BookLocal Prospectus

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October 31, 2018

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1   What

The vision for BookLocal is to connect travelers directly to their hotel of choice by creating the first two way inventory management system, accessible as both a traveler and a hotel administrator. Simply put, BookLocal is designed to act as a direct booking aggregator that can effectively enable the positive effects of an aggregator, while maintaining the communication and payment benefits of booking directly with the hotel.

At its heart, BookLocal will operate as a series of smart contracts stored on the Ethereum blockchain. To interact with the application, special interfaces for both hotel workers and travelers will be designed to provide intuitive functionality and replace inefficiencies in the current ecosystem.

To the traveler, BookLocal will provide a simple and intuitive mobile application to search and book a hotel room. For the hotel, BookLocal will provide a tablet kiosk with modules for guest management, inventory management, and payment processing.

The layout of this paper provides the motivation for BookLocal in section 2, a description of the current ecosystem in section 3, an overview of the features in section 4, and the steps toward full implementation in section 5.

2 Why

To understand the motivation for BookLocal we identify a few key issues with the current hotel reservation model and propose solutions.

2.1 Problems

The hotel booking industry is fragmented with no fewer than five different groups working for commission between travelers and hotels. Problems include:

High fees.

- Online travel agents (OTA) receive 15-30% commission per room.

- Other necessary software packages (i.e. channel manager and property management systems) also require monthly usage fees.

- These additional payments increase rates for travelers while lowering profit for the hotels.

Lopsided legal agreements.

- *Last available room* clause requires hotels to give the OTA access their last room(s) when near capacity. Because of the high commission rates, this can cause hotels to pass on revenue from more profitable booking options (i.e. last minute walk-ins).

- *Rate parity* clause forbids the hotel from renting a room at a lower price through any other source, including their own website, from which they could charge a lower price to the traveler and still receive higher profit.

- *Blanket use of trademark rights* allows an OTA to bid on Google ad-words for higher listing than the hotel's brand website.

Indirect and inefficient.

- If a traveler books a room through an on-line travel agency, any complaints or room price adjustments need to be made through the agency – the hotel oftentimes cannot handle it directly.

2.2 Solution

BookLocal will design a platform that incorporates the best features of the current system while omitting middlemen.

Holistic design.

- This is the first travel application designed with both the guest and hotel in mind.

- Integrating features into a single smart-contract system will put the guest and hotel in direct contact while still providing the network benefits of an aggregator.

Open sourced contracts.

- All contracts will be open sourced and publicly scrutinized to provide fair and consistent terms.

Guaranteed payment with no charge backs.

- Since funds are held in a smart-contract escrow account, and some minimum amount needs to be sent to even make the reservation, hotels can be confident that the guest can pay without retroactively losing the money.

3   Who

The current ecosystem has too many players trying to earn a share of the final room price. Figure 1 shows the network of relationships, each of which is explained below.

3.1   Ecosystem

Below is a visual representation of the various paths through which a traveler can book a room. The red arrows indicate the most used reservation path.
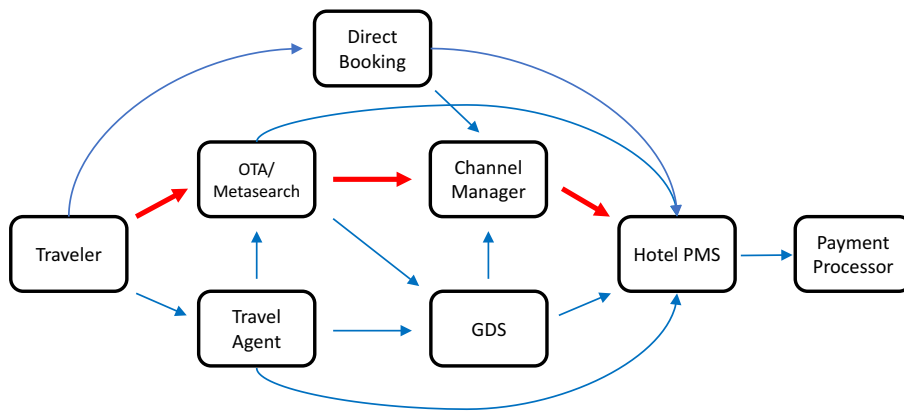

Figure 1: Current Ecosystem

3.2   Players

We describe the main players in the ecosystem by including a brief history and discussing the value they add and cost they subtract from the industry.

3.2.1   Travel Agent

Travel agents appeared first as an intermediary between travelers and hotels in order to facilitate trip planning. While the internet has left brick and mortar travel agencies largely obsolete, they do still exist and are often helpful in booking group trips.

- _Value:_ Travel agents at their best will remove the burden of research and planning from the customer and provide individualized travel suggestions. Further, the hotel industry stands to benefit since the commission rates can be negotiated on a case by case basis.

- _Cost:_ Conflicts of interest may arise when the travel agent is secretly incentivized by higher paying hotels. In these cases, the traveler may not receive the best available deal for their preferences.

3.2.2 Global Distribution System (GDS)

Global distribution systems originally began in the airline industry (eAAsy Sabre) to provide a central platform for airlines and travel agents to aggregate flight data. By 1991, the Hotel Reservation Network (now Hotels.com) was founded to extend this idea directly to the customer for hotel bookings using a toll-free phone number. Currently, global distribution systems are largely outdated and seeking ways to reinvent themselves since online travel agents are now able to bypass their networks and work directly with the service providers (i.e hotels, airlines, and rental car companies).

- *Value:* The benefit of a global distribution system lies in it's network and the consequent ability to bundle airline deals with hotel and car rental service providers. However, online travel agents (OTAs) are now able to provide the same service directly to the traveler which has left global distribution systems looking for ways to stay relevant.

- *Cost:* Availability and pricing information can be slow and spotty since global distribution systems typically act between service providers and travel agents rather than communicating directly with the travelers.

3.2.3 Online Travel Agent (OTA)

Online travel agents represent the most dramatic change to the travel industry in the last decade. Initially, OTAs tapped directly into the GDS networks to find availabilities and sell directly to the interested traveler, however, channel management software packages now allow OTAs the option of bypassing the GDS and learning of availability information directly from the hotel or other service provider. While much of this has truly improved the travelers experience only two main parent companies currently exist - Priceline Group and Expedia Inc. - each with many subsidiary companies that creates the illusion of competion. This duopoly has predictably led to high commission rates and uneven legal agreements, the burden of which is shared by the hotel and the traveler in the form of lower profit and higher rates.

- *Value:* Online travel agencies are easy to use and can provide discounts when bundling a flight, room, and rental car.

- *Cost:* High commission rates charged by OTAs and various payment reconciliation methods add costs to the hotel which ultimately falls, at least in part, to the traveler. Further, booking through an OTA complicates the resolution of any disputes between the hotel and traveler (i.e. if a traveler is unsatisfied with the room and wants a discount they often must go through the OTA rather than working directly with hotel management). And finally, the sheer size of the two main OTAs allow for uneven and inconsistent legal agreements.

3.2.4   Channel Manager

Channel management software allows the hotel to automatically update their availability and pricing information across their distribution network. This technology relies on two-way XML communication to push and pull data between the hotel's property management system and various booking platforms (i.e. online travel agents, global distribution system, direct booking through hotel's website) to help prevent over booking. It was the advent of this ability that ultimately allowed online travel agencies to bypass the global distribution system's information network and take hold of the market.

- *Value:* Automates much of the hotel's inventory planning and centralizes access to various distribution channels.

- *Cost:* Most channel management companies operate on the software as a service (SaaS) model which further increases the hotel's operating cost and adds complexity into the hotel ecosystem.

3.2.5   Property Management System (PMS)

The hotel's property management system (PMS) refers to any piece of software designed to help manage the daily requirements of running a hotel. At it's most basic, a PMS will include functions to manage guest arrivals and departures and then generate the necessary reports for auditing. More advanced systems can include a housekeeping module, payment processor, and revenue management tools.

- *Value:* A good property management system can make the life of a hotelier much easier by automating and centralizing many of the daily operations.

- *Cost:* Lack of customization and complicated interfaces makes it difficult to train new workers.

4 How

The heart of BookLocal will reside in a series of smart contracts on the public Ethereum blockchain.

4.1 Data

BookLocal allows travelers to connect directly to the hotel by way of the room. Figure 4.1 below represents this flow of information for a simple ecosystem consisting of three hotels and three successful travelers.
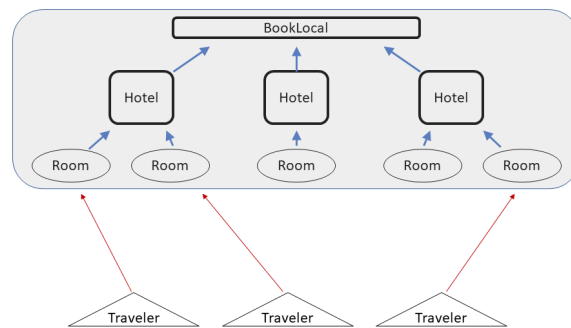
- **BookLocal:** The main contract that stores a list of all hotels and allows creation of new hotels.

- **Hotel:** The contracts controlled by the hotel itself. Each hotel essentially acts as a "room factory" that can directly control their visible inventory.

- **Room:** Each room is a smart contract that contains attributes like number of beds, price, and total occupancy.

- **Traveler:** Each traveler is referenced by their Ethereum account address, and, to make a reservation, will send an appropriate amount of money to hold the room for the dates they choose.

- **Reservation:** Each time a traveler reserves a room, a new reservation contract is created and acts as an escrow account between the hotel and guest, with BookLocal as the arbitrator in case of dispute. Upon checkout, all funds automatically transfer and the reservation contract self destructs.

4.2 Traveler

With BookLocal, the traveler will be able to quickly and easily search for and book a hotel room.

4.2.1 Search

Our vision for this feature is to allow the guest to search the hotel in a visually intuitive manor whereby they can quickly navigate through various available options in their price and date range. This will primarily be intended for use on mobile using a web3 connected browser (i.e. coinbase wallet, trust wallet, etc.)

4.2.2 Book

When the traveler decides on a room to book, they will call the 'reserve' function with appropriate dates and send the necessary Ether along with the transaction. This will create a new reservation smart-contract that acts as escrow between the hotel, guest, and BookLocal for the duration of the stay. In case of room dispute or something unsatisfactory, the hotel does have the option to lower the room price accordingly. Upon check out, the money transfers to the hotel, and any remaining funds get sent back to the guest.

4.3 Hotel

The hotel interface will require the following functionality:

4.3.1 Inventory Management

Hotels are able to create new "room types" that represent either a group of rooms, or a single room, and contains room specific attributes and price information. This is to say that a hotel could classify all rooms that sleep two people as the same type – i.e. they would have one room type that represents their entire inventory. In this case, multiple travelers can book the same room type and it is the job of the hotel to allocate a specific room to that guest at check in. Alternatively, a hotel could also count each room in their inventory as a totally different room type, whereby each room type will be unique. In this case, only one traveler could rent a room type for any given night. This design structure provides flexibility for the hotel to manage their inventory as they see fit.

4.3.2 Guest Management

Guest management includes managing arrivals and departures with any special requests. Sub features involve messaging capability between the guest and hotel and a variety of viewing options to see arrivals and departures for different time scales (i.e. monthly view, weekly view, daily view, and so on).

4.3.3 Payment Processing

Upon checkout, funds held in the reservation contract will transfer automatically.

4.4 Dispute

In case of a disputed room charge or rate, the guest or hotel can open a dispute. Both the guest and hotel will have a specified amount of time (i.e. two-weeks) to submit their claim after which BookLocal will make the final decision. Here, the guest's subchain stays open and unresolved until BookLocal's decision.

5 Implementation

Below are our key milestones toward full adoption.

5.1 The Exchange Building

The Exchange Building in Memphis, Tennessee will host the first version of BookLocal as it's own proprietary property management system. Through the building's support, we have built both a proof of concept and minimum viable product. This building will continue to serve as our official testing ground and innovation hub.

Proof of Concept

We proposed rentable token model (ERC-809) that extends a non-fungible token to provide temporary access for non-owners. The contracts for the proof of concept are available online.[1] This version of BookLocal was used at EthMemphis to provide free accommodation for developers and speakers and represented the first hotel room bookings made through the Ethereum network.

Minimum Viable Product

The minimum viable product extended the proof of concept to incorporate full payment functionality and included more interface features.[2]

Each new reservation essentially creates a new escrow contract between the guest and the hotel, whereby either party (and no one else) has the permissions to check out and transfer funds. The traveler must send enough Ether to pay for the duration of the stay, however, in cases of dispute the hotel does have the opportunity to change the reservation price. This escrow account holds the funds for the entirety of the stay – ensuring the hotel that payment can be made. Additionally, this prevents retroactive charge backs from credit card companies.

The traveler interface allows for searching, booking, check-in, and check-out. Special to our product, we offer a database/blockchain interaction whereby data is split between the two sources. Key room availability information is stored on the blockchain and additional (optional) user data is stored in our private database for improved user experience. We feel this interaction is critical going forward to improve usability and encourage adoption.

Each hotel also has access to all of the methods callable by the traveler, as listed above. Additionally, the hotel also has features to add and update room inventory. In this version of the product, we let the hotel create generic

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[1] https://github.com/BookLocal/proofOfConcept.
[2] This code is stored in a private GitHub repository. Samples available upon request.

RoomTypes that hold basic room attributes like number of beds, total number of occupants, and price, and the specify the total inventory of that type. For convenience, we store reservations in such a way as to enable a convenient, "view only" function call[3] to see daily check-ins, check-outs, and occupied rooms.

5.2 Growth

In our main roll out phase, we will use the platform to exclusively manage accommodations for EthUniversal events. EthUniversal is the parent group of a series of hackathons and workshops that started with EthMemphis in May and continued with EthAtlanta in September. Due to the success of these events, we have joined forces with other developers and industry leaders to provide more of these type events in the future. The next one is EthAustin, and will take place February 23-25 in Austin, Texas. Here we will offer the first main-network version of BookLocal.

5.3 Sustainability

After each event, we will work with the partner hotels to create lasting relationships and continually improve the experience for BookLocal guests. Our goal is to on-board 25 hotels in tech-savvy communities by December 2020 and be known for offering a VIP experience to travelers. Similar to self check-in and TSA pre-check, we plan to offer an expedited service that allows the traveler to avoid potentially long check-in lines by simply scanning a QR code on a Book-Local kiosk and receiving a print out of the information the hotel is required to store. Eventually, we would like to work with the hotel to further expedite the process by utilizing smart door-locks and automatically sending the passcode to the BookLocal traveler after check-in.

Our current research efforts involve blockchain scaling features to reduce gas fees[4] and stable coin options to eliminate Ether volatility risks. Toward these ends, we are confident that as the Ethereum ecosystem continues to grow and improve, the technical and industry expertise of our team will enable us to stay on the frontier and offer the appropriate travel product at each moment – with an eye always toward satisfying the desires of both hoteliers and travelers alike.

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[3]View only functions are free and cost zero gas.

[4]Gas use and gas price essentially correspond to transaction fees for the Ethereum network to process your request.