Winding Tree

Travel Distribution Without Intermediaries

Draft White Paper (FOR REVIEW; COMMENTS ARE NOW CLOSED)

Discussion: https://www.reddit.com/r/windingtree/

windingtree.com (GitHub, Slack)

Abstract

The travel industry is notoriously out of date in terms of technology adoption. Many travel companies still rely on fax machines and phones as main communication methods, others are struggling to connect to data sources to power their sales. This problem is especially acute for travel startups, one of the main sources of innovation.

In this paper, we're identifying the root cause of these problems and proposing a solution to it that has been made possible with the invention of the blockchain: a decentralized B2B marketplace for travel.

Root Cause: Travel is an Oligopolistic Market

There are just five companies in the travel industry that control the entire market. The two largest OTAs (Online Travel Agencies), Priceline and Expedia, control 95% of OTA market in the US. The top three GDSs (Global Distribution Systems), Amadeus, Sabre and Travelport, distributors of airline inventory, have 99% combined market share in non-direct inventory.

In this paper, we'll make a few generalizations because it's not our goal to dissect the problems we're describing, but rather to give a high-level overview of them. Also, for the sake of simplicity, we'll call the above-mentioned five companies "the intermediaries".

Because there are only five intermediaries, they lack the incentive to innovate, e.g. some of these companies still use mainframe computers and software written decades ago.

Another problem is that these companies use their position on the market to extract rent, e.g. US Airways VS Sabre. They are accused of overcharging their customers and employing other dubious tactics.

What does the status quo mean for stakeholders in these markets and for travelers?

For a boutique hotel, for example, it is extremely hard to distribute their inventory. They have to negotiate a contract to do so, while the intermediaries add their commission fee, usually 10-25%, very often forcing the hotel into a rate-parity agreement. That is why you see major hotel chains heavily advertising direct bookings by providing additional amenities, but not a better price.

On the other hand, a new travel startup will find it very hard to obtain data from the intermediaries. Negotiations are lengthy and integrations slow. In the vast majority of cases, the intermediaries simply dismiss the request from new companies with no volume, the case for every new startup

noreply@booking.com
Signup Rejected
To: [redacted]

Dear Sir or Madam,

Thank you for your registration and interest in joining Booking.com affiliate program.

We have reviewed your website and unfortunately we do not feel that has some of the fundamental elements we feel would make for a mutually successful collaboration.

It is important for us to see a well structured website with rich unique content that contains both pictures and text and is preferably travel related.

Moreover, we would like to see qualified web traffic and at the moment does not meet this criteria.

Again, thank you for contacting us and feel free to contact us in the near future should come to meet the qualities outlined above.

With kind regards,

Booking.com distribution team

HotelsCombined Affiliate Support
Re: Enquiry from Data feeds access
To:

Hi

To clarify, our hotel data feeds consist of a static list with basic hotel information. Access is offered on a limited basis, depending on existing partner site content as well as account performance. In addition, our hotel data feeds are not a suitable solution for new websites built from scratch and with no/little existing content.

Please tell us more about your website and send us some examples on how you would like to integrate our hotel data with your existing content, so that we can look into your request.

Regards

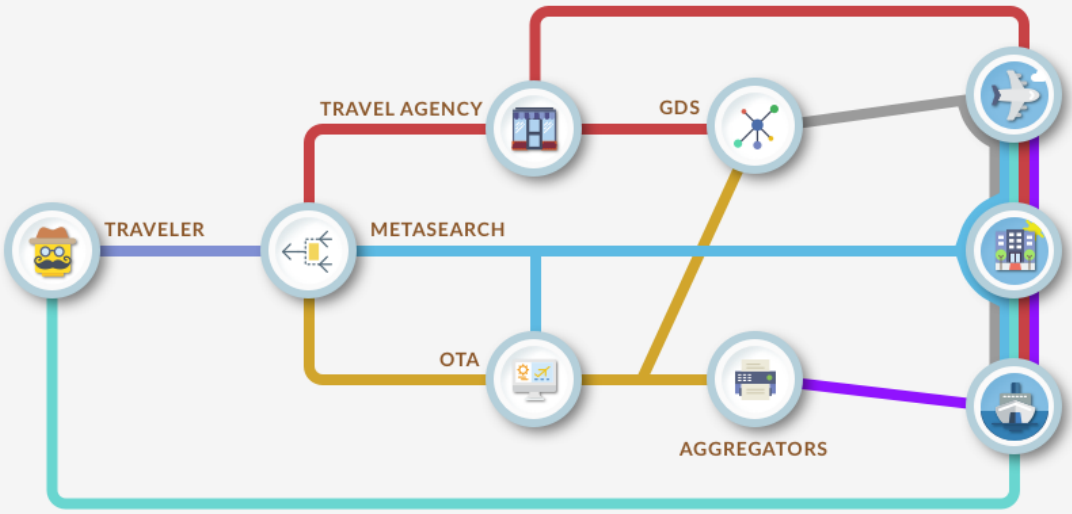
HotelsCombined

We have researched these problems extensively and many industry professionals agree with us that if there was real competition between the intermediaries, none of these problems would exist.

The following illustration of how the travel ecosystem looks today is taken from William El Kaim's article titled The Coming Fourth Digital Revolution in the Travel Ecosystem. We present it here with slight modifications.

TRAVEL ECOSYSTEM

CURRENT STATE



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Solution: Blockchain-Enabled B2B Travel Marketplace

The solution to the problems is a platform with a few simple rules for data exchange between suppliers and buyers of travel.

The project we've been working on for the past few months is called Winding Tree and it has the following features that aim to address current issues and enable an unprecedented surge of innovation in the travel industry.

Here are some of the key features of the platform. Please note that we use Ethereum to build the MVP (minimum viable product), but we might consider changing to another public permissionless blockchain.

No Booking Fees

We believe that booking fees are a business model of the past[1]. Winding Tree will not be charging suppliers any distribution fees. Regarding transaction fees, Winding Tree will only charge a minuscule 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 the total booking amount.

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.

[1] OTA commission fees are not pure rent, part of their fee goes towards marketing. The problem is that the marketing message in this case is in the hands of one company. At Winding Tree our goal is to allow many companies to compete using different marketing strategies and messages.

No Downtime

Winding Tree will be deployed on one (or several) of the public blockchain, which guarantees its 100% uptime.

Near-real-time Transactions

Winding Tree is a fully-automated solution, with integrations directly with reservation systems of travel suppliers. Transactions on our platform happen within a few seconds. This time is determined by the time needed for the blockchain to mine a block.

Currently, blockchains are slower than other databases. At Winding Tree 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, which the travel industry requires.

Bundling

We understand that travel is all about bundling. Whenever you book a trip, it’s not just a flight or a hotel room, it’s usually a combination of multiple different segments.

With Winding Tree, bundling will be extremely simple. Whether you have a pre-existing relationship with a provider of a service that complements yours, or whether you’d like to establish one, our platform will help you do it in the most streamlined way, given that that provider also uses Winding Tree.

Open Collaboration

Winding Tree code will be open-sourced and completely transparent for anyone to study and propose changes. It's one of the first open-source projects in the travel space.

More importantly, the platform will be owned by the community and participants of the marketplace will be able to create and vote on proposals for changing the marketplace code by using the tools for governance of the platform that we're currently building.

Focus on Developer Experience

In the next five years all travel firms will have to become software companies to be able to adapt to the rapidly changing technological landscape. The rest will be obliterated from the market just as Blackberry was made obsolete by the iPhone.

Ten years ago it was enough for a travel agency to own a phone and a notebook, but now they have to be active on social media, understand online advertising, etc. Both suppliers and sellers of travel will have to embrace the new reality driven by technology, that is why our platform is built by engineers for engineers because labor cost is the top expense on a P&L of any software company and working with legacy systems slows down software development tremendously.

Bank-Level Security

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 the transaction can see its details.

Open Consensus Mechanism

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. We are convinced that only permissionless architecture, where anyone could freely participate in the network, will solve the problems we've described above.

Consortium consensus will inevitably lead to censorship. Its members will be deciding who can or can't access the platform, and the mere need for that process will slow the advance

of such platforms drastically. It's worth mentioning that some of the companies in a union like this will be able to adopt new technologies faster than others, but at the same time, they will have to use the same standard, which will lead to the whole consortium moving only as fast as its slowest member.

New Marketplace Economy

The goal of creating Winding Tree is to facilitate travel in all of its different aspects, making it cheaper, faster, more enjoyable for consumers and allowing the creation of new business models in the travel industry.

In order for us to achieve this goal, some of the 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.

Fundamentally, Winding Tree is enabling the conditions for the perfect competition of travel suppliers and provides perfect information to buyers.

Let's see how this will impact current market players and what new businesses can be built on top of the Winding Tree platform.

TRAVEL ECOSYSTEM

WITH OPEN AND TRANSPARENT MARKETPLACE

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Suppliers of Travel

Forecast: Positive

Airlines, hotels, car rentals, cruise ships, tour and activity providers, home rentals and B&B's will enjoy the fact that the Winding Tree marketplace has no transaction fees and that it's extremely easy to integrate with. They will also reestablish relationship with their customers, allowing them to provide much better service and truly differentiate on the experience.

Winding Tree will also drastically lower barriers to entry for new players, allowing them to easily compete with the incumbents.

Travel Agencies and Tour Operators

Forecast: Positive

Travel agents will enjoy easy access to data and low fees on our platform. One of our goals is to improve the quality of the data that's currently available to travel agents.

Travel Startups

Forecast: Positive

Winding Tree is built with the needs of travel startups in mind. While small companies and individual entrepreneurs are rejected by big players, our platform is open and very easy to work with. Just download our library, read the API documentation, and you're good to go in almost no time.

Destination Management Organizations

Forecast: Positive

Destination marketing organizations (or DMOs) have been sidelined in this digital age by industry giants. They often don't have the bandwidth or resources to stay relevant. With Winding Tree, a DMO will be able to fully leverage their unique position in the market, in order to provide the best traveler experience by easily accessing hotel/tour content in their destination as well as flight availability and acting as a travel agency.

Meta-Search

Forecast: No Longer Necessary

The meta-search business model was created precisely because there was no data infrastructure that allowed for easy access to supplier data. Winding Tree could eliminate this problem and its derivative business models, while initially it will be just one of the data sources for metasearch engines.

Aggregators

Forecast: Radical Business Model Change Necessary

Many intermediaries in the travel industry benefit from charging exorbitant transaction fees because there are no alternatives, not because they deliver value. By enabling perfect competition, Winding Tree threatens this model.

New Business Models

Winding Tree will allow for new business models to be built on top of it. Here are just a few examples.

Travel Agent Interface

Winding Tree is just a set of APIs, so an individual travel agent won't be able to access it, but a programmer, on the other hand, will easily be able to build an interface for travel agents and sell it as a subscription, for example.

Easy access to the platform would mean that many more individuals and organizations will be building these interfaces, competing on features and price, which will lead to vast improvements in quality of these interfaces and adjacent products and services, including back office.

Algorithm-as-a-Service

An individual software engineer could easily build an algorithm for pricing hotel rooms, for example, and sell it as an add-on to property systems integrated with Winding Tree.

Personalization Engine

Because Winding Tree will have access to a huge body of anonymized travel data, it will be extremely easy to build a travel personalization algorithm and sell it to travel agencies.

AI-assisted Booking

Currently, there are multiple projects that can help you book a hotel via chat or voice interface, but all of them are only as good as the data they have in their systems. By enabling easy access to data we will make it extremely easy to build a travel booking chat bot.

The Ultimate Travel App

What would the ultimate travel experience look like? Imagine you receive a calendar invite from your business partner for a meeting in another city. Ideally, there would be an

app that would immediately book the best option for traveling there, including flights, hotels, ground transportation, etc.

The perfect travel app will also send you updates when your flight is delayed, with the information about how it affects your whole itinerary and options to still be able to make it to your meeting.

Thematic Travel DAOs

Thematic Travel DAOs where suppliers (hotels, airlines, cars etc.) meet demand, have their own incentive tokens, build customer loyalty with it, local reputation etc. and charge small fee distributed to the community.

Travelers

Forecast: Positive

Most importantly, the goal of the Winding Tree platform is to allow businesses to deliver the best possible customer experience.

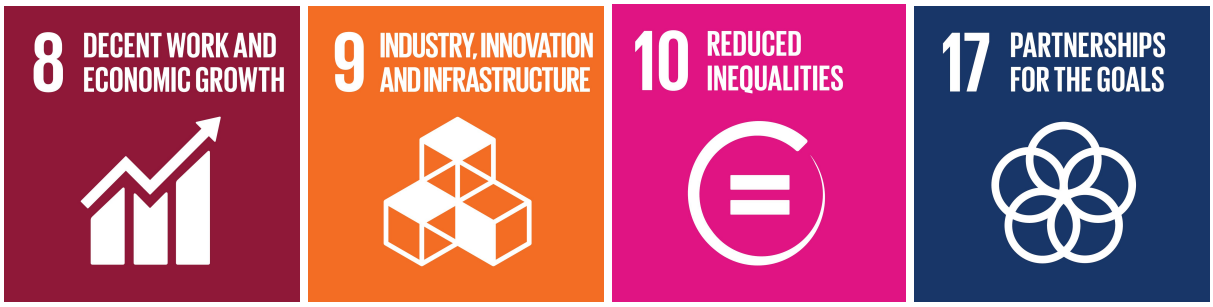
With all the aforementioned new business models, travel will be much more streamlined, personalized and there will be much more choice in terms of travel agencies that will cater to different demographics, as opposed to status-quo today, with the same company trying to satisfy needs of business travelers, backpackers, cultural, health and eco-tourists, etc.

With increased competition between travel agencies and suppliers, travelers will enjoy better service at better prices.

UN Sustainable Development Goals

The Sustainable Development Goals (SDGs), officially known as Transforming our world: the 2030 Agenda for Sustainable Development is a set of 17 "Global Goals" with 169 targets between them.

Winding Tree helps to advance the travel industry towards the following goals.



Decent Work and Economic Growth

We believe that the current situation in the travel does not allow for innovation, but technological innovation is one of the main drivers of economic growth.

Industry, Innovation and Infrastructure

Winding Tree goal is to improve infrastructure and enable innovation in the travel industry.

Reduced Inequalities

Inequality, social, economic and corporate, is one of the defining features of our societies today. Blockchain technology helps us to address these issues in the travel industry by removing rent-seeking intermediaries and enabling competition.

Partnerships for the Goals

Last, but not least, Winding Tree is open to collaborate with any stakeholders in the industry that share the same vision. We need your contribution, because only together we can solve the issues described in this paper.

Another project that founders of Winding Tree are involved at is Travel Tech Con, an organization that aims to enable collaboration in the travel industry via organizing events for travel startups and developers.

How Does Winding Tree Work

In a nutshell, Winding Tree is a set of smart contracts on Ethereum with a DAO governance platform that allows for the holders of Líf to participate in the development of those contracts.

Winding Tree connects suppliers (hotels, airlines, etc.) and sellers (travel agencies) to a single marketplace. Suppliers will be able to put information about their availability and price onto the database, where it would be 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 without human intervention.

Why Blockchain?

The travel industry, as we established, is dominated by a few big players. Blockchains on the other hand are designed to cut out the middlemen. E.g. Bitcoin is a financial system without one central authority, such as a bank or a government, and we hve just applied a similar logic to the travel industry.

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

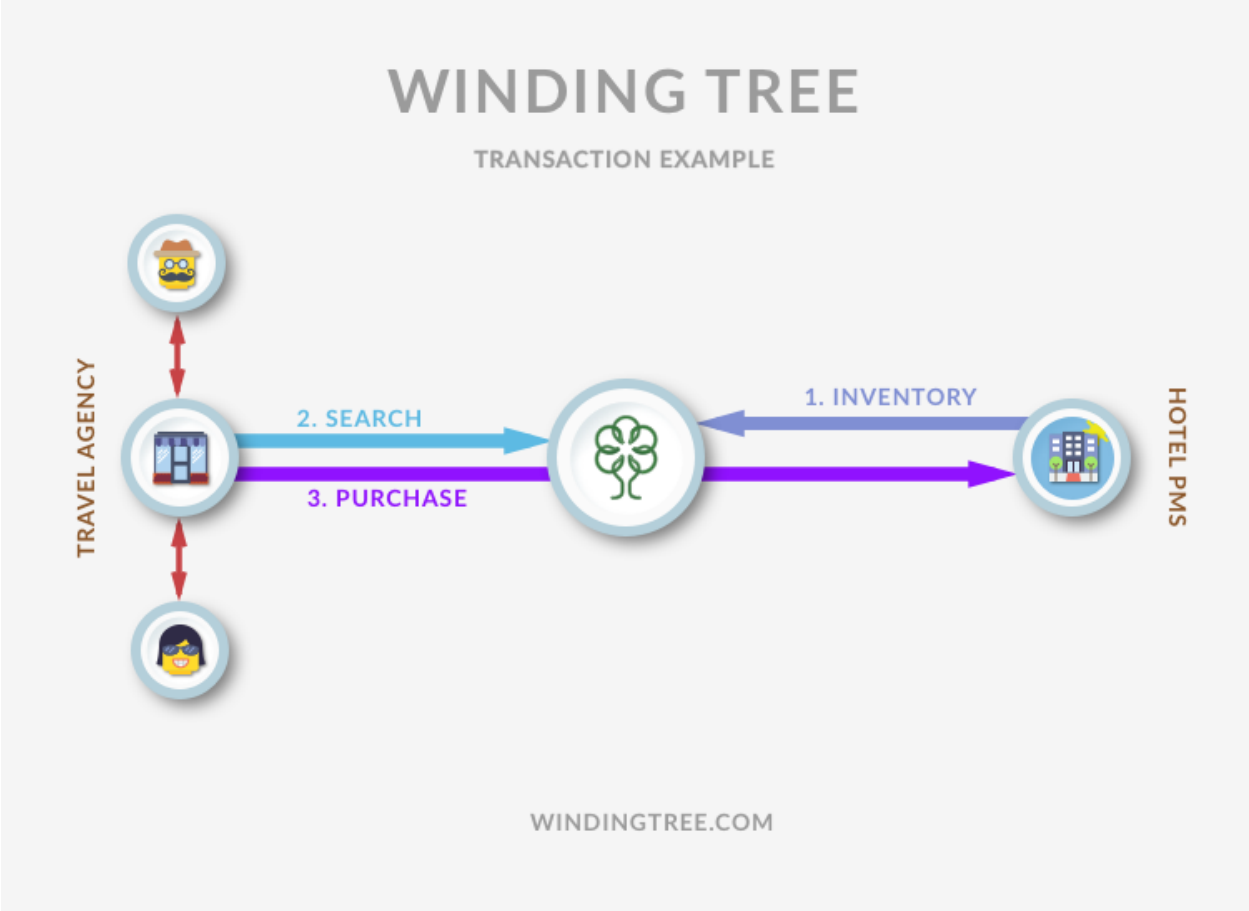
Connecting to Winding Tree

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

We also envision existing software products, like property management systems, travel agent interfaces, etc. to connect to Winding Tree.

Winding Tree Transaction

Here's how a hotel booking on Winding Tree looks like.



Líf Token — Winding Tree Currency

In order for the PMS from the illustration above, let's call it PMS1, to be able to write information into 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 in the background is the líf token, but it is beneficial for developers to understand how it works behind the scenes.

In order for PMS1 to write information onto the Index contract, and in order for the sellers to be able to find inventory from that hotel, the PMS will have to spend a tiny amount of líf. Once again, that's not the platform fee, this is for incentivizing miners to participate in the network.

Let's say that PMS1 has a balance of 5 líf. A hotel manager would like to make available 10 rooms in the hotel 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.

Now one of the employees of the travel agency (or a user of an online travel agency) performs a search on Winding Tree via software that their software engineers had created, let's call it 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 used though 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 LIF.
2. TA1: SEARCH. Data: search criteria, fee: 0.
3. TA1: PURCHASE. Data: room and guest information, price: 100 LIF, fee: 0.02 LIF.

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

At the same time, 0.03 LIF 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.

Líf Exchange

In order for PMS1 and TA1 to have Líf balances, they have to purchase it first. This can be done automatically, so there is no need for the end users of PMS1 or TA1 to know that they are buying and selling cryptocurrency. For them the transaction will look very simple: 100 U.S. dollars (or any other fiat currency) are sent to the WT platform from their bank account for payment of a hotel room for a customer. The hotel will receive a payment in their bank account as well.

But how are the tokens converted into fiat currencies? One of the most important parts of the Winding Tree ecosystem, while most of the world still uses fiat currencies, is the Líf Exchange. We are working with a variety of cryptocurrency exchanges in order to be able to easily convert Líf to local currencies. The goal for the initial release is to be able to transact in US dollars and Euro, but we will be adding other currencies as we continue development.

While all the transactions within Winding Tree have very small fees (fraction of 1 líf), withdrawing fiat from the system will be the subject to a fee up to 1%.

Winding Tree Block Explorer

Both PMS1 and TA1 users should now be able to verify that that transaction has been confirmed and that the end user 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 DAO and Platform Governance

Winding Tree DAO smart contract is the issuer of Líf. That's where participants of the marketplace will buy tokens initially. Afterward, anyone will be able to sell and buy líf at the Líf Exchange.

WT DAO has all the logic for token distribution, but the most important part of this smart contract will be the logic that will allow Winding Tree users to create proposals for changing the logic of the platform and vote on them.

The nature of the blockchain does not allow for changing smart contracts, but the platform will have to evolve, the data exchange standards will have to change, we will need new smart contracts for handling other methods of transportation, etc.

The solution is to create new smart contracts and have the WT DAO store a list of these contract addresses. Whenever there is a need to update one of the smart contracts, any user of the platform that has made at least 10 transactions will be able to create a proposal for that change, with the new smart contract logic, back it up with an explanation for the change, data to support it, etc. Other participants of the network will be able to vote on that proposal and when it gains enough votes for the change, the DAO index will be updated automatically within a predefined timeframe, e.g. one month.

Data Exchange Standards

Data exchange standards is one of the issues that participants of the Winding Tree marketplace have to agree upon. The current model for developing these standards (e.g.

Open Travel Alliance or IATA) are too slow, by any adequate metric. E.g. it took IATA five years to create NDC standard.

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

How Will Winding Tree Make Money?

Despite not taking commission fees from transactions on our platform, there are a number of ways for Winding Tree to be commercially successful so we can commit to its future development.

Reports

One of the biggest problems in the travel industry is that market reports are usually out of date. We plan on issuing regular reports with high-level insights of what's happening in the WT marketplace, so participating companies can make educated decisions about their strategies.

Selling Optional Proprietary Extensions and Professional Services

One of the most obvious open-source business models for us is to build optional extensions for the platform. We will also consult and provide technical support for larger companies as they migrate to the Winding Tree platform.

Challenges

Winding Tree project is facing a few exciting challenges that can be divided into two categories: technical and business.

In terms of technology, blockchains are still not capable of supporting the load that the the entire travel industry would require. The Bitcoin blockchain can handle a maximum of seven transactions per second, Ethereum — 10–20. The good news is that many people are working on scaling public blockchains and these improvements are well underway.

Another issue that many bring up is the security of WT transactions. This is not a real issue however, because all transactions will be encrypted so only the parties that are immediately involved in a transaction will be able to see its details.

The biggest challenge by far is to educate people and organizations about the possibilities of the Winding Tree platform and convince them to use it, but, hopefully, if Silicon Valley's prophecy about software eating the world is correct, we'll see a natural and steady growth.

Token Generation Event

https://docs.google.com/document/d/1wkZOZCHKi3S5sHLh_i1FM2guERSQ1Uz8bh6WEsb1FWU/edit?usp=sharing

Development Plans

Depending on the total amount of funds raised, we commit to the following roadmaps. In any case, we will put a lot of power into the hands of our contributors, so they will be able to influence the development of the platform. Winding Tree will act as a non-profit and provide annual reports about the fund distribution. We are also considering to incorporate as a non-profit, as other blockchain companies have done.

$5-10M Roadmap

2017 Q2

- WT DAO & Lif token smart contract.
- Smart contract for inventory search
- Smart contracts for booking hotels
- Open source data exchange standards for hotels
- Stage one of the crowdsale: pre-sale

2017 Q3

- Smart contracts for airlines
- Open source data exchange standards for airlines

- Stage two of the crowdsale

2017 Q4

- Multisignature Líf Token
- Multisignature integration on web apps & wallets
- WT Block Explorer
- Líf exchange

2018

- Smart contracts for tours and activities, car rentals, etc.
- Public data reports published in real time
- Improve network scalability

$10-25M Roadmap

In addition to all the above, we will start the development of a state channel for blockchains, designed specifically for travel, i.e. to handle large volumes of transactions, with better search mechanisms and quicker payments.

We will also develop user-facing applications, e.g. an application for smartphones that would unlock a hotel door using a confirmed B2B transaction hash.

$25-40M Roadmap

In addition to all the above, we will commit to design, develop, produce and contribute to the development of open-source hardware for the travel industry, like POS, locks, terminals, etc.

The 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. Apart from Winding Tree, Maksim cofounded Roomstorm, 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, he speaks at travel conferences about blockchain and at blockchain conferences about travel.

Jakub Vysoky

Jakub is a software engineer and evangelist for Python programming language. He has worked with Maksim on a multitude of software projects in the last 10 years.

Jakub 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.

Jakub is responsible for the development of the open-source data exchange standards and Winding Tree libraries.

Augusto Lemble

Augusto is a blockchain hacker and a full-stack software developer. He has worked on multiple blockchain related projects for the last three years.

Augusto is specialized on decentralized and web applications, with a deep knowledge of blockchain protocols. He is responsible for the smart contracts development and security, also for the blockchain integration of Winding Tree libraries and services.

Pedro Anderson

Pedro 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, Pedro was responsible for driving adoption of the Attendify app from its formative years to a leading position in the Event Tech space. Pedro also founded "Firefly" a non-profit focused on training and preparing orphans for careers in the hospitality industry.