



A Practical Application of Blockchain for the Travel Industry

Using blockchain technology to enable a fair
and competitive travel distribution market

*"Competition always has been and always will be
troublesome to those who have to meet it"*

- Frédéric Bastiat

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Foreword

The travel industry is dominated by a handful of companies which, through market power and industry politics, have created a highly-concentrated market. They are able to charge superior margins, cause double-marginalization, and, in some cases, simply collect rent. Rent-collection and superior margins inflate the cost of supply, with consumers ultimately bearing the artificially increased costs.

The consolidated nature of the travel distribution platforms creates a situation where the intermediaries have no incentive to use new technologies. Instead, they spend resources on locking their customers into using systems that were in some cases created decades ago.

Current archaic technological solutions hinder innovation and create extremely high barriers to entry for new platforms. Blockchain technology allows for a ground layer to be built for a truly free and competitive market in travel distribution.



Overview of the Travel Industry

Overview of the Travel Industry

Significant inefficiency plagues nearly every segment of the travel industry. Individual travel companies are notoriously out of date in terms of technological adoption: travel companies still rely on fax machines and phones as main communication methods, while others struggle to connect to data sources to power their sales efforts.

The concentrated and centralized state of travel distribution bears a strong cost on consumers, while poor currency exchange solutions inflate consumer prices. The problem is particularly acute for travel startups, the main sources of innovation in the sector.

Online Travel Players

Five companies in the travel industry control the most of the travel market. The two largest OTAs (Online Travel Agencies), Priceline Group and Expedia Inc., control 95% of OTA market in the U.S.¹ Amadeus, Sabre, and Travelport, the top three GDSs (Global Distribution Systems), have 99% combined market share² in non-direct inventory in the air market.

The concentrated structure of travel distribution has also been one of the factors allowing these companies to make record-breaking revenues,³ with Priceline Group enjoying a decade of year-over-year 40% EBITA growth. These dominant players lack the economic incentive to innovate because there are only two major intermediaries in the hotel sector and three in the airline sector. Some of these companies still use dated mainframe computers⁴ and software written decades ago.

These companies tend to use their position on the market to extract rent, as shown by the recent US Airways VS Sabre lawsuit.⁵ Sabre was accused of overcharging customers⁶ and employing other dubious tactics to generate increased revenue. Concentrated power held by these intermediaries also allows them to tie hotels into rate parity agreements, making hotels legally liable to provide the OTA with the best rates at all times and causing a breach of contract if they offer direct booking customers a cheaper rate. Rate parity has been ruled as anti-competitive and illegal price fixing in Germany, France, and Italy⁷.

Although the aforementioned countries have made rate parity illegal on paper, the intermediaries actively remove hotels that don't provide them with the best rates out of search results.

1 Why Are The Regulatory Bodies Stepping Up To Curb The Growing Influence Of OTAs And What Might Be The Implications?, NASDAQ.com

2 Travelport aims to raise up to \$480M with its IPO in US, Tnooz

3 The world's largest online-travel company, The Economist

4 Ai Editorial: Airline tech issues - is mainframe legacy solely responsible?, Airline Information

5 Jury sides with US Airways against Sabre in GDS antitrust trial of the century, Tnooz

6 Is Expedia Stealing From its Customers?, Forbes

7 Bundeskartellamt B 9 - 66/10; GNI article 33 octies; Senato della Repubblica 1 A.S. n. 2085-B;

For a boutique hotel, for instance, distributing inventory can become extremely expensive. OTAs charge small hotels up to 25% commission (on the gross rate), often forcing the hotel into a rate parity agreement. High distribution fees push hotels to increase room rates to offset the high distribution cost, inevitably creating higher costs for consumers.

Nascent travel startups also find it difficult to obtain data from these intermediaries. Negotiations are lengthy and integrations slow. In the vast majority of cases, the intermediaries simply dismiss requests from new companies with no volume, the case for every new startup seeking to enter the marketplace.

Double Marginalization

The state of the travel industry is partly the result of double marginalization. The different dominant travel industry players, namely distributors and suppliers, occupy different vertical levels in the travel supply chain and add markups, fees, and increased costs at each level.

This creates a significant deadweight loss, weakening the competitiveness of the wider travel marketplace as increased costs are incurred at each level. This raises prices for consumers and creates inefficiency in the marketplace while crowding out new entrants and competitors, leading to a lack of innovation and competitively-priced travel products for consumers.

This problem can be solved through new distribution methods offering frictionless and more affordable alternatives to list, buy, and sell travel products outside the traditional structure constraining travel suppliers, GDSs, travel agents, and consumers.

Concentrated Landscape

The concentrated shape of the travel industry bears a weight on consumers and the industry itself, adding extra costs during transactions and reducing price competition among travel providers.

Three GDS companies (Sabre, Amadeus, and Travelport) dominate the distribution landscape between suppliers and travel agents selling both leisure trips and business travel. Two online travel agencies (Priceline Group and Expedia Inc.), likewise, control online booking through a variety of brands. Online search giant Google, as well, generates billions each year through travel search advertising and a flight booking engine acquired through its purchase of ITA Software.

Through pricing power, private negotiations, and international governmental inaction today's landscape stifles innovation and hinders new startups from being able to get their products to market.

Security Implications

Trusted third parties that hoard the data of their customers have always had security holes. In 2017 alone we've seen a number of successful hacker attacks on systems that should be unhackable, like Sabre and Equifax. When one master password has access to a database that contains millions or even billions of dollars worth of data, there is a fundamental flaw: sooner or later it will be hacked, in some cases from inside the company.

Impact on Innovation

GDS companies, which operate the data connections that facilitate the vast majority of air ticket sales around the world, have little reason to innovate given the current structure of the global travel market. They earn money on each flight and hotel sold while charging travel suppliers for access to their platforms and associated technology services.

Outside of these GDS platforms, airlines and hotel chains are able to use more powerful revenue management and merchandising tools that increase their profitability and provide a better experience to buyers or consumers; for a variety of reasons, most importantly the global scope of GDS platforms, these sectors are currently locked into these antiquated and costly systems.

The market power of GDS companies and online booking giants limits the development of innovative new travel distribution solutions. It is difficult for startups to gain access to content on the GDS platforms, or scale to anywhere near the booking volume of the OTAs.

This phenomenon has prevented true innovation from disrupting the travel distribution landscape.

Members of the Winding Tree team have worked in the travel industry for decades and extensively documented these problems. Many industry professionals agree that none of these problems would exist if there was real competition between the dominant intermediaries. The solution to these problems is an open platform with a few simple rules for data exchange between suppliers and buyers of travel.

Winding Tree

Winding Tree is a decentralized travel distribution network. It is built on top of Ethereum platform with Winding Tree incorporated as a non-profit private company limited by guarantee. The network connects buyers and sellers via a set of smart contracts and open-source tools in a non-rent-seeking manner without taking a transaction fee.

Overview of Winding Tree

Winding Tree offers a decentralized alternative to GDS and OTA distribution with a reduced cost of distribution and more packaging flexibility than traditional platforms. The following features aim to address current issues and enable an unprecedented surge of permissionless innovation in the travel industry.

The Winding Tree team has more than 40 accumulated years of architecture and programming experience in the travel space with leading incumbent travel intermediaries.

We are creating the next-generation decentralized travel platform on Ethereum, allowing for a true peer-to-peer economy to free up creativity and innovation in the travel industry.

Winding Tree will not charge suppliers any distribution fees and will only charge a minuscule transaction fee to incentivize miners to give computational power to the network. These fees will be automatically calculated by the blockchain at the time of transaction and will have no correlation with total booking price or complexity.

Suppliers will have the option to set a default referral commission if they wish to do so. If a referral fee is set, any individual who refers a customer to the supplier will automatically receive the referral amount set by the hotel – if they voluntarily decide to set one. Hotels can also set up individual referral rates for different entities if they wish to do so. Winding Tree will be deployed on the ethereum blockchain, and may be deployed on several other blockchains in the future, which guarantees 100% uptime. Winding Tree is a fully-automated solution, integrating directly with the reservation systems of travel suppliers. Transactions on our platform happen within a few seconds, determined simply by the time needed for the blockchain to mine a block.

One of our development goals is to build a state channel on top of a public blockchain, in order for participants of the network to make multiple thousands of transactions per second. Travel industry transactions require this level of speed.

Travel is also all about bundling. Whenever you book a trip, it's not just a flight or a hotel room, but often a combination of multiple different segments.

Bundling is extremely simple with Winding Tree. Whether you have a pre-existing relationship with a provider of a service that complements yours, or would like to establish one, our platform will help you do so simply given that the provider also uses Winding Tree.

Participants in the ecosystem can see how their partners perform over time and how reduced distribution costs affect their financial bottom line and relationship with travel partners.

Winding Tree's code is open-source and completely transparent for anyone to study. It's the first open-source project in the travel space and the first truly decentralized blockchain solution.

All travel firms will soon have to become software companies in order to adapt to rapid change in the industry's technological landscape. Both suppliers and sellers of travel have to embrace this new reality driven by technology; this is why our platform is built by engineers for engineers. Labor cost is the top expense on the P&L of any software company and working with legacy systems slows down software development tremendously.

Security of the data transacted on our marketplace is our top-priority. We use public-key cryptography to ensure that no one but the parties immediately involved in a transaction can see its details.

One of the most important aspects of Winding Tree is that it is a public decentralized computing platform with the open consensus model, as opposed to the consortium model or complete centralization. We are convinced that only permissionless architecture, where anyone can freely participate in the network, will solve the problems described above.

The consortium consensus model will inevitably lead to censorship where its members will decide who can or can't access the platform, and the mere need for that process will drastically slow the advance of such platforms. Some of the companies in a union like this will be able to adopt new technologies faster than others. At the same time, however, they will have to use the same standard, leading to the whole consortium moving only as fast as its slowest member.

Winding Tree facilitates travel distribution in all of its different aspects by making it cheaper, faster, more enjoyable for consumers, and easier for new business models to emerge in the travel industry.

Some current business practices and models will have to be removed or drastically changed, while some new concepts will finally be given a fertile ground for their growth, in order to achieve this goal.

Winding Tree, fundamentally, enables the conditions for the perfect competition of travel suppliers and provide perfect information to buyers. This will impact current market players and create new businesses built on top of the Winding Tree platform.

Today, booking an international flight involves a multi-currency transaction which can span a handful of countries for a simple flight. When booking a flight from New York to Barcelona through Reykjavik, a traveler will pay the ticket price in USD, while part of the ticket price will then be exchanged to Icelandic krona and other parts into Euro. The total ticket price also includes airport security charges, bag security charges, government taxes, embarkation tax, passenger service charge, and more. A single booking can involve more than five currency trades for a simple flight if third-party insurance or a car rental is added to a booking at checkout.

Winding Tree solves this problem by using blockchain technology to remove extensive currency conversion from the travel booking process.

How Blockchain Enables Winding Tree

Blockchains are designed to cut out the middlemen. Bitcoin, for example, is a financial system without one central authority, such as a bank or a government, and Winding Tree applies a similar logic to the travel industry using the universal smart contract platform that Ethereum has provided to decentralize the world economy.

It is important to note that only open, permissionless blockchains can reduce inequalities and change the balance of power because private or consortium-governed blockchains⁸, by definition, are not able to provide the same level of trust and security.

Under today's architecture, the travel industry bears a very high cost of verification. A traveler's information often passes through many hands from the website it is booked, to the airlines, the payment merchants, airports, governments, border control agencies, and others. Not only is it costly to do so under a centralized system, but it also exposes the sensitive data to data leaks. Blockchain, instead, allows for costless verification.

How Winding Tree Enables Innovation

Winding Tree connects suppliers (hotels, airlines, etc.) and sellers (travel agencies) to a single marketplace. Suppliers will put availability and price information into the database, where it is easily discoverable by sellers. Sellers then have the ability to buy that inventory and pay for it instantly. All these interactions are designed to be performed automatically, without human intervention.

⁸ Open Matters: Why Permissionless Blockchains are Essential to the Future of the Internet, Coin Center

The Winding Tree platform is built by engineers for engineers. It's not our goal to build user-facing interfaces for the marketplace. We encourage the creation of those interfaces by third-party developers in order to increase competition and the quality of these products.

We also envision existing software products, like property management systems and travel agent interfaces, connecting to Winding Tree. Winding Tree faces a few exciting challenges that can be divided into two categories: technical and commercial.

In terms of technology, blockchains are still not capable of supporting the load that the entire travel industry requires. The Bitcoin blockchain can handle a maximum of seven transactions per second, while Ethereum can handle between 10 and 20 per second. The good news is that many people are working on scaling public blockchains and these improvements are well underway, like Lightning Network (Bitcoin) and Raiden (Ethereum)

Another issue that many bring up is the security of Winding Tree transactions. Security is our most important focus. All transactions will be encrypted so only the parties that are immediately involved in a transaction will be able to see its details.

One of the factors will be educating people and organizations in the travel industry about the possibilities of the Winding Tree platform as part of the decentralized cryptoeconomy.

Líf Token

The Fuel of the Ecosystem

Due to the need for travel companies to send more information than typically handled by smart contracts, we have expanded the Líf token to be able to handle more data than a typical ERC20 token while still remaining full compatibility with ERC20 standards.

ERC20 Token:

```
1 pragma solidity ^0.4.11;
2
3 import 'zeppelin-solidity/contracts/token/ERC20.sol';
4
5 /**
6  * @title Líf token interface
7  */
8 contract LifInterface is ERC20 {
9     uint public maxSupply;
10    function approveData(address spender, uint value, bytes data, bool doCall);
11    function transferData(address to, uint value, bytes data, bool doCall);
12    function transferDataFrom(address from, address to, uint value, bytes data, bool doCall);
13    event TransferData(address indexed from, address indexed to, uint256 value, bytes data);
14    event ApprovalData(address indexed from, address indexed spender, uint256 value, bytes data);
15 }
```

Líf Token:

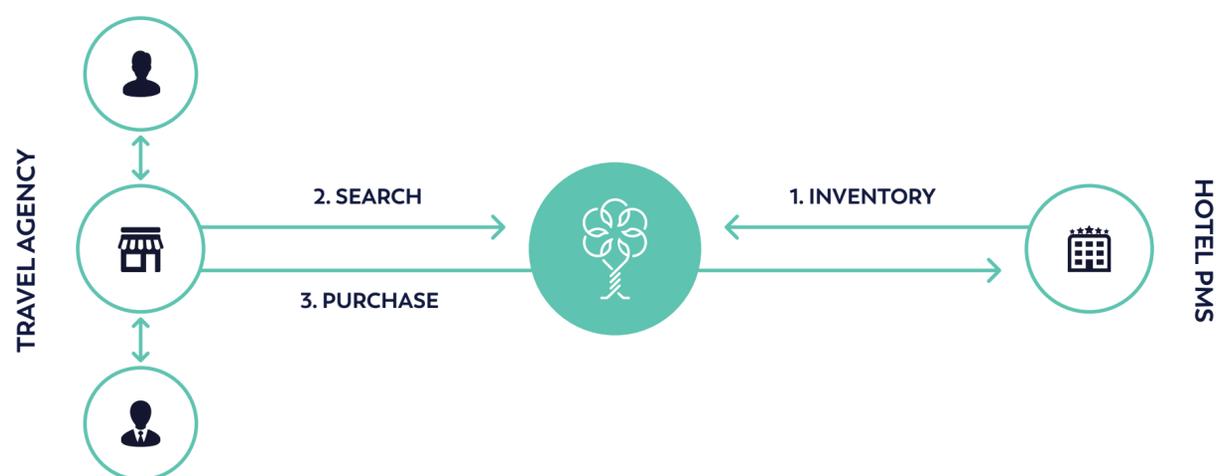
```
1 pragma solidity ^0.4.11;
2
3
4 /**
5  * @title ERC20 interface
6  * @dev see https://github.com/ethereum/EIPs/issues/20
7  */
8 contract ERC20 {
9     uint256 public totalSupply;
10    function balanceOf(address who) constant returns (uint256);
11    function allowance(address owner, address spender) constant returns (uint256);
12    function transferFrom(address from, address to, uint256 value);
13    function approve(address spender, uint256 value);
14    function transfer(address to, uint256 value);
15    event Transfer(address indexed from, address indexed to, uint256 value);
16    event Approval(address indexed owner, address indexed spender, uint256 value);
17 }
```

In order for a property management system (PMS1) to be able to write information to the Winding Tree database, it has to have a balance of Líf, the Winding Tree platform cryptocurrency. The users of the platform, like travel agents or front desk managers, do not have to know that what powers the system. It is beneficial for developers, however, to understand how it works behind the scenes.

PMS1 will have to spend a tiny amount of Líf to write information onto the Index contract, and for travel sellers to be able to find inventory from that hotel. This incentivizes miners to participate in the network and does not represent a platform fee.

Let's say PMS1 has a balance of 5 Líf. A hotel manager would like to make 10 rooms in the hotel available from May 1 to May 31 for the price of USD \$100 per room per night. One transaction with all that information is dispatched and along with it a fee of 0.01 Líf is sent to Winding Tree. Now the hotel has its inventory on Winding Tree platform.

A travel agency employee (or customer of an online travel agency) then performs a search on Winding Tree via software created by software engineers. Let's call them TA1 (Travel Agent 1). It also has a balance in Líf, but the search query is free, so the TA1 balance has not decreased. It is only used when the travel agent decides to book a hotel room for one of their customers. In this case, the correct amount of líf has to be sent to the smart contract in order to book a room.



Here is a breakdown of what is being transacted in each step:

1. PMS1: INVENTORY. Data: room availability and price, fee: 0.01 Líf.
2. TA1: SEARCH. Data: search criteria, fee: none.
3. TA1: PURCHASE. Data: room and guest information, price: 100 Líf, fee: 0.02 Líf.

At the end of this series of transactions, the TA1 balance is decreased by 100.02 Líf and the PMS1 spent 0.01 and gained 100 Líf, while Winding Tree has the record confirming that the travel agency customer has the right to stay at the hotel.

At the same time, 0.03 Líf went towards the miner that confirmed these transactions by putting them in the next block.

Please note that the fees above are hypothetical, the actual fee amounts will be automatically calculated by the marketplace at the time of the transaction.

The usual concern here is the volatility of the currency. We mitigate that risk by allowing parties to convert Líf to fiat currencies at the time of the transaction through third-party financial institutions.

Both PMS1 and TA1 users should now be able to verify that that transaction has been confirmed and that the traveler can enjoy her upcoming hotel stay. Winding Tree Block Explorer is a website where they may see their (encrypted) transactions if they know its hash. The website will also have statistics about the platform load, Líf price, and other information.

Winding Tree brings the open-source model of working on data exchange standards to the travel industry.

Líf Token Generation Event (TGE)

Brief Overview

We firmly believe that infrastructure projects, like Winding Tree, must be supported by the organizations and individuals that will use them. Therefore we will raise money via a token generation event as opposed to funding from traditional investors.

The TGE will be organized by Winding Tree Limited, a private limited non-profit company incorporated in Gibraltar that aims to promote innovation in the travel industry by funding and promoting collaborative travel technology projects.

Phases of the TGE

Winding Tree aims to raise funds in order to pursue its goals by issuing Líf tokens.

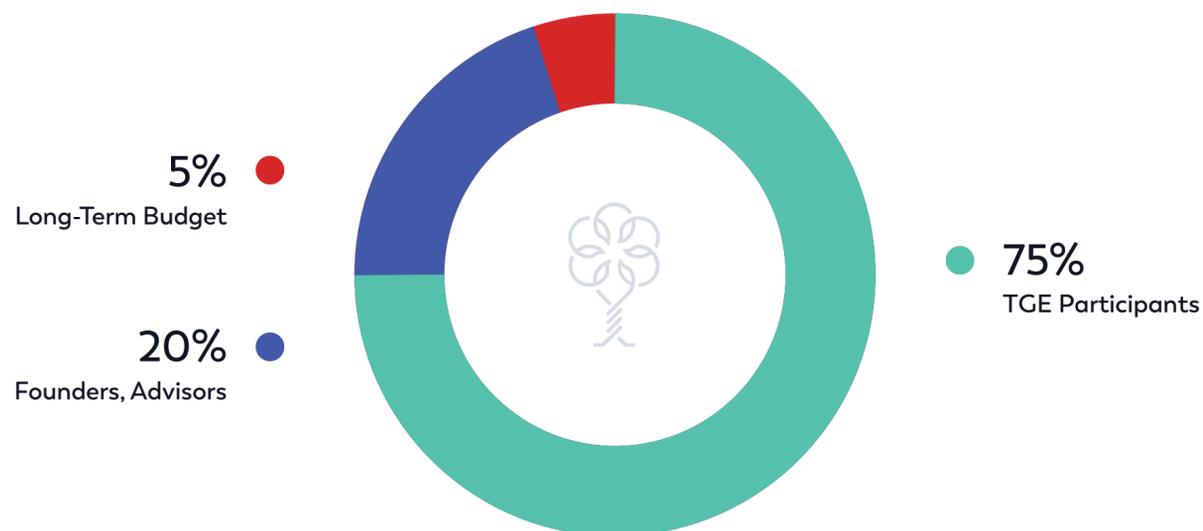
- Start date: February 1, 2018
- Duration: 2 weeks, until February 15
- Token distribution
 - 75% - public TGE participants
 - 20% - founders, advisors, employee pool, etc.
 - 5% - long-term budget (released according to schedule below)
- Price: Week one: 1000 LIF/ETH; Week two: 900 LIF/ETH
- Number of tokens generated: decided by the market
- Token availability: LIF will be distributed over the course of 7 days after the end of the fundraiser
- Maximum funds initially received by Winding Tree Limited after the TGE (irrespective of the total funds raised during the TGE): \$10 million USD
- The excess of funds (>\$10 million) will be put into a Market Validation Mechanism (MVM) that will allow TGE participants to withdraw a part of their contribution, during the below defined time-frames, by sending their LIF to the MVM
- The MVM will be distributing its funds to Winding Tree on a monthly basis, according to the schedule below

- Crypto-assets will be held in a multi-sig wallets controlled by the Winding Tree members
- A part of the funds will be converted to other crypto-assets and fiat (EUR, USD, CHF, LIF, ETH, BTC)

Token Distribution

Decentralized projects require a fair token distribution model ⁹. Our goal is to avoid the problem most projects have had in the past: the problem of centralization (the “central banking problem”). Our solution to this problem is to not limit the amount of generated tokens (and therefore funds raised), but rather limit the amount of funding that we will receive after the TGE to \$10 million (see the table below).

Winding Tree will also receive a certain number of tokens that will amount to 25% of all issued tokens. For example if there were 75 Lifs generated, we would issue 25 more Lifs to distribute amongst the founders, advisors, employees, and others.



The excess funds from the TGE stage will be put into a smart contract we call the Market Validation Mechanism (MVM) that will maintain the Líf price floor. This smart contract issue funds to Winding Tree on a monthly basis, according to the rules described in the Market Validation Mechanism section below.

⁹ When Token Sale is Necessary, Winding Tree Blog

STAGE	START	END	LÍF / ETH	CAP
Early Contribution Stage 1	Aug 1	Sep 18	1300	\$250k
Early Contribution Stage 2	Oct 1	Oct 15	1100	\$1.5M
TGE, Week 1	Feb 1	Feb 7	1000	Soft cap \$5M
TGE, Week 2	Feb 8	Feb 15	900	Soft cap \$5M

(Feb 1 = 2017-11-01T08:00:00+00:00 = Feb 1, 8:00 am London Time)

Lífs will be distributed to the backers upon the conclusion of the TGE, within approximately seven days following the conclusion of the TGE. It will only be possible to obtain Líf using ETH.

Winding Tree has already raised \$1,500,000 through the early contribution stages outlined above. We've used these funds to incorporate the legal entity, fund the development of the MVP, TGE smart contracts, audit, marketing, and more.

We will publish the source of the smart contract for the Líf token smart contract at least one week before for community review.

For this and all the subsequent stages, the USD amounts will be recalculated in ETH based on data from <https://coinmarketcap.com/currencies/ethereum/> exactly 24 hours before the stage start time.

During the TGE, Winding Tree Limited will be issuing Líf for a duration of two weeks with two price stages of one week each. The TGE will open with a one-week discounted period of 1ETH = 1000 Lífs. During the second week the rate changes to 1ETH = 900 Lífs.

If the TGE generates less than \$5 million in funding, all the contributions from this stage will be returned back to the wallets they originated from. The private early contributors will not be refunded. Public early contributors will be issued a partial refund, minus the expenses before and during the fundraiser.

Market Validation Mechanism (MVM)

The MVM is designed to provide validation to the project. The MVM smart contract has a few simple rules:

- It is completely autonomous (no one can change it)
- It holds the ETH generated by the TGE, in excess of \$10M
- It will allocate a certain amount of funds to Winding Tree on a monthly basis
- It buys Líf back and burns them instantly; the price equation is below

If the project is successful and token holders don't use the MVM, the team will receive funds every month from the MVM smart contract. If the Winding Tree marketplace is not successful, the token price will fall below the MVM price and everyone will be able to recover part of their contributions by sending Líf to the MVM, thus draining the smart contract.

The schedule that the MVM will be operating upon will depend on the amount of funds in the contract. If the contract has more than \$40 million, it will have a 4-year lifespan, $P=48$ (months), otherwise $P=24$ (2 years).

The following formula shows the percentage of all the funds that Winding Tree Limited will be able to claim after the month m .

$$dF = m^e / P^e$$

dF = distributed Funds
 m = month
 P = Period (24 or 48 months)

With a 24-month schedule, Winding Tree will be able to claim 0.0177% of all the funds F in the smart contract the 1st month after its initiation.

The MVM is designed in a way that allows all holders of Líf to recover part of their contribution.

Therefore, the MVM Líf price will be:

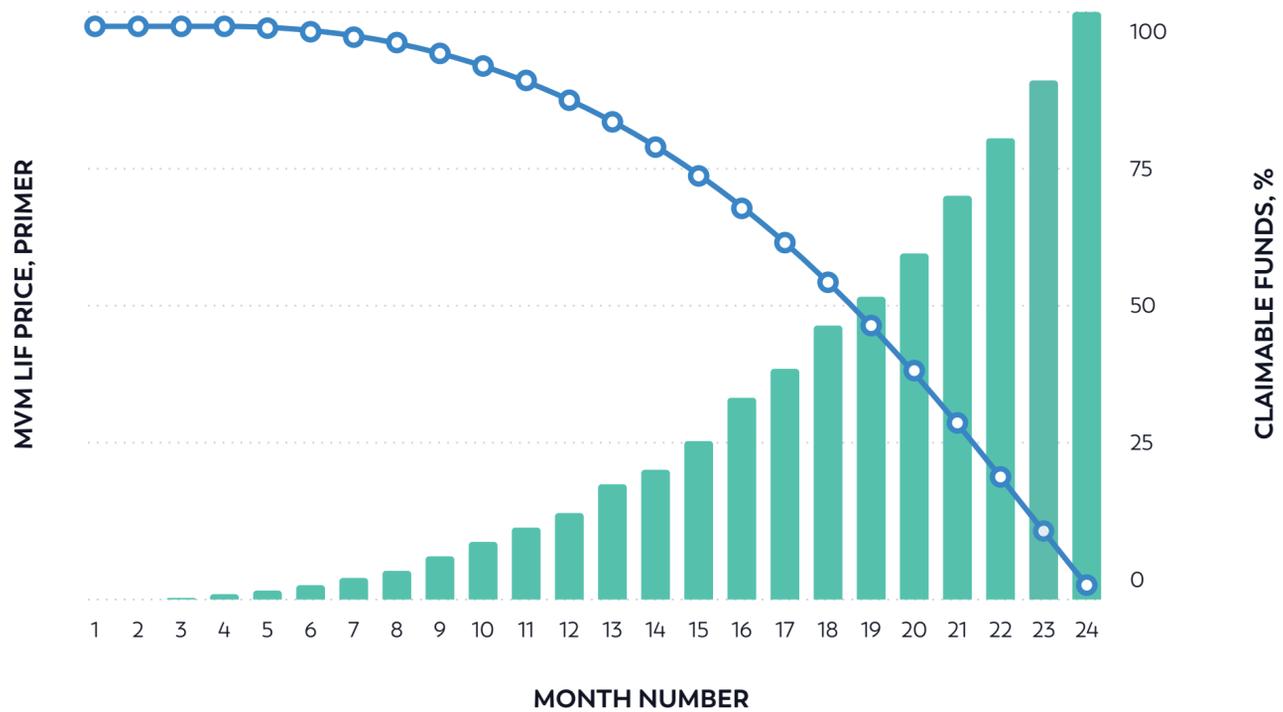
$$p = (1-dF) * F/T$$

p = price
 dF = distributed Funds
 F = Funds in the MVM
 T = Total Líf tokens

As you can see, the price function and the amount of funding that the team will receive every month have a direct relationship. Please also note that the shape of the price function is a negative exponential; we minimize the risk for contributors in the beginning of the project.

Winding Tree will receive regular monthly funding from the MVM, if the token holders have not used MVM and there are still funds in the MVM smart contract.

Below is a primer of what the price and claimable funds functions look like and how they are related.



Winding Tree would like to reserve the right for the second-round token generation event. For this purpose an additional 5% of tokens will be issued over the course of 4 years after the MVM ceases to function.

Use of Proceeds



We plan to convert a certain amount of received ETH to other crypto-assets and fiat currencies, subject to approval by our advisors and external consultants.

Vesting Schedules

Winding Tree Limited founders and employees will receive their tokens on a 4-year vesting schedule with 1 year cliff. The advisory board tokens will vest on a 2-year schedule with 6-month cliff.

Ongoing Information Disclosure

Winding Tree Limited will release monthly updates and comprehensive quarterly financial reports.

Security Audits

In order to make sure that the funds we're going to receive will be secure, the smart contracts we'll be releasing prior to the ICO will be reviewed by well-known security advisors, such as Manuel Aráoz and Zeppelin. The results of these audits will be made public.

Roadmap

2017 Q4

- LifToken Distribution - Early Contribution Phase & TGE
- WT Hotels smart contracts - Alpha version, open-source
- LifToken Wallet, for hotel & users - Alpha version - demo.windingtree.com
- WT API nodejs - Alpha version
- WT Block Explorer - Alpha version - explorer.windingtree.com

2018 Q1

- Integrating with Hotel providers
- Open source data exchange standards for hotels
- WT Testnet
- Multisignature integration in LifToken Wallet

2018 Q2

- Open source data exchange standards for airlines
- WT Airlines smart contracts - Alpha version
- LifToken Wallet for airlines

2018 Q3

- WT Contracts V1.0

2018 Q4

- WT Search Engine

2019 Q1

- WT expansion into other travel sectors

2019 Q2

- Smart contracts for tours and activities, car rentals, etc.

2019 Q3

- Public data reports published in real time

2019 Q4

- Improve network scalability & privacy

As the platform scales Winding Tree will start the development of state channel for blockchains, designed specifically for travel, in order to handle a large volume of transactions. This will result in better search mechanisms and quicker payments, the development of user-facing applications like an application for smartphones that would unlock a hotel door using a confirmed B2B transaction hash, and a commitment to design, develop, produce, and contribute to the development of open-source hardware for the travel industry, like point-of-sale systems, locks, terminals, and more.

Who We Are

Our Team

Our team has deep expertise in software engineering, entrepreneurship, business development in the travel industry and other fields.

Maksim Izmaylov

Maksim is a software engineer and entrepreneur. He has been working on travel projects for more than five years. Izmaylov cofounded [Roomstorm](#), a software solution that helps airlines to accommodate passengers from delayed and canceled flights, and [Travel Tech Con](#), a not-for-profit organization that aims to move the industry forward by enabling collaboration between various stakeholders in the travel industry.

Maksim writes about travel and technology, and speaks at travel conferences about blockchain and at blockchain conferences about travel decentralization.

Jakub Vysoky

Jakub Vysoky is a software engineer and evangelist for Python programming language. He has worked with Izmaylov on a multitude of software projects in the last 10 years. Vysoky is a contributor to Python, Django, and many other open-source projects. He has deep knowledge of the travel industry API ecosystem and its problems. Vysoky is responsible for the development of the open-source data exchange standards and Winding Tree libraries.

Augusto Lemble

Augusto Lemble is a blockchain hacker and a full-stack software developer. He has worked on multiple blockchain related projects for the last three years. Lemble specializes in decentralized and web applications, bringing a deep knowledge of blockchain protocols. He is responsible for the smart contracts development and security, along with the blockchain integration of Winding Tree libraries and services.

Pedro Anderson

Pedro Anderson leads our business development and marketing efforts. He is responsible for expanding adoption and use of Winding Tree across the industry. Prior to Winding Tree, Anderson was responsible for driving adoption of the Attendify app from its formative years to a leading position in the Event Tech space. He also founded "[Firefly](#)" a non-profit focused on training and preparing orphans for careers in the hospitality industry.

Advisors

Manuel Aráoz

Manuel Aráoz is the Founder and CTO of Zeppelin Solutions, the leading blockchain security auditing company. Aráoz also advises Decentraland, and has previously worked as a Software Engineer for BitPay leading the development of Bitcore. He also developed one of the first apps on Bitcoin providing Proof of Existence and proposed BIP 45 introducing multi-signature wallets on the bitcoin protocol.

Norm Rose

For over two decades, Norm Rose has been an analyst and consultant focused on emerging technologies and how they impact business practices in the global travel industry. Rose is a travel industry veteran, speaker and writer. He consults with the biggest travel companies in the world and governments, including Phocuswright, Expedia, Amadeus, the U.S. Department of Transportation, and many others.

William Niejadlik

William Niejadlik is a travel technologist with over 20 years of experience (he was the founder and CTO of Vayama). William is also a crypto-investor (Polychain, Tezos) and his wife helped to build Coinbase.

Douglas Rice

Douglas Rice is an industry leader in the global hospitality technology industry. He is best known for his role as a founder of the global non-profit industry association Hotel Technology Next Generation.

Johnny Thorsen

Johnny Thorsen is a passionate innovator and enjoys disrupting the status quo. Previously he served as Senior Director of Strategy and Product Marketing for Concur Risk Messaging and Senior Director at SAP Mobile Services. Currently he is a vice president of travel strategy at Mezi.

Conclusion

The travel industry is in dire needs of innovation and decentralization due to a variety of factors including anti-consumer behavior by corporations, outdated infrastructure, and the business practices of influential travel companies which have little incentive to change the status quo.

Using blockchain technology, Winding Tree offers travel stakeholders a way to distribute their products with perfect competition and reduced costs. This new marketplace will inevitably provide consumers with more choice and travel companies with the opportunity to sell products outside of outdated, yet deeply entrenched, distribution platforms.

Winding Tree represents a more egalitarian and progressive way forward for the global travel industry. Join us on our journey to redefine the travel distribution landscape.

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Please note that Winding Tree is in the process of undertaking a legal and regulatory analysis of the functionality of its LIF Tokens. Following the conclusion of this analysis, Winding Tree may decide to amend the intended functionality of its LIF Tokens in order to ensure compliance with any legal or regulatory requirements to which we are subject. In the event that Winding Tree decide to amend the intended functionality of its LIF Tokens, Winding Tree will update the relevant contents of this whitepaper and upload the latest version of this to its website.

Any LIF Tokens could be impacted by regulatory action, including potential restrictions on the ownership, use, or possession of such tokens. Regulators or other circumstances may demand that the mechanics of the LIF Tokens be altered, all or in part. Winding Tree may revise mechanics to comply with regulatory requirements or other governmental or business obligations. Nevertheless, Winding Tree believe they have taken all commercially reasonable steps to ensure that its planned mechanics are proper and in compliance with currently considered regulations.

CAUTION REGARDING FORWARD-LOOKING STATEMENTS

This whitepaper contains forward-looking statements or information (collectively "forward-looking statements") that relate to Winding Tree's current expectations and views of future events. In some cases, these forward-looking statements can be identified by words or phrases such as "may", "will", "expect", "anticipate", "aim", "estimate", "intend", "plan", "seek", "believe", "potential", "continue", "is/are likely to" or the negative of these terms, or other similar expressions intended to identify forward-looking statements. Winding Tree has based these forward-looking statements on its current expectations and projections about future events and financial trends that it believes may affect its financial condition, results of operations, business strategy, financial needs, or the results of the TGE or the value or price stability of the LIF Tokens.

In addition to statements relating to the matters set out here, this whitepaper contains forward-looking statements related to Winding Tree's proposed operating model. The model speaks to its objectives only, and is not a forecast, projection or prediction of future results of operations.

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Winding Tree undertakes no obligation to update any forward-looking statement to reflect events or circumstances after the date of this whitepaper.

The Company's business is subject to various laws and regulations in the countries where it operates or intends to operate. There is a risk that certain activities of the Company may be deemed in violation of any such law or regulation. Penalties for any such potential violation would be unknown. Additionally, changes in applicable laws or regulations or evolving interpretations of existing law could, in certain circumstances, result in increased compliance costs or capital expenditures, which could affect Winding Tree's profitability, or impede Winding Tree's ability to carry on the business model and the LIF Tokens model proposed in this whitepaper.

