trust16

A Blockchain-Based Game of Strategy and Cooperation

Decentratech

1 Overview

`trust16` bootstraps trust dynamics in a gamified environment using a multi-state mechanism popularized by similar blockchain projects. The first state, known as the Short Game Mode, uses an abridged Player vs Player (PvP) format with multiple rounds as described in section 3.

Once a player's reputation reaches a predefined value, a State Transition occurs whereby they unlock access to the Long Game Mode, featuring more complex strategic elements as outlined in section 4.

2 Economic variables

Price p is defined per table 1 and equation 1.

Term	Notation	Asset
TRUST token	t	TRUST
Rewards Pool	r	TRUST

Table 1: TRUST token and Rewards Pool definitions

$$p = \frac{t}{r} \tag{1}$$

The economic variables in table 2 fully specify the set of numerical values required for the implementation, as derived in sections 3 through 6.

Term	Notation
Player deposit	d_p
Rewards pool contribution	c_r
Cooperation reward	r_c
Competition reward	r_t

Table 2: Economic variables for game modes

3 Short Game Mode

The Short Game Mode in Trust16 is designed to create a fast-paced, strategic experience that encapsulates the core dynamics of trust and betrayal. Here's a detailed breakdown of how it works:

3.1 Setup

- Each player deposits d_p TRUST
- The rewards pool contributes c_r TRUST
- Total Game Pool starts at $2d_p + c_r$ TRUST

3.2 Rounds

The game consists of 5 rounds. In each round:

- Players simultaneously choose to either Cooperate (Green) or Compete (Red)
- Choices are revealed, and TRUST is redistributed based on the decisions

3.3 TRUST Distribution

TRUST distribution follows the pattern described in table 3.

Scenario	Player 1	Player 2
Green-Green	r_c from deposit $+r_c$ from rewards pool	r_c from deposit $+r_c$ from rewards pool
Red-Green	Previous balance + Player 2's balance $+r_t$ from Player 2	r_c from rewards pool
Red-Red	0 TRUST	0 TRUST

Table 3: TRUST distribution based on player choices

4 Long Game Mode

The Long Game Mode offers a more in-depth strategic experience:

- Duration: Variable, based on player-set chat time
- Includes a chat phase for negotiation and strategy discussion
- Single round with higher stakes
- Complex reward distribution based on negotiation outcomes

5 Technical Architecture

5.1 Blockchain Integration

Trust16 leverages the Aptos blockchain for its smart contract functionality, ensuring transparent and immutable game outcomes.

5.2 Smart Contract

The core smart contract handles functions described in table 4.

Function	Description
Player matching	Pairs players based on reputation and preferences
Bet escrow	Securely holds player deposits during games
Outcome verification	Uses Verifiable Random Functions (VRFs) to ensure fair play
Reward distribution	Allocates TRUST based on game outcomes

Table 4: Smart contract core functions

6 Tokenomics

Trust16 introduces a unique, community-focused tokenomics model that provides direct value to players while simultaneously enriching the game's reward ecosystem.

6.1 Token Valuation and Purchase

- 1 TRUST = 0.05€ (or 1€ = 20 TRUST)
- Standard Purchase Example: For 10€, a total of 200 TRUST is minted

6.2 Community-Boosting Dual Allocation

When a player purchases TRUST tokens, the minted amount is equally split between the player and the game's Rewards Pool:

- Player Allocation: The player receives half of the total minted TRUST tokens
- Community Rewards Pool: The other half of the minted TRUST tokens is added directly to the game's Rewards Pool

6.3 Rewards Pool Utilization

The Rewards Pool, boosted by this dual allocation system, is used as described in table 5.

Utilization	Description
Tournaments	Fund larger prize pools for special events
Bonuses	Provide rewards for consecutive cooperative plays
Creator Rewards	Offer incentives for content creation
Jackpot Events	Create periodic high-value prize opportunities
Community Initiatives	Support engagement and growth activities

Table 5: Rewards Pool utilization

7 Character Traits System

7.1 Core Traits

The game maintains 16 standard character traits, each representing different strategic approaches and playstyles.

7.2 Seasonal Trait Variations

To keep the game dynamic and encourage strategic adaptation:

- Each season, 4-6 characters receive significant trait changes or "seasonal variants"
- Seasonal variants feature visual changes (themed skins) and adjusted trait behaviors
- Remaining characters receive minor trait tweaks to keep the meta fresh
- Occasional introduction of new characters (yearly) with potential retirement of underperforming ones

8 Reputation System

Trust16 implements a sophisticated Reputation System, represented by a soulbound token, which reflects a player's standing within the community.

8.1 Reputation Formula

The reputation score (R) is calculated using the following formula:

$$R = \min(100, GP + CB + SS + CE + CP - RD) \quad (2)$$

Where the components are defined as per table 6.

9 Conclusion

Trust16 represents a pioneering effort in blockchain gaming, blending sophisticated game theory with cutting-edge technology. By creating a platform that is simultaneously a game,

Component	Description	Max Points
GP	Games Played	50
CB	Cooperative Behavior	20
SS	Successful Strategies	15
CE	Community Engagement	10
CP	Consistent Play	5
RD	Reputation Decay	Variable

Table 6: Reputation formula components

a social experiment, and a research tool, Trust16 aims to push the boundaries of what's possible in the realm of decentralized applications.

As we move forward, we invite players, developers, researchers, and institutions to join us in exploring the fascinating world of Trust16. Together, we can not only enjoy a compelling game but also contribute to meaningful insights that could shape our understanding of human behavior and social interactions in the digital age.