LORDLESS

Be a bounty hunter in my tavern.

Preface

LORDLESS is a decentralized task distribution platform with game as carrier. LORDLESS increases the usage scenario of paying token as a reward by developing the tasks, which will substantially enhance the popularity of the project. The task system intended by LORDLESS converts tokens into social attention to the project directly to achieve the goal of increasing project attention.

In the face of industry changes and evolution, platform choices help those who have the ability and ideas to attract fans, guide traffic, manage the community, and output value. Because the platform for providing services is a win-win community with relatively decentralized thinking, the energy of multi-person participation, joint decision-making, and collective creation is far higher than the completely centralized single-player.

But reckless supporting the platform is not a wise move. Think about two questions:

- **Can the business profit be split again?**

- **Can it bring positive feedback to the whole industry after being divided into individual agents?**

In the light of two questions in the previous section, using digital assets as a reward to drive users to complete the target task, can the profit be split again? Can it bring positive feedback to the industry? The LORDLESS team believes that we can achieve this change via the NFT.

LORDLESS splits the token distribution capacities of the platform creatively and injects the capacity into specific NFT assets by posting quest. We define this process as 'Platform Service Digitalizing', PSD. LORDLESS expects to link the task distribution function with tavern in the form of a smart contract so that tavern has a capability of platform-independent token distribution.

The most significant difference between LORDLESS and all current blockchain applications or blockchain games is that LORDLESS has a positive value inflow, not a "Pass the parcel" game, nor a zero-sum game or even a negative sum game.

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01 Task distribution

1.1 Value of task distribution

A token is the circulation certificate of the blockchain project. The primary way for early investors to obtain tokens is via the ICO, which converts the legal tender into digital currency, or the exchange in which you can acquire other tokens with a standard token. With the diversification of the token types, more and more projects decide to airdrop the tokens to the investors in the way of "Candy", promoting circulation and transactions by increasing holders of this token. There are even some projects, such as ONT (Ontology) [1] that choose airdrops to distribute tokens to users thoroughly.

Limited by the singularity of previous distribution ways, digital asset distribution cannot bring actual value to the project. Since the essence of digital asset distribution is task distribution, LORDLESS increases the usage scenario of paying token as a reward by designing the tasks, which will substantially enhance the popularity of the project. The task system intended by LORDLESS converts tokens into social attention to the project directly to achieve the goal of increasing project attention.

When the rewarding via digital assets has been made universal, task distribution will no longer be limited to token delivery requirements for the project. Digital assets can be paid as a reward for any verifiable action in the future. It is expected that there will be further cooperation between the task distribution and the advertising industry or the new media industry, and the pattern of "behavior is mining" can be further validated.

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[1] ONT: https://ont.io/

1.2 Market Status

1.2.1 ERC-721 Status

Cryptokitties[2], once a strong performer among ERC-721[3], made the Ethereum[4] network almost impossible to use; Parcel[5] in Decentraland[6] carries the heavy responsibility of the VR world in the future. Excluding the increase of transactions in the market, digital assets such as virtual pet Cryptokitties neither take responsibility for solving practical problems nor provide substantial benefits to owners. The parcel in Decentraland can only be traded as a natural ERC-721 asset if the VR world ecology is not built. Even if the VR world were created in Parcel, the uncertain economic ecology would hardly bring substantial income to the owner.

1.2.2 Airdrop Status

The pain point of airdrops to distribute digital assets is that users cannot know which digital currency is airdropping, and there is no way to claim airdrops in a friendly and fun way. There are mainly three kinds of common airdrops on the market:

- Passive collecting: Make users fill out the designed form including user's address via webpage sharing, and eventually distribute the tokens at a specific time. Some projects will KYC to confirm the uniqueness of identity and prevent multiple claims

- Contract Execution: Trigger and execute contracts by way of sending token to the specified contract, and returns the specified number of tokens to the original address

- Centralized platform: The project transfers tokens that need to airdrop to the platform. Then the airdrop platform distributes tokens to users in various forms

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[2] Cryptokitties: https://www.cryptokitties.co/marketplace

[3] ERC-721: https://github.com/ethereum/EIPs/issues/721

[4] Ethereum: https://www.ethereum.org/

[5] Parcel : https://docs.decentraland.org/decentraland/glossary/

[6] Decentraland: https://decentraland.org/

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Passive collecting	Contract execution	Centralized platform
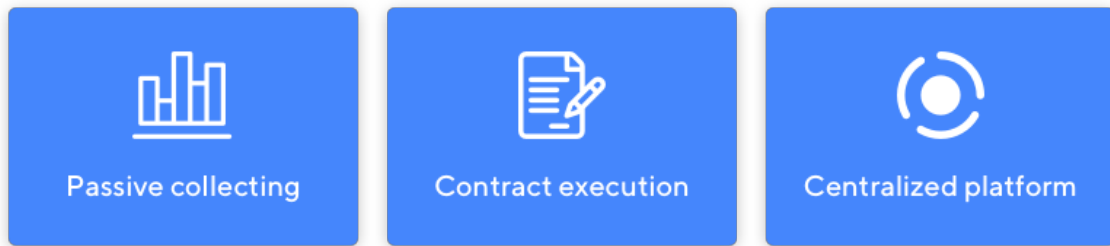
Airdrop Status

LORDLESS is designed to segment platform benefits and redistribute through tasks design and task distribution. It has not only changed the status of token distribution, but also injected value into ERC-721 assets by turning airdrop behavior into user tasks.

LORDLESS

02 Tavern

2.1 ERC-721

Tavern is a rare and specific digital asset in LORDLESS and it is an ERC-721 token. In the first world of LORDLESS, it is allocable, but not replaceable. Most of the interactions in the virtual world are dependent on Tavern. The core information of the Tavern will be stored on the blockchain to ensure the immutability of this digital assets.Since the tavern is the most central and rare asset in LORDLESS, the official will issue a total of **4,000** taverns in multiple phases. The upper limit of the taverns will be written into the smart contract and will never overissue.

Different from other virtual worlds and social networks, no centralized organization can control LORDLESS. Even if the official team cannot change its software rules, land content and currency. It cannot stop other people from entering the virtual world. Therefore, digital assets in LORDLESS are safer and more reliable than centralized services.

2.2 Reliability

Since the tavern in LORDLESS is based on the real-world building mapping, some of the tavern's value is related to the state of the real building. Therefore, in response to the unpredictability of real-world situation, the solution will be based on the following two criterion:

- If real-world building location changes and the changes can be tracked, LORDLESS makes corresponding migrations;

- If real-world building location changes but the changes cannot be tracked, or even the buildings are removed, LORDLESS still keep it in LORDLESS;

2.3 Properties

2.3.1 Popularity

Since the taverns in LORDLESS is screened from the real world, the popularity of the tavern reflects the value of it in the real world. The popularity contains 4 levels, from high to low, SS, S, A, and B, and the proportions are 2.5%, 17.5%, 25%, and 55%.

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	SS	S	A	B
Proportion	2.5%	17.5%	25%	55%
Total count	100	700	1000	2200
Range	0-99	100-799	800-1799	1800-3999

2.3.2 Level & Activeness

Activeness is the embodiment of how many bounty hunters are taking, performing, and completing quests in the tavern. Whenever a bounty hunter completes a quest in the tavern, the tavern's activeness increases. When the activeness reached a certain value, the tavern will level up. The level of the tavern is crucial, as some of the advanced or rare quests will only be posted in the premium, and the bounty hunters can only get them in it.

2.3.3 Influence

Influence is determined by both popularity and activity in the LORDLESS world. The popularity represents the initial value of the tavern in the real world, while the activeness describes the development of the tavern in the virtual world. Combine two factors to calculate the specific influence of the tavern in the virtual world. Influence is the ultimate measure of the rarity of a tavern in a virtual world. The interior and appearance of the tavern will change as the influence of the tavern increases.

2.3.4 Action points

The action point of the tavern describes the amount of reward that the tavern can assign to the quest in a particular round of the quest posted by the host. The higher the influence of the tavern, the more tasks that can be distributed in a single round. Every time a quest is picked up by a bounty hunter, the tavern's action points will be consumed until the action points are used up, and the bounty hunter cannot take the quest at the tavern.

2.3.5 Home

Any tavern can recruit bounty hunters. Once a hunter recruited by a tavern, it means that the hunter has become a member of the tavern, and the tavern will become the "home" of the hunter. Bounty hunters visit their home tavern each

time when they log in. The bounty hunters in the tavern also get more rights for quests. In the follow-up development, it will form multiple rival camps based on the hunters recruited by the tavern. There would be lots of cooperation and struggle between the taverns or camps.

LØRDLESS

03 Roles

3.1 Bounty hunter

Everyone who enters the LORDLESS world will become a bounty hunter. Bounty hunters can pick up the quests posted by the host in different taverns. When the quest is completed, the bounty hunter will reap a corresponding reward.

3.1.1 Action points

Taking quests would consume action point of the bounty hunter. It will consume different action points for different difficulty quests with different rewards. Once the action points are used up, the bounty hunter will not be able to take quests. But the action points will be filled up in a few hours, so the bounty hunter regains his vitality.

3.1.2 Level & Activeness

In addition to the rewards, each time the bounty hunter completes the mission, he will also receive an amount of activeness. Activeness is a measure of the ability of bounty hunters in the virtual world. You can get more activeness via completing more the quest and improving the ability of the quest completion. The hunter levels up if he accumulates enough activeness. Advanced and special quests require a higher level of bounty hunters, and the corresponding rewards will be more generous.

3.2 Tavern master

The owner of a tavern is the master. Once the user becomes the master, you are the dual identity of "Bounty Hunter" and "Tavern Master". The master has the right to buy and sell taverns, as well as the reward cuts. After the recruitment is open, you can also organize the recruited bounty hunters to fight and plunder in other taverns or lands.

3.3 Host

The Quest Host is the publisher of all quests and the provider of all quest rewards in the LORDLESS world. The host can be a project desiring community promotion. Any valuable task in the future can be posted on LORDLESS and pay in digital assets as a reward.

The host of the project needs to perform token authentication first. After the authentication passed, the quest paid in the kind of token as the reward can be posted. The host can view the consumption of the rewards and the quests completed in the current rounds. Hosts can also choose taverns with different influence, rank, and popularity to post quests for filtering the bounty hunters.

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04 Economy

4.1 Quest

4.1.1 Round

Property

The Quest is the core of the LORDLESS world. Any quest post creates a "round". In a single round, LORDLESS will provide the reward consumption for a single quest in real time. The host needs to determine the start time, end time, task type, task name, task content, and total rewards for the task of the round.

The end of a single round of quests means：

- All rewards are distributed via the form of quests in the duration of the round;

- The duration of the round ends;

If the duration of a round ends but there are rewards remaining, it will be returned to the host's address.

Distribution system

The host can post the task by filtering the tavern's popularity, rank, influence, and even the number of bounty hunters. Since influence is the comprehensive factor of the value for the tavern in both the real and virtual world, the rewards in a single round are distributed as follows

$$reward_{tavern} = influence_{tavern} \div influence_{total} \times reward_{total}$$

The number of awards for a tavern in a particular round depends on the ratio of the influence of the tavern to the sum of all tavern influences.

4.1.2 Type

All quests in LORDLESS are related to the tavern. Most of the quests are available in regular taverns. But a few officially released quests can only be picked up in the official tavern.

Bottoms up

Click on the bubble floating in the tavern and you will have a drink directly with the tavern master. Bottoms up is the easiest way to keep intimacy with the tavern. Bottoms up can be repeated, but there is a limit to the number of "Bottoms up" in the same round of quests.

Bounty quest

The bounty quest of the same content can only be picked up once. The more complex bounty quest always pays a higher reward. Advanced bounty quest requires bounty hunter with a higher level.

- Guide quest

Guide quests are released to guide bounty hunters to get started fast with some basic processes. This part of the task is not very difficult. It is designed to get the bounty hunter familiar with the whole system as soon as possible.

- Referral quest

Any bounty hunter can invite others to the LORDLESS world. When the invited bounty hunters complete quest, the inviter will reap additional rewards. At the same time, the sharing of the taverns, quests on social media also provides corresponding rewards.

- Follow quest

The host pays the reward to make the bounty hunter complete the quest of following the social media of the host's project. The quest makes not only token rewards worthwhile but also attracts high-quality head users to follow projects due to the analysis of address profile in LORDLESS.

The quests currently plan to support social platforms like Twitter, Telegram, Medium, and Reddit.
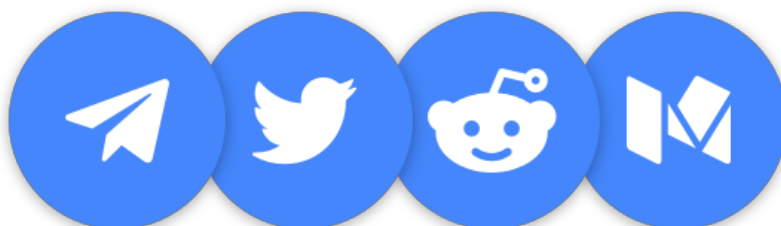
Supported social platform

4.1.3 Bonus system

Each time a bounty hunter take a quest, the tavern and hunter will both consume the action points. When the action point of the tavern or hunter is insufficient, the quest would not be able to apply.

In LORDLESS, the tavern master and the bounty hunter are both cooperative and competitive. If any bounty hunter completed the quest in the tavern, and the master will get a cut of it. The actual distribution ratio depends on the level of both parties.

$$prop_{role} = 60\% \times lvl_{role} \div (lvl_{hunter} + lvl_{master}) + 20\%$$

No matter how big the gap of level between the master and the hunter is, 20% of each character can be assigned at least. At the same time, whenever a bounty hunter completed a quest in a tavern, the tavern's activeness increases.

4.2 Free market

The taverns in LORDLESS are mapped to the real world on one by one basis, where you can buy taverns which you can never buy in the real world. The original taverns are sold to users by LORDLESS official. Once you become a tavern master, you can sell your taverns in the Free Market. You can also buy taverns in the secondary market, which determines the price of the taverns as a free market.

Tavern is a kind of digital asset. The more famous the real world's building is, the higher initial price it is given in LORDLESS. But the growth of the tavern in the virtual world is particularly significant. The value of the tavern is determined by both popularity and activity finally.Marketplace is an easy, convenient way to buy and sell your tavern. You can list taverns in the marketplace to reach thousands of people in LORDLESS and find unique taverns for sale.

Thanks to the decentralized features of the ERC-721 asset trading, the vision of LORDLESS team for the free market is not limited to trade taverns. It will include most of the other famous ERC-721 digital assets in the future. LORDLESS plans to provide a safe, fair and perfect NFTs trading platform for all traders with ERC-721 recognition.

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4.3 PSD

4.3.1 Problem

The LORDLESS team has been trying to explore the essence of decentralized applications. With the emergence of Internet tools, more and more people choose to "Solo." A game team or a game association, it evolved into an independent game streamer; A newspaper or a media, it evolved into we media; A store or a business, it evolved into an individual online store.

Two why worth considering:

- Why did Taobao initially choose not to do warehousing, stocking, and sales to become the world's largest e-commerce provider

- Why does WeChat public platform not choose to recruit excellent editors for content output

I believe that the founders of Taobao or Wechat can get the things done. But in the face of industry changes and evolution, platform choices help those who have the ability and ideas to attract fans, guide traffic, manage the community, and output value. It is undoubtedly advanced gameplay. A fully centralized company can't race against a relatively decentralized platform. Because the platform for providing services is a win-win community with relatively decentralized thinking, the energy of multi-person participation, joint decision-making, and collective creation is far higher than the completely centralized single-player.

But reckless supporting the platform is not a wise move. Think about two questions:

- **Can the business profit be split again?**

- **Can it bring positive feedback to the whole industry after being divided into individual agents?**

4.3.2 Solution

Currently, the token distribution always depends on a centralized platform, which receives the token from the project and distributes the token to users in various ways. If the platforms get profit, they will monopolize revenues in a

centralized manner, while ordinary users will not receive other income except airdrops, who will become profit tools for the platform eventually.

In the light of two questions in the previous section, using digital assets as a reward to drive users to complete the target task, can the profit be split again? Can it bring positive feedback to the industry? The LORDLESS team believes that we can achieve this change via the NFT.

PSD
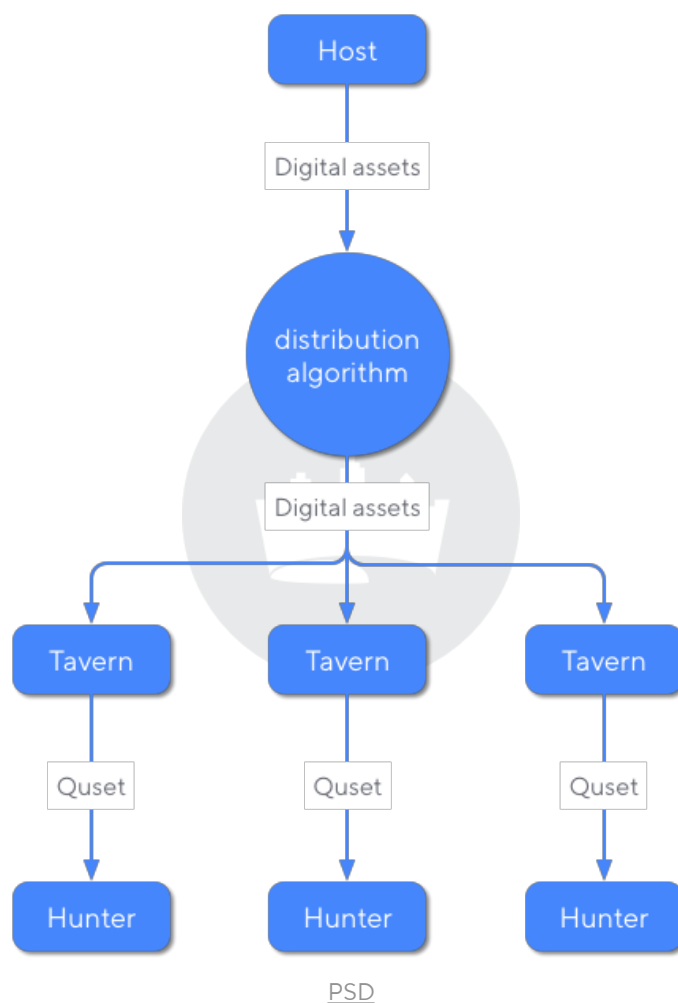
LORDLESS splits the token distribution capacities of the platform creatively and injects the capacity into specific NFT (tavern) assets by posting quest. We define this process as 'Platform Service Digitalizing', that is, **PSD**. LORDLESS expects to link the quests distribution function with tavern in the form of a smart contract so that tavern has a capability of platform-independent token distribution. When the bounty hunter purchases tavern, he becomes tavern master. Tavern master will receive benefits when the quests are completed in the tavern. **Throughout the PSD, LORDLESS awarded all the profit of the task distribution to the tavern master, so that the tavern master had enough**

motivation to run and promote tavern. If the tavern master brings their fans, the rewards of the entire tavern will be significantly improved. As the traffic of taverns increases, the platform's traffic will gradually increase.

The tavern is an ERC-721 asset; it will be stored on chain inevitably. However, LORDLESS hopes that both the asset and services are published on the chain. There are two services that are most important:

- Hosts post quests and pay digital assets as rewards to distribute them to taverns

- Bounty Hunter completes quests to reap digital assets as a reward

However, considering the performance of the current Ethereum network, LORDLESS is not ready to put these two services on the chain. Currently, we are actively testing the Ethereum side chain Loom Network in the hope of achieving efficient chain interaction on the side chain in the future. Even if the LORDLESS project team does not devote energy into maintaining the product, the tavern's capacity to receive token and distribute token will still keep the entire ecological operation, to ensure the benefits of tavern master. More importantly, even LORDLESS officials cannot plunder your ownership of tavern, or stop the tavern running.

4.3.2 Advantage

There are many advantages to working with PSD as a token distribution in the form of tasks:

	LORDLESS	Passive collecting	Contract execution	Centralized platform
PROJECTS				
Exposure costs	**Low**	High	High	Medium
Development costs	**Low**	High	High	Medium
Guide capicity	**High**	Medium	Low	Medium
Precise delivery	**Yes**	No	No	Unknow
Data analysis	**Yes**	No	No	No

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	LORDLESS	Passive collecting	Contract execution	Centralized platform
USER				
Operating cost	**Low**	High	Medium	Medium
Interesting	**High**	Low	Low	Medium
KYC	**Yes**	Yes	No	Yes
LORD				
PSD	**Yes**	No	No	No

Guided Traffic

The well-positioned platform has a large number of users. We can set a social account following action before users claiming the candy to make more person become your follower.
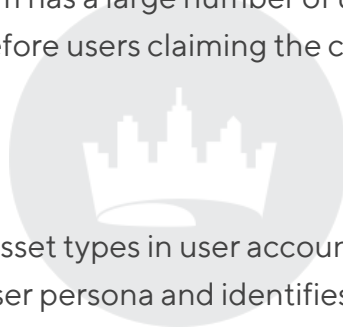
Precise Delivery

Our platform analyzes the asset types in user accounts and obtains user asset distributions. We provide user persona and identifies leading users to make accurate delivery possible.

Data Analysis

No development costs. Provide data analysis of airdrops to understand the details of airdrops fully.
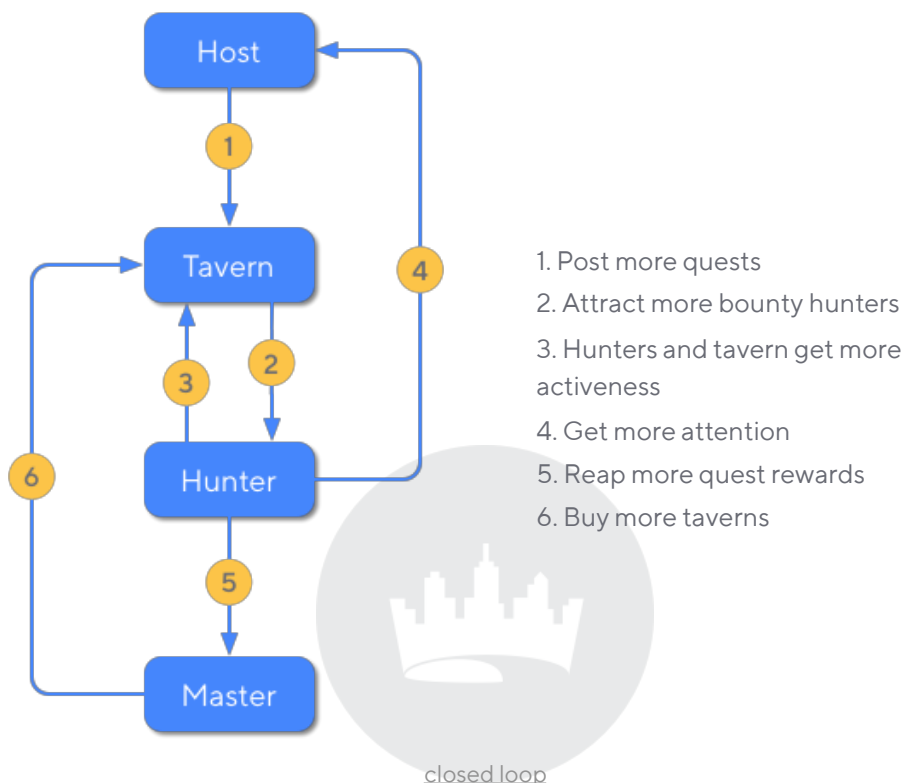
User Experience

- Users don't have to finish KYC repeatedly

- Users claim candy in various ways

4.3.3 Ecology

Closed loop

The real world traffic model is mainly based on the passenger traffic economy with geographic location advantage. The higher traffic volume a business cluster has, the higher the sales of shops will be. However, the increased sales of shops

in the shopping cluster usually have little effect on the passenger traffic itself. LORDLESS is based on the thinking of the real business cluster and hopes that "traffic" and "traffic carrier" combined into a closed loop, which is "traffic ecology."

1. Post more quests
2. Attract more bounty hunters
3. Hunters and tavern get more activeness
4. Get more attention
5. Reap more quest rewards
6. Buy more taverns

closed loop

One of tavern's core functions is to distribute multiple digital assets. The traditional airdrop mode has no interactive interface, and it is costly and not friendly to the user. In LORDLESS, hunters complete the quests in the tavern through the game interface, and the tavern's level determines how many quests to be distributed. Tavern with stronger quests distribution capability will attract more bounty hunters accordingly. The completion of quests by these hunters will level tavern up to complete a closed loop of traffic-ecology.

Value of LORDLESS

The most significant difference between LORDLESS and all current blockchain applications or blockchain games is that LORDLESS has a **positive value inflow**, not a "Pass the parcel" game, nor a zero-sum game or even a negative sum game. Most of the current ERC-20 tokens on the market do not have real values. The corresponding ERC-20 will become worthless when the bubble bursts. The essence of making money in these zero-sum games is that the early-stage

investors cut the later ones. This is a natural flaw caused by the zero-sum game itself that does not create value and has no value inflow. LORDLESS binds the abilities of quests distribution with tavern which is a kind of specific ERC-20 assets on the chain creatively. The entire value system just like a flowing river, LORDLESS focus on fishing tools building, and users only need to buy fishing tools and start fishing in the river. There are two critical points in this process:

- The fish in the river is swimming and are continually flowing;

- Users do not need to care about the production process of fishing tools, only need to buy finished products;

Digital assets are not limited to token at the current stage. With the development and diversification of digital assets in future, LORDLESS, which is deeply involved in the distribution of quests, aims to become the largest traffic center in the blockchain industry in a decentralized practice, and it is an intermediary between the projects demanding distribution and the hunters getting the quests. The more diversified the digital assets are, the more thoroughly the LORDLESS will exert its core value of traffic ecology in the future. As long as the overall trend of the digital asset industry booming continues, LORDLESS' digital asset distribution capabilities will be more and more useful and powerful. At the same time, taverns relate to this capability strictly, energizing the value of taverns, so it reflects the core value for the taverns transaction.

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05 Technology

5.1 Autonomy

In the process of LORDLESS development, whether the realization of the "ownerless" is the key to the product landing. The idea of LORDLESS is that platform operation no longer relies on centralized services. All rule execution, data storage, and resource hosting are implemented by decentralized technology. Even if LORDLESS official team does not maintain the platform, it can still rely on blockchain technology to continue to operate spontaneously. All characters in the virtual world are mutually beneficial and win-win. Bounty hunters, tavern masters, and quest hosts can still get their place in the tavern.

In the process of technology landing, we have to solve two problems:

- High cost and inefficiency transaction on Ethereum chain trading;

- Decentralized storage solution of resource files

5.1.1 Loom Network

To solve the problem of high transaction fee inefficiency on the chain, we plan to try Loom Network[7]。

The Loom Network is based on the side chain of Ethereum, and LORDLESS cooperate with the Loom Network for the Alpha version test. As the Loom Network officially said, there is no pop-up window for MetaMask[8], and there is no gas fee. Clients don't need to have an Ethereum account or hold any cryptocurrency, or even know what the blockchain is. They can start the game immediately.

The team implemented the deployment in two test environments, Ethereum Ropsten and Loom Network. Loom Network reduces costs and enhances the user experience compared to Ethereum Ropsten. LORDLESS will follow up the update of Loom Network technology.

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[7] *Loom Network: https://loomx.io/*
[8] *MetaMask: https://metamask.io/*

5.1.2 IPFS & Filecoin

The team researched IPFS[9] and Filecoin[10] for the decentralized storage solution.

IPFS

Compared with the HTTP protocol, IPFS is a new generation of P2P transmission protocol. The advantages are as follows:

- P2P download, saving bandwidth and low cost of use;

- Decentralized permanent data storage;

- Do not rely on a single node to reduce service interruption caused by force majeure

Filecoin

Filecoin is a distributed storage network that transforms cloud storage into an algorithmic marketplace. It is an incentive layer running on IPFS. It also integrates a contract system and a bridge system to provide Filecoin's storage system to other blockchain systems.

LORDLESS stores static resources on distributed nodes of IPFS, enabling decentralized storage of static resources, making LORDLESS one step closer to "ownerless".

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[9] IPFS: https://ipfs.io/
[10] Filecoin: https://filecoin.io/

5.2 Smart contract

The consensus layer of LORDLESS is built on the Ethereum. The smart contract includes modules[11] such as TavernNFTs, Tavern, Power, and NFTsCrowdsale.

5.2.1 Tavern contract

The entire tavern contract consists of three modules: TavernNFTs, Tavern, and Power. They are interrelated and reserve scalability for the contract as a whole under the premise of implementing business logic.

TavernNFTs

```
contract ITavernNFTs is ERC721 {
  function setTavernContract(address tavern) external;
  function mint(address to, uint256 tokenId) public;
  function batchMint(address[] tos, uint256[] tokenIds) external;
  function burn(uint256 tokenId) public;
  function setTokenURI(uint256 tokenId, string uri) public;
  function tavern(uint256 tokenId) external view returns (uint256, int,
int, uint8, uint256);


  /* Events */
  event SetTavernContract (address tavern);
}
```

Tavern NFTs Interface

This contract inherits the original interface of the ERC-721 standard and adds the *setTavernContract* method to associate with the Tavern contract. The advantages of this approach are:

• Decoupled from the ERC-721 contract and the Tavern contract;

• It is possible to update a Tavern contract while ensuring the NFTs ownership;

– batchMint

The mining batch interface is used for releasing 20 new taverns each phase. It can improve the efficiency of the mining and reduce the cost to use the interface.

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[11] *GitHub: https://github.com/lordlessio/game-contracts*

Tavern

```
interface ITavern {
  function setPowerContract(address _powerContract) external;
  function influenceByToken(uint256 tokenId) external view
returns(uint256);
  function levelByToken(uint256 tokenId) external view returns(uint256);
  function weightsApportion(uint256 ulevel1, uint256 ulevel2) external
view returns(uint256);

  function tavern(uint256 tokenId) external view returns (uint256, int,
int, uint8, uint256);
  function isBuilt(uint256 tokenId) external view returns (bool);
  function build(
    uint256 tokenId,
    int longitude,
    int latitude,
    uint8 popularity
    ) external;
  function batchBuild(
    uint256[] tokenIds,
    int[] longitudes,
    int[] latitudes,
    uint8[] popularitys,
    ) external;
  function activenessUpgrade(uint256 tokenId, uint256 deltaActiveness)
external;
  function batchActivenessUpgrade(uint256[] tokenIds, uint256[]
deltaActiveness) external;

  function popularitySetting(uint256 tokenId, uint8 popularity) external;
  function batchPopularitySetting(uint256[] tokenIds, uint8[] popularitys)
external;
}
```

Tavern Interface

LORDLESS

The Tavern contract[12] records the basic attributes of the tavern and provides a range of methods for tavern initialization, visibility updates, and activeness updates.

The tavern is an NFTs asset whose attributes are recorded in the Tavern contract. The individual Tavern data structure is as follows:

```
struct Tavern {
  uint256 initAt; // The time of tavern init
  int longitude; // The longitude of tavern
  int latitude; // The latitude of tavern
  uint8 popularity; // The popularity of tavern
  uint256 activeness; // The activeness of tavern
}
```

Tavern Struct

– build

Create a tavern. The tokenId, longitude, latitude, and popularity are required parameters

– batchBuild

Create batch of taverns

– activenessUpgrade

Upgrade tavern activeness

– batchActivenessUpgrade

Upgrade batch of tavern activeness

– popularitySetting

Set tavern popularity

– batchPopularitySetting

Set batch of tavern popularity

The property that ultimately determines the quests capacity of the tavern is the influence, the influence is the computing property of the tavern, and the computing method is recorded in the Power contract. The Tavern contract provides the *influenceByToken* method, which is a cross-contract invocation. The Power contract address needs to be associated with *setPowerContract* before use.

– weightsApportion

Calculate the profit weight ratio of the bounty hunter to the master for a single quest, and the algorithm is implemented in the Power contract.

[12] *Tavern Interface*： *https://github.com/lordlessio/game-contracts/blob/master/contracts/tavern/ITavern.sol*

Power

The Power contract mainly implements the tavern influence algorithm, the Level algorithm, and the Quest Rewards weight distribution algorithm. The contract code is as follows[13].

```solidity
interface IPower {
  function setTavernContract(address tavern) external;
  function influenceByToken(uint256 tokenId) external view
returns(uint256);
  function levelByToken(uint256 tokenId) external view returns(uint256);
  function weightsApportion(uint256 userLevel, uint256 lordLevel) external
view returns(uint256);
}
```

- influenceByToken

```solidity
function _influenceAlgorithm(uint8 _popularity, uint256 _activeness)
    internal pure returns (uint256) {
    uint256 popularity = uint256(_popularity);
    return popularity.mul(_activeness).add(popularity);
  }
```

<div align="center">Influence Algorithm</div>

Implement an algorithm[14] that calculates influence via tokenId. The popularity and activeness both determine the influence. Because the popularity of each tavern is immutable, the variable parameters are only activeness, so popularity determines the growth of the tavern.

- levelByToken

```solidity
function _activeness2level(uint256 _activeness)
  internal pure returns (uint256) {
    return (_activeness.mul(uint(108).sq())/10).sqrt()/108 + 1;
  }
```

<div align="center">Activeness to Level</div>

---

[13] Power: https://github.com/lordlessio/game-contracts/blob/master/contracts/tavern/IPower.sol

[14] Influence : https://github.com/lordlessio/game-contracts/blob/master/contracts/tavern/Power.sol#L68-L71

Implement the Level algorithm. The level is proportional to activeness. The only way to improve your level is to increase activeness.

5.2.2 Market contract

NFTsCrowdsale

The NFTsCrowdsale contract mainly supports market contracts. It has two transaction pairs, ERC721/ETH and ERC721/ERC20.

```solidity
interface INFTsCrowdsale {

  function getAuction(uint256 tokenId) external view
  returns (
    bytes32,
    address,
    uint256,
    uint256,
    uint256,
    uint256
  );

  function isOnAuction(uint256 tokenId) external view returns (bool);
  function isOnPreAuction(uint256 tokenId) external view returns (bool);
  function newAuction(uint128 price, uint256 tokenId, uint256 startAt,
 uint256 endAt) external;
  function batchNewAuctions(uint128[] prices, uint256[] tokenIds,
 uint256[] startAts, uint256[] endAts) external;
  function payByEth (uint256 tokenId) external payable;
  function payByErc20 (uint256 tokenId) external;
  function cancelAuction (uint256 tokenId) external;
  function batchCancelAuctions (uint256[] tokenIds) external;
}
```

NFTsCrowdsale Interface

5.3 SDK

Tavern master can embed the tavern into a third-party website via the LORDLESS SDK, making task distribution to reach external sites for more traffic.

5.3.1 Design concept

The SDK needs to be lightweight, readable, easy to use, and testable. Every time the SDK version is released, make sure it is not only compatible with the old version but also has strong scalability for future versions.

Lightweight

This feature is an important feature that the Javascript SDK is easy to ignore. NPM manages most Javascript modules. Many Javascript developers have become accustomed to implementing all the functions of large and small through the existing NPM module. It deviates from the principle of lightweight design. The LORDLESS SDK is designed to limit the use of third-party NPM components strictly.

Ease of use

Our team believes that the great SDK's readability and ease of use mean that users can find the way to use without reading the document as if they are intimate with the developer.

It was finally decided to use TypeScript[15] as the development language for the SDK because of the high readability of the TypeScript code and the complete support of the VSCode editor[16] for TypeScript.

5.3.2 Usage

Component

LORDLESS provides development components for the mainstream front-end framework to facilitate the SKD using by the developer. These include ReactJS, VueJS, and AngularJS.

```
# Installation
yarn add lordless-vue-components@beta0.0.1
// Usage
import { Tavern, User }  from 'lordless-vue-components'
```

lordless-vue-components

---

[15] Typescript: https://www.typescriptlang.org/

[16] Why Typescript: https://medium.com/nona-web/why-typescript-6c7d5302ec6

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\<script\>

```html
<div>
   <script
       src="https://cdn.lordless.io/sdk/bata0.0.1/tavern.js?tavernId=0"
       type="text/javascript">
   </script>
</div>
```

use by <script>

5.4 Address profile

There are a large number of addresses in Ethereum, behind which are a large number of user groups. In the blockchain world, it is extremely difficult to associate a specific user with an address unless the user exposes the address. Therefore, the traditional concept of "user profile" based on the user system is out of date. LORDLESS uses the "address profile" instead.

The essence of an address profile is to make a professional analysis of the assets and transactions in the address to form a pattern to describe the appearance of the address. Due to the transparency of the blockchain network, assets and transaction records in all addresses can be checked, so that a network map formed by a specific group of addresses can be analyzed. So the address profile can be the appearance of one single address or the overall impression of a network consist of multiple addresses. Most addresses can be filtered to the following specific categories:

- Exchange wallet address

- Miner wallet address

- Project wallet address

- Investment institution wallet address

- The whale account address

- Regular ETH address

LORDLESS can track the relationship between addresses by analyzing all historical transactions. The essence of address profile is to apply different dimensions and different categories of labels to a single address or a group of addresses through big data analysis of address behavior.

5.4.1 Assets and transactions

We can build basic address profile by analyzing the status of digital assets in the Ethereum address, including but not limited to the holding of ERC-20 and ERC-721. It can perfect the address profile to analyze further whether the address holds a specific token, and what type of digital asset the token is. It is also possible to analyze which type of digital asset the address concerned about based on the product development orientation of the token.

Just because the Ethereum transaction record can be checked, by analyzing the historical data, you can get the first trading time of the address, the number of transactions, whether the smart contract has been issued, and so on. The reference dimensions of these data are the source of the address profile.

5.4.2 Cross-chain analysis

LORDLESS may use the technology of side chains based on Ethereum or other public chains. Therefore, there will be some cross-chain behaviors. High performance on the chain can help obtain more behavioral data of the address, which will make the results of data analysis more accurate and objective so that that address profile can display its appearance more fully.

06 Outlook

It is easily foreseeable that many platforms will enter the PSD process to consolidate and improve the needs of the user's asset persistence in the future, which is currently fully compatible with ERC-721. The operation of PSD is mostly the process of making asset on the blockchain. The core idea of the blockchain is distributed and decentralized, but the vast power of the platform makes the user in a weak position, which conflicts with the blockchain thinking. LORDLESS believes in the core idea of the blockchain firmly and has spared no effort to implement it into products. The ultimate goal of LORDLESS is to split the platform's services into users' fully controllable assets and make them run independently. A new generation of PSD platforms based on blockchain technology, we call it 'Blockform', LORDLESS is the forerunner in Blockform.

Blockform

LORDLESS

07 Roadmap

|	
August, 2017	● Initiation of the idea of LORDLESS in a Shanghai's Starbucks; ● Set up founder team of LORDLESS;
October, 2017	● Finalize Product prototype of LORDLESS;
November, 2017	● Architecture layer technology selection; ● Layered model design;
December, 2017	● Confirm open platform technology solution of LORDLESS;
February, 2018	● Release LORDLESS white paper 1.0;
July, 2018	● LORDLESS version Alpha arrival; ● Release free market, basic user system, and map system; ● Release LORDLESS white paper 2.0;
September, 2018	● LORDLESS version Beta arrival; ● Post 20 taverns for trading; ● Release LORDLESS white paper 3.0;
First Half, 2019	● Develop and release mobile applications;
Second Half, 2019	● Release task distribution open platform for developers;

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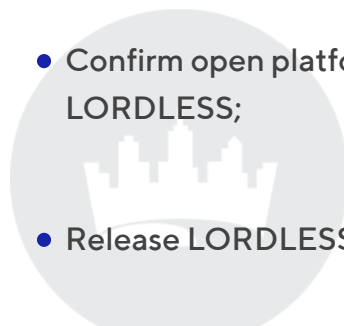
08 Team

8.1 Team Members
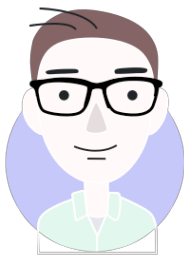
Chen
Founder

Worked at cchain.io Chief Architect.
Worked at ele.me as a Technical Expert.
Worked at Video++ as Tech Leader.

Yi Feng
Co – Founder

Shanghai Jiao Tong University.
Doctor of Artificial Intelligence.
Tencent IEG Senior Technical Expert.
Worked for the Google Firebase Team.

Joe
Co–Founder & Product Director

Worked at orimuse as a Mobile Director.
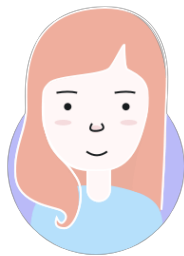Senior analyst of blockchain products.

Founy
Full Stack Developer

dApp early developer.
Specializes in Javascript, Solidity, Ethereum and other
technologies.

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Michelle
Marketing Director

SMG Senior Marketing Manager.
Sina News Chief Editor.
News Evening News reporter from the Ministry of Economic Affairs.

June
Designer

Senior designer.
Good at graphic design, 3D modeling, animation production, etc.
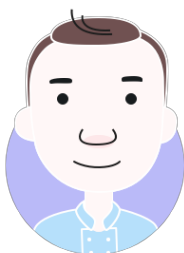
8.2 Advisors

Liang

Graduated from Carnegie Mellon University.
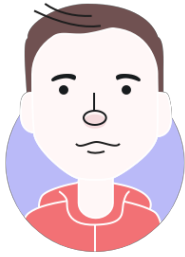Apple Systems Management Expert.
Former Blizzard Technical Expert.

Mikko

Alibaba Senior Technical Expert.
Alibaba Baichuan Open Platform Tech Leader.
Taobao App User Growth Tech Team Leader

Brian Tan

Foodie.
A number of well-known food brand founders.
Winner of the 2011 International Best Discovery Award.

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Gary

Graduated from Tongji University.
C Chain Co-Founder, Product Director.
Ethereum Technical Expert.

8.3 Partners

MetaMask

imToken

omisego

FileCoin

ethereum

UPort

IPFS