Lightweight animations (Flutter-optimized)

- All logic decoupled from UI for performance

- Async-safe handling of Q-table and reward updates

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# ⭐ 4. Optional Enhancements (Stretch Goals)

| Feature | Description |
|---|---|
| 🎮 Multiplayer | LAN / Firebase PvP |
| 🤖 AI Difficulty Levels | Easy / Medium / Hard RL Bots |

| 🥇 Achievement Badges | Milestones like "Power Play Master", "No Ball Slayer" |
| --- | --- |
| 🏆 Leaderboards | Global or local rankings |
| 🔊 Audio Commentary | Turn-based voice lines or sound effects |
| 🎯 Super Over Mode | Sudden-death tiebreaker |