IAP WHITEPAPER

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1. Introduction

Background of Auction Protocols

Auctions have been a pivotal method of asset allocation and price discovery for centuries. From ancient civilizations to modern online platforms, auctions have undergone numerous evolutions to adapt to the changing needs of society. With the digital revolution, online auctions became prevalent, and now with the advent of blockchain technology, decentralized auctions are taking center stage. Auction protocols on the blockchain offer transparency, security, and a trustless environment, ensuring a fair process for all participants.

Need for an Incentivized Auction Protocol

While traditional auction mechanisms focus solely on the highest bid as the winning criterion, there is untapped potential in creating more dynamic and beneficial auction systems. The Incentivized Auction Protocol (IAP) is conceived with the vision of maximizing positive outcomes not just for the winning bidder, but for all participants. By providing incentives for those who are outbid and sharing the surplus with a governing DAO, IAP ensures that more participants benefit from the auction process, leading to greater engagement and a healthier auction ecosystem.

2. System Overview

High-level Explanation of IAP

The Incentivized Auction Protocol (IAP) introduces a novel approach to auctions, integrating incentives for all participants within a decentralized framework. Unlike traditional auctions where only the winning bidder and auctioneer derive direct benefits, IAP ensures a broader distribution of benefits, rewarding those who participate actively but might not necessarily win the auction.

Main Components and Their Roles

- Bidders: Participants who place bids on items. They play a crucial role in price discovery and, uniquely in IAP, can gain rewards if outbid, which increases participation and competition.

- Auction Item: The NFT or SPL Tokens being auctioned. It has an initial reserve price, a current bid, and a final settlement price. The final settlement price is what the auctioneer receives, which might be different from the winning bid due to outbid increments distribution.

- DAO (Decentralized Autonomous Organization): The DAO is pivotal in IAP's ecosystem. It not only governs the protocol but also benefits from half of the outbid increments, ensuring continuous funding for protocol development and maintenance. This funding will be distributed to SUBDAOs relative to size per distribution.

- Psuedoblock System: A unique component of IAP, the psuedoblock system orders transactions, ensuring that the most users possible achieve a net positive outcome. By batching and ordering bids, it maximizes the number of participants who benefit from the outbid incentive mechanism.

- User Experience Interface: The front-end interface through which bidders interact with the auction. It features a slippage slider, allowing users to specify a percentage over the current bid they're willing to pay. This ensures dynamic bidding and reduces the chances of rapid, frequent outbidding, enhancing the user experience.

By integrating these components, IAP offers a holistic and enhanced auction experience, ensuring that maximum participants derive value, thereby promoting healthier and more engaging auctions.

3. Bidding Process

How Bids are Made

In the IAP system, bidders interact with the User Interface to place their bids. A distinctive feature of this protocol is the slippage slider, which allows bidders to specify how much more they're willing to pay over the current bid. This creates a dynamic bidding environment where users can strategize their bids based on their valuation of the auction item and their willingness to outbid others.

Outbidding Mechanism

When a new bid is placed that surpasses the current highest bid, an outbidding event occurs. The system automatically calculates the bid increment, which is the difference between the new bid and the previous highest bid. Instead of the entire bid increment going to the auctioneer, IAP introduces an incentive mechanism:

- 50% of the bid increment is returned to the outbid bidder as a reward.
- The remaining 50% is sent to the DAO, providing it with funds and ensuring the sustainability and growth of the protocol.

This dual distribution ensures that while the auctioneer still benefits from the competitive bidding, those who get outbid also have a positive takeaway, encouraging more active participation.

Distribution of Outbid Increments

As bids progress and multiple outbidding events occur, the accumulated outbid increments get distributed in real-time. The outbid bidders receive their share immediately upon being outbid, while the DAO's share accumulates and can be utilized for various purposes, such as protocol development, community initiatives, or rewards. SUBDAOs will receive their weekly distributions relative to the size of the SUBDAO.

4. Auction Settlement

Determination of the Final Auction Price

Once the auction duration is over or the buyout threshold is met, the auction reaches its conclusion. The final bid becomes the determining price for the auction item. However, the nature of the IAP means this final bid price is not the exact amount the auctioneer receives.

Explanation of Settlement Difference

Throughout the auction, there have been several outbidding events. Each of these events resulted in bid increments, half of which were distributed to outbid bidders and the DAO. Thus, the cumulative total of these distributed increments is subtracted from the final bid price to determine the auctioneer's final settlement.

For example, if the final bid is $1,000 and the total outbid increments throughout the auction amounted to $200, the auctioneer receives $800, while the remaining $200 has been split between outbid bidders and the DAO.

Distribution Mechanism Post-Auction

At the conclusion of the auction:

- The winning bidder pays the final bid price.
- The auctioneer receives the final settlement amount, which is the final bid minus the total outbid increments.
- The DAO has already accumulated its share of the outbid increments during the auction's progression.

This mechanism ensures transparency in settlements and maintains the incentive structure even at the auction's conclusion.

5. Psuedoblock Creation

Introduction to the Concept of Psuedoblocks

Within the IAP system, the concept of psuedoblocks is introduced to bring order and structure to the influx of bids. Psuedoblocks are not actual blockchain blocks but are instead conceptual batches of transactions. Their primary purpose is to order bids in a manner that maximizes net positive outcomes for the bidders.

Ordering for Net Positive Outcomes

The IAP system aims to ensure that the highest number of participants benefit from the outbid incentive mechanism. To achieve this, instead of processing bids in a first-come-first-serve manner, bids are grouped into psuedoblocks. These psuedoblocks are then processed to determine which bids will provide the most users with a positive outcome, i.e., receiving a part of the outbid increment.

For instance, if three bids are received at roughly the same time, instead of instantly processing them and having two bidders outbid immediately, the system might wait for a few more bids to determine an order that will result in more bidders benefiting from outbid incentives.

User Notifications and Transparency

Once a psuedoblock is processed and bids are ordered, users are notified of their status. Whether they have successfully placed a bid, have been outbid, or have won the auction, the system ensures transparency in all outcomes.

6. User Experience (UX)

Description of the User Interface

The IAP's user interface is designed with simplicity and efficiency in mind. Recognizing the varying expertise levels of potential bidders in the crypto space, the interface is intuitive, guiding users seamlessly through the bidding process.

Slippage Slider Mechanism

One of the standout features of the IAP's user experience is the slippage slider. This tool allows bidders to specify how much more they are willing to pay over the current bid, ranging from 1% to 1000%. By using the slider:

- Bidders can strategize their bids, balancing between their valuation of the item and their willingness to compete.
- The system gains a dynamic bidding environment, reducing the chances of rapid, frequent outbidding and enhancing the overall auction experience.

User Flow within the Auction System

Upon entering the auction:

1. Users view the auction item and the current highest bid.
2. They set their desired slippage via the slider.
3. They confirm and place their bid.
4. Users receive real-time stats, keeping them informed about their bid status, whether they've been outbid, and the potential incentives they stand to gain.

This user-centric approach ensures that participants have a clear understanding of the auction dynamics and can make informed decisions.

7. Buyout Process

Introduction to the Optional Buyout Threshold

The IAP introduces a mechanism that allows bidders to instantly win the auction before its scheduled conclusion: the buyout threshold. This threshold is an optional feature that auctioneers can set, indicating a price at which they're willing to immediately conclude the auction and sell the item.

Benefits and Use Cases

The buyout threshold serves multiple purposes:

- Speedy Conclusions: For items in high demand or for auctioneers who want a quick sale, setting a buyout threshold can expedite the auction process.

- Public Mint Format: The buyout feature is particularly useful for public mint style auctions. By setting a buyout threshold, auctioneers can attract bidders who are willing to pay a premium to immediately secure the item, benefiting both the auctioneer and the bidder.

- Predictable Outcomes: For bidders, the buyout option provides a clear path to acquiring the item without the uncertainty of the auction's final moments. For auctioneers, it guarantees a sale at a price they're comfortable with.

Triggering a Buyout

If a bidder decides to utilize the buyout option:

1. They will confirm their intent to meet the buyout threshold via the User Experience Interface.
2. Upon confirmation, the auction system processes the buyout, instantly concluding the auction.
3. The auctioneer is notified that the auction has been bought out, and the winning bidder secures the item at the buyout price.

8. Economic Model

Foundations of the IAP Economic Model

At the heart of the Incentivized Auction Protocol is an economic model designed to drive engagement, ensure sustainability, and reward active participation. By reimagining the traditional auction structure, IAP introduces a system where value is more equitably distributed among its participants.

Economic Incentives in IAP

Key incentives within the IAP framework include:

- Outbid Rewards: Traditional auction systems often deter continuous participation due to the fear of being outbid without any returns. IAP addresses this by rewarding outbid participants with 50% of the outbid increment, encouraging more active bidding and competition.

- DAO Funding: The DAO, a critical component of the IAP ecosystem, receives 50% of the outbid increment. This continuous funding mechanism ensures the DAO has the resources for protocol development, community initiatives, rewards, and more.

- Buyout Threshold: The optional buyout threshold allows auctioneers to potentially receive a premium for their items, while bidders get the certainty of securing the auction item without further competition.

Expected Behavior of Participants

With these economic incentives in place:

- Bidders are more likely to participate actively, even if they've been outbid multiple times, knowing they stand to gain a portion of the outbid increment.

- Auctioneers benefit not just from the final settlement but also from the heightened competition and engagement that the outbid rewards generate.

- The DAO has a consistent funding mechanism, ensuring the longevity and continuous improvement of the IAP.

9. Implementation on Solana

Technical Aspects of Implementing IAP on Solana

The Incentivized Auction Protocol is built upon the Solana blockchain, a high-performance platform known for its scalability, low fees, and fast transaction speeds. Integrating IAP with Solana provides several technical advantages:

- Scalability: Solana's capacity to handle a vast number of transactions per second ensures that even large-scale auctions with numerous bidders can operate seamlessly.

- Speed: With block times of 400 milliseconds, real-time bidding becomes a reality, ensuring instantaneous feedback and a dynamic auction environment.

- Cost-Efficiency: Solana's minimal transaction fees mean that both placing bids and distributing outbid increments remain cost-effective for all parties.

Benefits of Solana for IAP

Beyond the technical aspects, Solana offers strategic advantages for the IAP:

- Growing Ecosystem: Solana's rapidly expanding ecosystem, with numerous DeFi projects and NFT platforms, provides a fertile ground for IAP's adoption and integration.

- Security: Solana's Proof-of-History consensus mechanism ensures the security and integrity of all transactions within the IAP.

- Interoperability: Solana's compatibility with various cross-chain protocols means that IAP can potentially extend its offerings beyond the Solana ecosystem in the future.

10. Future Directions & Upgrades

Continuous Development

The Incentivized Auction Protocol, in its innovative design, is only the beginning of a broader vision. As the landscape of decentralized finance and auctions evolves, IAP is committed to advancing alongside it, ensuring the protocol remains both relevant and revolutionary.

Planned Enhancements and Features

- Toolkit (Stage 2): Recognizing the diverse needs of creators and projects in the decentralized space, IAP will introduce a toolkit in its second stage. This toolkit will empower individuals and projects to customize and leverage the IAP mechanism for their unique requirements, granting them the flexibility and benefits of the protocol without rigid constraints.

- IAP Marketplace (Stage 3): Building on the foundation of individual auctions, the third stage will see the launch of the IAP Marketplace. This platform will host multiple auctions simultaneously, allowing a broad spectrum of sellers and buyers to engage, transact, and benefit from the incentivized mechanisms of IAP.

Feedback Loop

Maintaining open channels for community feedback remains a priority. Ensuring that the experiences, suggestions, and potential concerns of users are continually integrated into the development process is paramount for the protocol's evolution and refinement.