# **System Description: Football Betting DApp**

## **1. Overview**

This project is a decentralized football betting application (DApp) built on the Ethereum blockchain. It allows users to place bets on football matches without any middleman. The system is fair, transparent, and runs automatically using smart contracts written in Solidity.

Each football match is called a Match. Inside each Match, users can join different Rooms. Each Room has a different betting condition, for example, team A gives 0.5 goals, etc.

Users can bet in many Rooms within the same Match. Rewards are calculated based on how much they bet compared to others, and a 3% fee is only charged when someone wins.

## **2. Main Concepts**

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| --- | --- |
| **Term** | **Meaning** |
| **Match** | A football match (e.g., Team A vs Team B) |
| **Room** | A specific bet inside a Match (e.g., A gives 0.5 goals) |
| **Stake** | Amount of ETH the user bets on one team in a Room |
| **Valid Room** | A Room where both sides (A and B) have at least one bet |
| **Cancelled Room** | A Room where only one side has bets → it will be cancelled |
| **Reward** | The total amount received by a winning user, including their original stake, their share of the losing side’s stake, minus the platform fee. |

## **3. How the System Works**

1. **Create Match and Room**

Admin creates a Match for each match and creates Room(s) for each match.

1. **Join Room**

Users can join Rooms with custom bet conditions. User only can join if the money in the wallet is equal to or more than the amount set for the room.

A screenshot of a computer screen

AI-generated content may be incorrect.

1. **Place Bets**

Users bet ETH on one team. The Room will be locked at match start time.

1. **Check Room Validity**

If both sides have bets → the Room is valid.

If only one side has bets → cancel the Room and return money.

1. **Result Entry**

After the match ends, the result is entered by the Admin.

1. **Calculate Rewards and Distribution**

The smart contract calculates rewards for winners. Losers lose their bet. If it's a draw, everyone gets their money back. A fixed 3% fee only applies to winners.

## **4. Formula**

If a user wins in a valid Room:

If a user wins in many Rooms inside one Match:

## **5. Special Rule**

|  |  |
| --- | --- |
| **Case** | **System Behaviour** |
| Only one side has bets | Room is cancelled, refund all users |
| Draw (based on Room condition) | Refund all users, no fee |
| User wins | Gets back bet + wins from losers − 3% fee |
| User loses | Loses full bet, no fee charged |
| User joins multiple Rooms | Each Room is calculated separately; rewards are added together |

## **6. Fee Policy**

* Only winners pay a fee.
* 3% of each reward is taken as a platform fee.
* Fee is sent to a system wallet.
* No fee is taken in draw or cancelled rooms.

## **7. System Benefits**

* Transparent: Everything is on the blockchain.
* Fair: Rewards are based on how much you bet.
* Automatic: Rewards, refunds, and fees are all handled by code
* Flexible: Users can join multiple Rooms per match.

## **8. Future Ideas**

* Use chainlink oracles to get match results automatically.
* Allow custom odds or dynamic payout rules.
* Share some fee revenue with active users.