Lifetime Lottery (LFL) White Paper

Network: Hedera Hashgraph
Contract:
Explorers:

1 Abstract

Lottery-based token projects are not a new idea, many have tried and failed. On the other hand, we know that most human beings tend to gamble, buying a lottery ticket causally, frequently, or even in an addictive way. If this were not the case, lotteries and casinos would not exist. We know that human nature makes us follow the dream of being the lucky one, despite the odds being against us. If that's the case, why can't we replicate this phenomenon with cryptocurrencies?

Firstly, we can say that this phenomenon already occurs when people buy meme coins or NFTs of dubious value. Most do not buy because they believe in the value of what they are buying, but rather they believe that it will increase in value and then they will sell it for a profit. At the end of the day, all the average holder thinks about is making money. This holder is in fact buying a "lottery ticket", it is a bet.

Lottery-based tokens are at the heart of this human nature of seeking the "winning ticket", so why have none worked so far? In short, the reason lies in the fact that the prizes are distributed very regularly and are therefore small. On the one hand, the investor has the opportunity to be rewarded with a certain regularity, but on the other hand, small prizes do not have the capacity to awaken this irrational human nature that seeks the so-called "winning ticket". This is why so many projects failed. To trigger this human nature we need to accumulate bigger prizes (which is actually done in conventional lotteries) and create flashy marketing around these prizes. *Lifetime Lottery* (LFL) is a Hedera Hashgraph token that offers a solution to all these issues as it is based on analysis and simulations of realistic scenarios.

Please note that throughout the text, when we talk about fees, we will always be referring to the fees for this project. If at some point we say that something has no fees, it means that our contract will not charge fees, but it is good to remember that there are the Hedera network fees.

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2 Motivation

Below we can see the state and local lottery revenue in the United States from 1977 to 2021 (in billion U.S. dollars). Americans spend more in lottery than the total spending on music, books, sports teams, movies and video games combined. More than 100 other countries run lotteries, all of which spend significant amounts of money. The state usually distributes only 60% of the money collected in the form of prizes, with the remainder used to pay operational costs and investments in areas such as education. It is clear that there is a lot of money in this market. All we need in the crypto space is a project that is capable of paying out amounts as large as the conventional lottery and with greater odds.

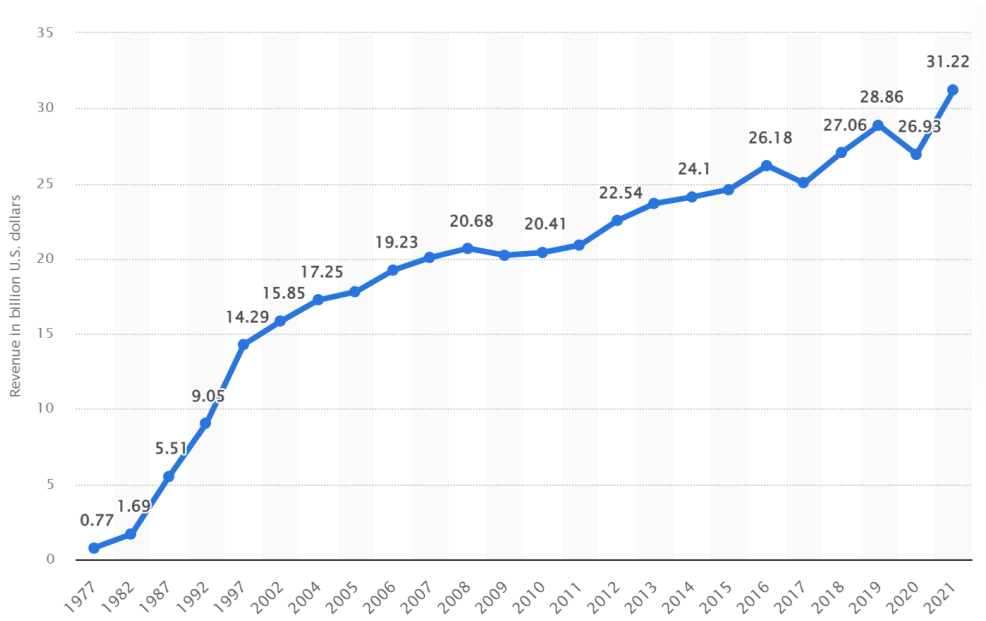

Figure 1: State and local lottery revenue in the United States from 1977 to 2021 (in billion U.S. dollars). Source: `https://www.statista.com/statistics/249128/us-state-and-local-lottery-revenue/`.

People play the lottery for a variety of reasons, and these can vary from individual to individual. Some of the most common reasons include:

1. **Dreams and hopes of life change:** Many people see the lottery as an opportunity to radically change their financial lives. The prospect of winning a large prize can awaken dreams of a more comfortable life, financial freedom, fulfilling personal desires, and even helping the community or family members.

2. **Entertainment and excitement:** For some people, playing the lottery is a form of exciting entertainment. The simple act of buying a ticket and imagining the possibility of winning can provide a dose of adrenaline and excitement.

3. **Socialization and community participation:** In some communities, the lottery is a shared social activity. People come together to buy tickets in groups or participate in pools, which can strengthen social bonds and create a sense of camaraderie.

4. **Lack of awareness of probabilities:** Many people underestimate the odds of winning the lottery and overestimate their own chances of success. This can lead some to believe

that it is a viable bet to improve their financial circumstances, even if the actual odds are extremely low.

5. **Cultural beliefs and superstition:** In some cultures, the lottery is associated with cultural beliefs or superstitions. For example, some people may buy tickets on special dates, numbers considered "lucky," or at specific times, such as during significant events in their lives.

People don't want the chance to win a few dollars every day, they want a life-changing prize, even if it means waiting a little longer. We can do this by accumulating the prize pool for a while before distributing. Our idea is to offer prizes monthly, and an end-of-year special that will be bigger than all the others. Additionally, the holder will also be able to enter bets on certain special events.

The dynamics must be similar to conventional lotteries, that is, we must have a reliable and solid system, which will be responsible for passing on the prizes. We don't want fancy things like NFTs, games, DAO, etc. Just an agent that collects and redistributes tokens to holders, in a predictable and consistent way. This is possible, we just have to do it right!

3 Tokenomics

3.1 Supply

The total supply will be of 1,000,000,000 (1 billion) LFL tokens. This also will be the circulating supply from day one. The dev portfolio will start with 3% of the total supply, the other 97% will be fully allocated to the LP. This 97% will be paired with a total HBAR equivalent to $970,00$ USD. This means 1 LTL = 0.000001 USD at launch.

The launch will be fair (public launch), no private sales. People initially will speculate and the chart will be a mess. Despite this, things will gradually return to normal and the number of buyers will increase as people realize that big prizes are taking place.

As we will see next, with just a few tokens the holder can participate in lottery drawings. Since a single token is expected to cost much less than a dollar, a small amount of money will be enough to purchase thousands or millions of tokens. This means that the holder with a single buy can participate in many lotteries without any worries. In this sense a single purchase may be enough to a lifetime participation, hence the name "Lifetime Lottery".

There won't be any burns or airdrops. This project is supposed to emulate conventional lotteries, and conventional lotteries do not burn or distribute tickets for free.

3.2 Fees

Initially the LTL token will have a 3% fee on both buys and sells. For buys, 1% will be allocated to the monthly prize, 0.5% to the annual prize, 0.5% to the project and 1% to the LP. This last 1% is split into two halves. One half is sold into HBAR. The other half of the LTL tokens are paired automatically with the previously mentioned HBAR and added as a liquidity pair on SaucerSwap. For sells, 1.25% will be allocated to the monthly prize, 0.75% to

the annual prize, 0.4% to the project and 0.6% to the LP, where a process analogous to the one previously described is applied.

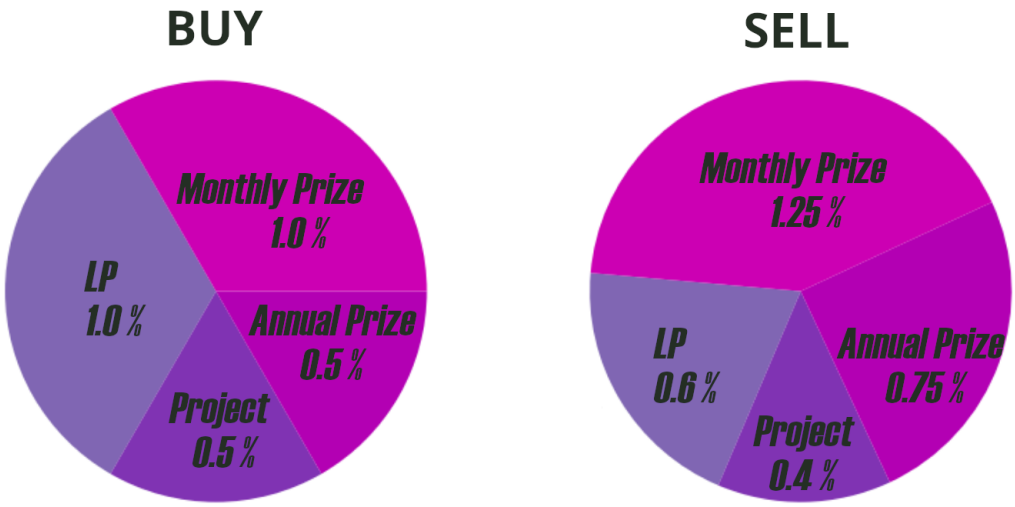

Figure 2: Summary of how buy and sell fees will be used.

Since the goal of the project is to distribute attractive prizes, it makes sense to allocate the majority of fees to prizes. Furthermore, note that the sell fees are concentrated in the prizes. The idea of this is to create an opposite reaction, that is, the more sells the greater the prizes, which in turn will attract more people and therefore increase the buys. In other words, more sells cause more buys naturally. This dynamics is one of the pillars that will bring sustainability to the project.

The "project" part of the figure above refers to marketing, operational costs, team payments, among others things. Finally, the 3% fees may change in the future depending on the situation. If more trading volume is required, the fees will be reduced; if higher prizes are required, fees will be increased. Since volume is needed to increase prizes and high fees can decrease volume, there is a tradeoff that needs to be understood first. Each change will be subtle so that we can feel its impacts before continuing.

All fees are collected in the form of LTL. This means that the prizes will be delivered as LTL and the allocation for the project is also in the form of LTL. In the case of a buy, the fee is applied after the swap between HBAR and LTL. In the case of a sell, the fee is applied before the swap. The figure below illustrates this process.

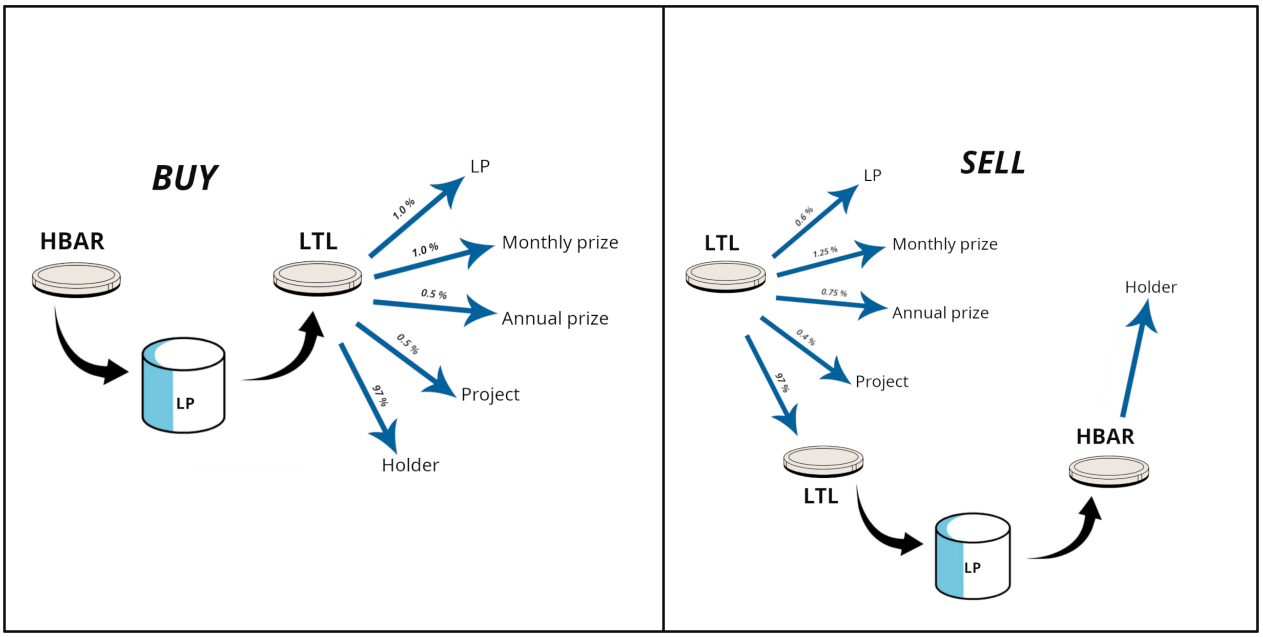

Figure 3: All transactions are conducted so that we only have fees applied to the total LTL amount.

The fees follow two special rules in order to avoid price manipulation and/or big whales:

1. The normal fees for buy and sell will be limited to transactions below 3% of the total LTL supply in the LP.. This rule applies to everyone including the dev wallet. With this rule we expect to avoid price manipulation and big whales that could harm the project. If a whale eventually wants to make a large sell, it will be forced to make several smaller sells, paying fees for each sell, which will go directly to the prizes.

2. If the person wants to exceed this 3%, the fee automatically increases from 3% to 30% of the transaction value.

With this penalty the distribution shown in figure 2 is increased in the same proportion (multiplied by 10). Below we have a table comparing possible values of the market cap and the 3% of that value. Be aware to not violate these thresholds.

Total supply in USD (market cap)	3% of the total supply in USD	1 LTL in USD	1 USD in LTL
1,000	30	0.000001	1,000,000
10,000	300	0.00001	100,000
100,000	3000	0.0001	10,000
1,000,000	30,000	0.001	1,000
10,000,000	300,000	0.01	100
100,000,000	3,000,000	0.1	10
1,000,000,000	30,000,000	1	1

We remark that these fees only apply to buy and sell transactions. The holder may transfer their tokens from wallet to wallet without any additional fee from our contract.

4 Prize systems

We will have two types of prizes: periodic and special. Periodic prizes are monthly and annual, while special prizes have no specified date.

Monthly prizes will be distributed in the form of LTL that was collected through fees throughout the month. Annual prizes will be distributed in the form of the LTL that was collected through fees throughout the year, so these prizes will always be higher.

Special prizes work differently. They are basically bets based on real-world events. For example, suppose the US elections have started and we have 5 candidates for president. We will then begin a betting process where each holder bets a certain amount of tokens on a chosen candidate. At the end of the elections, all holders who bet on the winner will receive the tokens of all the losers. This type of bet can also be about the value of BTC at some point in the future, among other topics. In any case, this type of betting is not the focus of the project and will only occur in special moments. However, this should be enough to keep the holder aware of what is happening and will prevent the project from becoming tedious.

4.1 Monthly prizes

At any time of the month, holders can signal that they are interested in participating in the monthly prize. This signaling is based on sending 300 LTL to a specific wallet and can be done up to one day before the draw.[1] As previously mentioned, the prize consists of 1% from all buys plus 1.25% from all sells, assuming no one violates the limits mentioned above. In case of violation the fees are multiplied by 10 as well and accumulate towards the prize. This translates into the formula below.

$$\text{Monthly Prize} = 0.01 \times \text{Total buys} + 0.0125 \times \text{Total sells} + 0.1 \times \overline{\text{Total buys}} + 0.125 \times \overline{\text{Total sells}} + \varepsilon,$$

where *Total buys* and *Total sells* are the total buys and sells in LTL not exceeding 3,000,000 LTL (0.3% of the total supply), and $\overline{\text{Total buys}}$ and $\overline{\text{Total sells}}$ are the totals exceeding this threshold. The value ε will be explained ahead but for now we consider $\varepsilon = 0$ for simplicity.

To give a concrete example, assume the project reached a market cap of 1 million dollars. Looking at similar projects on the website `https://coinmarketcap.com/` we can see that the 7-day volume varies greatly from project to project. Some being a few hundred dollars and others going up to 20 million dollars. Even so, we note that most projects are close to 250 thousand dollars. We will take this value for our example and assume that the month has 4 weeks, so this gives us a volume of 1 million dollars per month. Let's also admit that the amount of buys and sells was equal, 50% of the volume for each. Finally, assume that no one violated the buy/sell threshold at any time (unlikely, but okay). It follows that the monthly prize is

$$0.01 \times 500,000 + 0.0125 \times 500,000 = 5,000 + 6,250 = 11,250 \text{ USD} = 11,250,000 \text{ LTL}.$$

This prize will be divided between 5 lucky people according to the distribution below.

[1] With this market cap, 300 LTL equals $0,03$ UDS monthly.

Winner position	% of the prize
First	50%
Second	30%
Third	10%
Fourth	7%
Fifth	3%

According to this distribution, the winners will receive the following prizes (in LTL):

Winner position	Prize	Conversion to USD
First	5,625,000 LTL	5,625
Second	3,375,000 LTL	3,375
Third	1,125,000 LTL	1,125
Fourth	787,500 LTL	787.50
Fifth	337,500 LTL	337.50

The gains are not spectacular but remember that this is an example for a market cap of just 1 million. Still, the possibility of earning 5 thousand dollars is enough to keep the small holder alive in the project. This is much better and attracts much more attention than reflections that give fractions of cents to all holders daily or crypto lotteries that pay out a few bucks daily. Investors need to see something beautiful and shiny that makes them move towards it.

After the results are announced, the winners receive their tokens and it is now possible to send 300 LTL again to participate in the next monthly prize.

4.2 Annual prizes

This is the big prize that will attract people to the project! This works in a similar way to the monthly one. The difference is that the prizes accumulate for longer and the registration fee to participate is 3000 LTL now.[2] The prize formula is also slightly different.

$$\text{Annual Prize} = 12 \times (0.005 \times \text{Total buys} + 0.0075 \times \text{Total sells} + 0.05 \times \overline{\text{Total buys}} + 0.075 \times \overline{\text{Total sells}} + \varepsilon)$$

Another relevant difference is that in this prize the chances of winning are no longer equally distributed as in the monthly prize. Each holder's chance is proportional to the number of tokens they are holding, with an upper limit of 1%. For example, if a holder has 1,000,000 LTL, then the probability of winning is 0.1%, as this number of tokens is equivalent to 0.1% of the total supply. If the holder has 100,000,000 LTL, then the probability of winning is 1%, as this amount of tokens is equivalent to 10% of the total supply but the 1% probability limit has been applied.

Let's consider the same example as before. The total annual prize is

$$12\times(0.005 \times 500,000 + 0.0075 \times 500,000) = 12\times(2,500+3,750) = 75,000 \text{ USD} = 75,000,000 \text{ LTL}.$$

The prize distribution is the same as before, so the winners will receive the following prizes (in LTL):

[2] With this market cap, 3000 LTL equals $0,30$ UDS annualy.

Winner position	Prize	Conversion to USD
First	37,500,000 LTL	37,500
Second	22,500,000 LTL	22,500
Third	7,500,000 LTL	7,500
Fourth	5,250,000 LTL	5,250
Fifth	2,250,000 LTL	2,250

In this specific example it is possible to think that the annual prize is not as attractive. However, it is worth remembering that this was a pessimistic example (median volume, no one violated the buy and sell limit, month with 28 days) and in addition the market cap is only 1 million. With a market cap of 10 million (something totally feasible) we already have the total annual prize of almost 1 million dollars!

4.3 Cheating the system

There is nothing stopping a person from creating hundreds of wallets and participating in lotteries with much greater chances of winning. This would be a way to cheat the system. From a project point of view this makes no difference as this person has to pay to participate with all their wallets anyway. I argue this situation is better than other standard cryptocurrencies where we have lots of whales receiving monstrous amounts of rewards while you, the average holder, receive pennies or nothing. At least in LTL, the whale will have to work hard to manage its hundreds of wallets, and at the time of the prize it is not even guaranteed that the whale will win, it could be you who wins.

Hypothetically, suppose a whale has 50% of the total supply and is just holding and waiting for the prizes. As this whale is holding back the potential volume, prizes will no longer be attractive and eventually the whale will sell its tokens. Thus the natural order of things is restored. It simply doesn't pay to monopolize the tokens as this project is based on day-to-day trading volume.

4.4 Random number system

The monthly draws and prizes will always be held on the last day of the month, except for unforeseen circumstances. In case of unforeseen circumstances, the announcement may be made a few days before or after. Similarly, the annual draws and prizes will always be held on the last day of the year. The holder can pay their entry fee up to one day before the draw, but as unforeseen events can happen without prior notice, it is recommended to always pay the entry fee in advance, at least one week before.

Monthly prize: One day before the draw, a table with all participants will be shared on the project's official website. Each participant will be associated with a number between 1 and N, where N is the total number of participants. On the day of the draw, the following 5 numbers will be drawn.

$$(\text{year} \times \text{month} \times \text{day} \times \text{BTC price})^i \pmod{N} + 1, \quad \text{for } i = 1 \dots 5$$

The price of Bitcoin (BTC) will be in dollars and will be extracted at some random time of the day, only the integer part of the price will be considered. If for some i we have a repeated

value, we discard the number and continue the iteration to the next i. The winners are the participants whose numbers were drawn.

Annual prize: One day before the draw, a table with all participants will be shared on the project's official website. Each participant will be associated with a range of consecutive numbers between 1 and N, where N is the total number of tokens of all participants.[3] For each participant the size of this range of numbers equals the number of their tokens. On the day of the draw, the following 5 numbers will be drawn.

$$(\text{year} \times \text{month} \times \text{day} \times \text{BTC price} \times \text{ETH price})^i \pmod{N} + 1, \quad \text{for } i = 1 \dots 5$$

The price of Bitcoin (BTC) and Ethereum (ETH) will be in dollars and will be extracted at some random time of the day, only the integer part of the price will be considered. If for some i we have a repeated value, we discard the number and continue the iteration to the next i. The winners are the participants whose numbers were drawn. Each participant can win at most one prize, we will continue iterating i if necessary, until we have 5 distinct winners.

Just like the participant table, the drawn numbers and winning wallets will be published on the project's official website and will also be published in the Telegram group and Twitter. The history of draws and winners will be saved on the project's official website.

4.5 Entrance fees destination

As mentioned previously, to participate in the draws, interested parties are required to pay a small symbolic fee. There will be a wallet to receive the fees associated with the monthly draw and another for the annual draw. The total revenue from these fees will be divided equally into three parts: next monthly prize, annual prize and LP. With this we can see that the prize values obtained in reality will generally be greater than the projections made in the previous examples. This extra value added to the prizes is the previously mentioned ε.

The purpose of these fees is to know who is interested in participating in the draw and facilitate the listing of participants. We do not expect large amounts of revenue through this process. In fact, if we consider the previous example again with an average of $10,000$ participants, the total collected for the monthly draw is $300 \times 10,000 = 3,000,000$ LTL ($3,000$ USD) per month while that for the annual draw is $3000 \times 10,000 = 30,000,000$ LTL ($30,000$ USD) per year.

4.6 Special prizes

The special prize is the secret ingredient that will spice up the project. This is the opportunity for small holders to suddenly become whales.

Special prizes occur from time to time, and are a type of bet on real-world events. Let's consider the example of elections.[4] We have 4 candidates running for president, they are

[3] This "total" already takes into account the adjustment made for holders with more than 1% of the total supply.

[4] This is just an example. I know there are many investors who don't necessarily live in the US. Therefore, these bets will be on more general topics that everyone has a chance at.

candidates A, B, C and D. In this case we will have 4 wallets where holders will send their tokens, each wallet corresponding to a specific candidate. How many tokens should the holder send? As many as you want. In this modality there are no limitations.

For concreteness, consider that you, the holder, have $1,000,000$ LTL and have bet $100,000$ LTL on candidate A. Once the betting phase has ended, the distribution will be visible on the website and no further bets will be allowed (we will always close betting a few days before the final result). You entered the website and viewed the bet distribution, represented in the figure below.

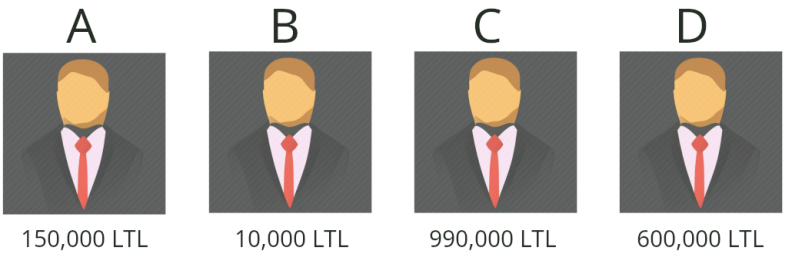

Figure 4: Distribution of bets.

From the looks of it, the favorite candidates are C and D, with A in third and B being the least favorite of all. Election day arrives and the unexpected happens, the winner is candidate A! And you are also the winner! And now, how does the distribution of tokens work? It's simple. Since you entered with $100,000$ LTL and candidate A's pool total is $150,000$ LTL, this means you own 66.66% of the pool. In other words, 66.66% of the total prize will be yours. This total is the sum of all tokens that entered the bet, which gives $1,750,000$ LTL. Then 66.66% of this amount is $1,166,550$ LTL, and this is the amount that will be deposited into your wallet. This is a 11x gain for a single bet. Putting it in the perspective of 1 million market cap, you entered the bet with 100.00 USD and won $1,166.55$ USD.

It is important to note that if someone transfers their tokens to more than one pool, only one will be considered at random. The remaining tokens transferred will remain in the pool and will be shared with the winners. Please note that in this system there are no fees. The objective of these bets is simply to shake things up.

5 Roadmap

The roadmap is very straight forward and simple. It is not based on an agenda with specified dates, but rather on market cap trigger points. Reaching market cap goals shows a real evolution of the project in terms of capitalization, as this is what we need to take the next steps.

Figure 5: The Roadmap.

6 Simulations

7 Challenges

8 Charity

9 Community

10 Where to buy LTL

11 Conclusions

12 References

https://smartasset.com/taxes/the-economics-of-the-lottery