Abstract

Ticket fraud and exorbitant secondary ticket prices are age old phenomena that have had artists and their fans worried since the times of Dickens and Shakespeare. Thirty percent of all tickets are resold with mark-ups between 30% and 700%. The ticket market is non transparent, and inexplicable transaction costs added to tickets are common practice among ticketing companies. The solution is a blockchain based event ticketing protocol that will make exorbitant secondary market ticket prices and ticket fraud occurrences of the past. The protocol will offer these features while providing absolute transparency for all users. This goal will be reached by introducing a smart-ticketing protocol built upon the Ethereum blockchain that will facilitate the sale of event tickets by issuing smart tickets to wallet addresses on the blockchain. The owner of a smart ticket is free to sell his or her ticket but has to do so within the decentralized infrastructure of the protocol. This ensures that trades are done safely and within a strict price margin bound. The Guaranteed Entrance Token (GET) protocol will ensure a transparent and decentralized event ticketing market for all users. GET will act as the main currency in the smart ticketing protocol, as the token has characteristics that add both security and stability to the protocol. The initiator and first user of the GET-protocol is GUTS: a blockchain based ticketing company from Amsterdam with a live ticketing application. Over the past year, GUTS has facilitated several events with its application and has more lined up for the future. GUTS believes an application should be created from a customer experience point of view and makes a big effort to implement blockchain technology to its system as this offers several significant advantages. The token’s issuance, its utilities, and the role for the token holder are all explained in detail in the body of this white paper. GET is the sole currency designed for an honest ticketing market.
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This white paper introduces the Guaranteed Entrance Token (GET): transparent and open smart-ticketing protocol for any event with regulated admission. The GET-protocol provides primary actors in the event space the following benefits:

- **Users**: GET ensures that event participants enjoy a secure and stress-free ticketing experience, and provides a simple and inexpensive way for ticket holders who cannot attend the event to securely sell their tickets to other users.

- **Content-creators**: The GET protocol prohibits commercial ticket resellers from disturbing the value chain; artists can be certain that their fans pay a fair price for a guaranteed, authentic ticket.

- **Event organizers**: GET provides a scalable ticketing protocol to manage ticket sales for any size events in a secure and controlled manner. GET controls the true cost of transactions and the blockchain ensures both the true price and properties of tickets, thus eliminating middlemen from the value chain. The protocol increases market efficiency as a whole while increasing margins for the stakeholders delivering actual value.

- **Venues**: GET provides users with an honest and fraud-free experience that promotes a higher occupancy rate of the venue.
Scalpers, ticket touts, black market sellers, and secondary ticketers are all terms used to describe people and organizations that profit from the reselling of tickets without adding any value to the industry. In many countries, primary ticketing organizations and other stakeholders have attempted to restrict the secondary market, but these initiatives offer little protection to the consumer. Though secondary ticketing organizations facilitate a free market and match high ticket demands with similar offers, resellers are denounced by fans and artists alike, who criticize resellers for deceptive tactics and exorbitant price hikes.

Artificial scarcity and fraud Professional resellers create unnecessary scarcity in the ticket-acquisition process, creating confusion about the price and availability of tickets. Their intrusion into this process imposes a burden on fans and threatens artists’ revenue from live performances: events which are becoming increasingly crucial to the artists’ success. Instances of ticket fraud compound these problems, as many fans are denied access to events because they were sold an invalid, fake, or already scanned ticket.

1.1 Non transparent and profitable market

The difference in demand and price between the moment a ticket goes on sale and the time that the event begins creates a lucrative arbitrage opportunity for middlemen resellers, whether they are individuals, bots, or companies. This arbitrage opportunity results in two distinct ticket markets:

Primary market Event organizers or content creators issue original tickets on the primary market, at a price that they set themselves. Event organizers then engage ticketing companies to sell and distribute the tickets for the event, and the ticketing company typically charges transaction and administration costs in addition to the original ticket price. In some cases, these added costs are distributed between the event organizer and the ticketing company without the consumer knowing.

Secondary market Thirty percent of all tickets are sold through the secondary market. The ticket resellers that belong to this market, such as touts and scalpers, acquire quantities of the original tickets with the intention of selling them for a much higher price. Ticket touts advertise ticket sales for upcoming events before the primary market even issues the tickets and, in some cases, touts make a deal with primary ticketing companies to acquire a certain number of original tickets before they are available for purchase by fans.

Falsifying event tickets The most objectionable type of secondary ticketing practice is fraud. The authenticity of a ticket is determined by ink printed onto a piece of paper or through an image in a PDF file, thus committing ticket fraud can be as easy as taking a screen shot or operating a copier.

The secondary ticket market in numbers In 2009, Europe Economics undertook a study to gain a better understanding of the structure and scale of the secondary ticketing market. Their findings:

- For popular music festivals, 20-30% of tickets are resold at a markup of 30%
- For high-end events (e.g. Kings of Leon), 20-40% of tickets are resold at a markup of 100-250
- For very high-end events (e.g. Madonna), 60-70% of tickets are resold, often with a markup exceeding 500%.

1.2 The ticket life cycle and middlemen

Assessing the life cycle of a ticket for a popular event reveals a vast number of intermediaries between the content creator and the end user. Several of these intermediaries—the promoters, the bookers, the artists’ management, the venues themselves, and the primary ticketing companies—add a certain value to the consumer in the chain. The fragmentation of all these intermediaries, however, prevents transparency within the ticketing and results in two problems: the commercial ticket reseller and dishonest transaction costs. A transparent market avoids these issues and provides end users with a fair and straightforward ticket purchasing experience.
Consequences for the stakeholders  In addition to the unnecessary burdens they impose on fans, middlemen can also create problems for content creators, including low ticket sales and an inability to attract the right audience. Exorbitant ticket prices often provoke conflict between unhappy fans and artists, who are themselves incapable of controlling prices set by secondary market resellers. Other stakeholders rarely share user data with the content creators, and artists lose a critical opportunity to cultivate a sustainable community of fans. Despite adding very little value to the event itself, intermediaries earn more than the content creators. Event organizers bear all of the financial risks, yet they have little or no control over ticket sales because they have no alternative than to enlist a ticketing company to issue tickets. By relinquishing the control of ticket sales to a third party, content creators and event organizers are, at their own expense, providing opportunities to intermediaries who benefit in the short-term without contributing to the artists’ future success, making the promotion of upcoming events more difficult and allowing the events themselves to remain a large financial risk for organizers.

1.2.1 The right to resell the ticket

A purchased ticket is the property of the end user, and users have the fundamental right to (re)sell their property. Regulation of ticket reselling, however, is complicated, and current solutions remain inadequate. In the Netherlands, for example, a law to end extreme prices for secondary tickets remains under review six years after it was first proposed. Governments will not provide a global solution for the problem, let alone a local one. The GET-protocol aims to align incentives for all stakeholders: venues sell all their tickets to the true fans. The scarcity of event tickets combined with the unregulated nature of the market ensures that resellers will always exploit end users with exorbitant secondary ticket prices. It is common knowledge that certain primary ticketing companies and secondary ticketing companies are subsidiaries of the same holding companies, which illustrate how market forces incentivize revenue maximization to the detriment of content creators and fans alike.

<table>
<thead>
<tr>
<th>Market</th>
<th>Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary ticketing market</td>
<td>- Lack of market transparency results in high and undefined added costs.</td>
</tr>
<tr>
<td></td>
<td>- Collusion between stakeholders thrives without transparency.</td>
</tr>
<tr>
<td>Secondary ticketing market</td>
<td>- Touts, scalpers and resellers cause excessive inflation of secondary ticket prices.</td>
</tr>
<tr>
<td></td>
<td>- Ticket buyers have no guarantee of ticket authenticity.</td>
</tr>
<tr>
<td></td>
<td>- The “middle man” effect of the secondary market results in a loss of user data.</td>
</tr>
</tbody>
</table>

Table 1: Overview of the problems with traditional ticketing markets.

The demand of stakeholders  Now that it is clear what is wrong with the market, another more important question arises: What do the stakeholders actually want? The first company to use the GET-protocol is GUTS: a ticketing company based in Amsterdam, the Netherlands. GUTS already has a working smart ticketing application and has been given a very warm welcome in the event marketplace in the Netherlands. The wish list displayed in table 2 on page 5 was drafted on the basis of GUTS’ experience, research and meetings with stakeholders all over the industry in 2016 and 2017.

1.2.2 The GET-Protocol

A solution to the issues posed by the secondary market should address the root cause of the problem: the ability to resell tickets at a higher price by charging additional and unnecessary fees. The solution proposed in this white paper—the Guaranteed Entrance Token (GET) protocol—does just that.
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Wishes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>End user</strong></td>
<td>- Fair ticket price.</td>
</tr>
<tr>
<td></td>
<td>- Low transaction costs.</td>
</tr>
<tr>
<td></td>
<td>- Ability to sell the ticket when unable to attend the event.</td>
</tr>
<tr>
<td></td>
<td>- Guaranteed authenticity of tickets.</td>
</tr>
<tr>
<td><strong>Content creator</strong></td>
<td>- Tickets sold to actual fans, not resellers.</td>
</tr>
<tr>
<td></td>
<td>- Increased sales and event attendance.</td>
</tr>
<tr>
<td></td>
<td>- Fair prices and authentic tickets for fans.</td>
</tr>
<tr>
<td></td>
<td>- Ability to create and sustain community of fans.</td>
</tr>
<tr>
<td><strong>Event organisers</strong></td>
<td>- Acceptable financial risk for event.</td>
</tr>
<tr>
<td></td>
<td>- Effective sales solution for any size event.</td>
</tr>
<tr>
<td></td>
<td>- Stable selling and distribution of tickets.</td>
</tr>
<tr>
<td></td>
<td>- Stable sale and distribution of tickets.</td>
</tr>
<tr>
<td></td>
<td>- Fair dynamic pricing for high occupancy events.</td>
</tr>
<tr>
<td></td>
<td>- User data collection (with permission).</td>
</tr>
<tr>
<td><strong>Venues</strong></td>
<td>- Reduced ticket fraud.</td>
</tr>
<tr>
<td></td>
<td>- Efficient validation process.</td>
</tr>
<tr>
<td></td>
<td>- Easy-to-use system.</td>
</tr>
<tr>
<td></td>
<td>- Ability to sell additional offers before the event (e.g. drinks).</td>
</tr>
</tbody>
</table>

Table 2: Event ticket market shortcomings overview.

### 1.3 INTRODUCING SMART TICKETS

The inherent difference between the market value of tickets at the moment of initial sale and the moment the event sells out creates an arbitrage opportunity for both businesses and consumers that are hard to resist. Even for initially non-profit-seeking consumers, it is difficult to ignore the sudden price increase of a ticket. Data analysis of the “fair” secondary ticket market platform, TicketSwap, confirms this statement. The company reported that regular ticket holders who want to sell their ticket to other fans seem strongly inclined to add 20% mark-up for their ticket.

#### ROLE OF REGULATION

Even strict government regulation that specifically forbids ticket sales for profit in the secondary market does little to deter the practice itself. The rise of online markets has eroded the government’s power to regulate, even when the laws are in place. Modern ticketing companies mainly use barcodes or QR codes to store all of the ticket data required for event admission. These data types merely obfuscate a ticket holder’s information, which is later checked against a database prior to entry. Information is only encoded, not encrypted, and therefore can be scanned and decoded by anyone with a smart phone. These vulnerabilities provide opportunities for bad actors to modify these data structures and create a new barcode that will be unique but not recognized as legitimate when consumers try to use them to enter an event.

#### NERDS TO THE RESCUE

From both a technological and political perspective, regulating the sale of tickets by, for example, tracking the profit margins made on each ticket, is almost impossible. To eliminate the shortcomings inherent in modern tickets and ticket reselling, tickets should be able to “know” when ownership changes and the tickets themselves should dictate the price of the transfer. In other words, we need to make event tickets “smart” and store information in a robust and transparent database.

**Did somebody say smart tickets on blockchain?**

### 1.3.1 Introducing blockchain

**Ethereum** is a decentralized database that is incorruptible by any central malicious actor. It can be accessed by anyone with an Internet connection and is very cheap to harness. These features render the blockchain as transparent by nature, such that many of the oversight and ticket verification issues are solved immediately. Blockchain technology provides an environment where consumers could locate a validated and trusted list of outlets selling tickets on the blockchain.

**Ethereum and smart contracts** The GET protocol is composed entirely of smart contracts that allow for the creation and validation of events and tickets. The issuance and sale of tickets in primary and secondary ticket markets (which can be controlled by event organizers) and the distribution of ticket sale revenue and

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1 Source: www.medium.com/@TicketSwap
market/event fees between the stakeholders are both monitored and executed with these smart contracts. The protocol charges minimal fees for the use and creation of these contracts, thereby making the protocol competitive against the current off-chain solutions and ensuring maximal adoption.

1.3.2 More about GUTS Tickets

GUTS Tickets is a blockchain-based ticketing company founded in March 2016 by three Dutch entrepreneurs. The company employs eight developers and has won multiple innovation awards both in the Netherlands as well as throughout Europe. GUTS Tickets has partnered with some of the most famous comedians in the Netherlands to support the mission of truly transparent ticketing. Visit the GUTS website to view the events previously ticketed by GUTS and use the Ethereum blockchain explorer to view the tickets on the chain. If you want to experience the future of event ticketing, check out our sandbox ticketing app and test it for yourself.

Curious? Buy and sell a (free) smart ticket for an event via the GUTS ticketing application on our sandbox environment:

https://sandbox.guts.tickets/events

Experience and Partners

Over the last year of its existence, GUTS has acquired both actual real-world experience in the business of selling tickets for events and, by running successful demos, has collected a set of important and influential stakeholders in the Dutch market, including Hekwerk Theatre Productions. This company organizes 800 theatre shows annually and has 20 major artists and comedians under management. GUTS completed a successful pilot program with A-venue (organizer of East Ville and Latin Village festivals), which organizes several festivals that draw over 30,000 attendees. In addition, GUTS has upcoming events in the pipeline in cooperation with major event organizer and partner Innolest.

Initial Development

Initially, the GET-protocol will be specifically tied to the GUTS API, the GUTS servers, and administrative/managerial oversight, because we believe it is important to ensure both the cryptographic security of our customers’ tokens and the experience of the ticket acquisition and use process looking ahead

As the GET-protocol moves to a fully distributed smart event ecosystem, we expect other developers to use our free and open source infrastructure to develop their own use case for the GET-protocol. We want the GET-protocol and the tools associated with it to become the standard for smart event ticketing. After years of being ripped off and defrauded, festival and theatre visitors deserve a secure, fair and well-engineered event protocol.

1.3.3 Understanding the industry

Previous chapters have described the current state of the ticketing industry and outlined the obvious problems and inefficiencies millions of consumers have to endure when buying a ticket. We believe that blockchain technology can introduce a layer of transparency to the costs incurred in the ticketing industry. Touting and scalping practices can be prevented with help from the possibilities offered by the GET-protocol proposed in this white paper.

The market characteristics/principles outlined in the following chapter are not theoretical or conceptual, but have been learned over the last 18 months through real-world interaction with event organizers, venue owners, and, most important, ticket-buying customers. These experiences have led to a series of design decisions and incentive structures that define the GET-protocol.
2 EVENT TICKETING PRINCIPLES

The complexities of large-scale ticket sales include payment processing, seat selection, and load balancing thousands of API calls per second. The details of these components are important, and the following section demonstrates how our research into each topic translates into a robust and user-friendly smart ticketing protocol on the Ethereum blockchain. The following set of principles outlines our research and its implementation into the GUTS application.

Principle 1. You can’t have your cake and eat it too

All modern ticketing services provide the buyer with either a QR code or a barcode (“Code”) containing the necessary data to determine a ticket’s validity. The problems in the secondary market arise because these Codes are static. This is because the Code printed on the ticket has no inherent connection to the ticket’s owner. With the GET-protocol, the Code is linked to the owner rather than the ticket, allowing the protocol to control and regulate the secondary ticket market.

Furthermore, the GET-protocol utilizes a dynamic Code that is only revealed right before an event starts. This way, scalpers cannot sell a fake ticket because they don’t have a Code to sell in the first place. These screenshots from the GUTS application show how these features work, viewed from a user’s smartphone.

![Code Screenshot 1](image1)

Figure 1: The Code on the smart ticket (at left) remains hidden during the days/weeks leading up to the event, therefore trading tickets outside of the GET-protocol is impossible by default (there is no data to sell). The user-specific Code (middle) appears just before the event starts. Once scanned at the entrance the user-specific Code disappears (right), preventing last minute reselling of the ticket. The Code itself changes as a function of time, thus taking a screenshots of the ticket before the scan is of no practical use; any screen-capped Code becomes invalid just minutes after it has been captured.

IMPLEMENTATIONS OF THIS PRINCIPLE

- The ticket’s Code is dynamic, not static, meaning it changes as a function of time, and when it is transferred to a different user.
- The event organizer chooses and sets the time that they want user-specific Codes to become visible.
Codes are linked to users through their phone number\(^1\); only the ticket owner will receive his or her ticket, and on the verified phone only.

**Principle 2. Professional resellers are professional**

Secondary ticket sales are a billion dollar market. Consequently, those seeking to make a profit in this market employ sophisticated techniques and are willing to work around “inconvenient” barriers. The notion that the secondary market is merely a collection of bots or consists of at-home casual resellers looking to make a quick buck is naive. To ensure that these malicious actors cannot profit from a resale scheme, the measures set forth must be robust and foolproof.

**IMPLEMENTATIONS OF THIS PRINCIPLE**

- User verification by means of a text message to link the user to a specific mobile phone number\(^2\).
- A smart ticket is exclusively linked to a phone’s SIM card, therefore the Code will only appear on this verified phone. Users can simply tap on the dynamic smart ticket on their phone to sell their ticket, eliminating the need for a secondary market as well as preventing scalpers from selling tickets on their own platform. The implementation of this principle is displayed in \(^2\).

![Tickets Interface](image)

Figure 2: Transferring or trading tickets outside of the protocol is impossible. If a user wants to sell their ticket, cannot do so outside the smart ticket interface. The steps of selling a ticket on the GET-protocol are shown in this series of screenshots. Note that all actions happen in the browser on the user’s phone—no special app or software is required to sell your event ticket on the protocol.

**Principle 3. Blockchain has its disadvantages (at least for now)**

Large concerts and festivals have multiple entrances and \(30+\) scanning devices can be in use simultaneously. At this rate, a constant stream of Codes must be scanned and the validity of the tickets verified. After validation, each ticket must be instantly marked as used, to prevent others from sharing the same Code within moments of each other.

As of today, blockchain technology is too slow to accommodate these conditions for a robust, competitive, and user-friendly instant verification ticketing system. The disadvantages of using blockchain as the only source of storage would prevent adoption by the current stakeholders in the market. Until blockchain can

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\(^1\) There are several alternatives available to verify a users uniqueness when buying a ticket (for example: Facebook, CIVIC etc.)

\(^2\) It would be possible for ticket-scalpers to sell a physical SIM card containing the smart tickets for an event. This would be extremely inconvenient and hard to actually scale, as the secondary markets would have to sell SIM cards instead of PDFs with QR codes in them.
accommodate all of the needs of stakeholders—and we believe it will, in time—the GUTS API fills in the blanks. With this approach, GUTS brings a competitive ticketing service to the market that will gradually introduce more on-chain solutions over the course of the GET-protocol roll out.

**Implementations of this principle**

- Instant (under 1 second) validation of ticket ownership and validity is now done off-chain with the GUTS API.
- Critical and sensitive user data is stored on a Postgress database of GUTS.
- A theatre seating selection algorithm and interface currently runs on a GUTS server and is not yet computed in the blockchain.
- A waiting list application avoids blockchain congestion and acts as a load balancer for surges in API-calls.
- Sale and change of ownership of the smart tickets are registered on the blockchain as soon as the network allows it.

**Principle 4. Ease of use for the end user and clients**

If you are reading this white paper you probably have at least a basic understanding of concepts like the blockchain and its usage of public and private keys. The average visitor to a concert does not have this understanding and in most cases is not interested in learning about these concepts. Similarly, users of the internet love its positive contributions to society but very few are familiar with the theory behind the TCP-IP standard. Blockchain technology and know how is no different in this respect. The average attendee of an event is purely interested in attending the event with as little effort as possible that should entail no unknown crypto volatility risk.

**Implementations of this principle for end user**

- The UX interface of the GUTS ticket application works in such a way that the interaction with the GET-protocol is completely obscured from the ticket holder. At no point in the ticket-flow is the user required to have any knowledge of blockchains or tokens.
- A ticket owner is able to view his or her ticket on the Ethereum blockchain and—in later versions of the protocol—to interact directly with her tokens by using the GET smart wallet. This latter functionality is purely optional and not necessary for the ticket to work.

**Implementations of this principle for event organizers**

- Dashboard with insightful real time data concerning the sale for event organizers and venue holders.
- Next business day payment settlement of the sales revenue to the organizers.
- Audit trail for tickets sold on secondary market, thus generating more reliable data insights for stakeholders.
- Easy reimbursement of funds to customers when an event is cancelled.

After confirming the users unique phone number, an Ethereum wallet will be created and linked to the verified user. This wallet address will be assigned as the owner of the smart tickets in a later phase of the ticket acquisition process. The user won’t be aware of these back end operations as can be seen in figure 5 on page 10.
Figure 3: Users will verify their phone number when creating a new account on the platform and when logging in. This measure ensures that only unique users hold tickets, without relying on any crypto complexity.

**Principle 5. Use existing stakeholders to penetrate the market by working with industry players.**

While bypassing all current ticketing stakeholders to create a new and completely disruptive platform seems tempting, GUTS has learned over the last 16 months that this strategy would ultimately fail. The thresholds required to penetrate the market are too great, and adoption of the GET protocol would be severely limited.

To maximize the chances for adoption, GUTS collaborates with current market stakeholders and uses existing infrastructure in the value chain. GUTS has partnered with several powerhouses in the business to build desired features and functions, and these industry experts are helping us avoid mistakes and misconceptions about the market.

Screenshot of the ticket selection page of the Jochem Myjer pilot, in which a 700+ attendee theater show sold out within hours. Changes in ticket ownership on both the primary as the secondary market were registered on the blockchain.
The Guaranteed Entrance Token (GET) was developed to address the broken event ticketing market described in the previous two chapters. The GET is an ERC20 token built on top of Ethereum. The first phases of development concern the unit of exchange for the transaction and administration costs incurred during the ticketing process. Thus, in the initial phase of protocol deployment, GET will act as a metric to represent and account for the efforts and added value of stakeholders such as event organizers, payment processors, and ticketing agencies. As development of the protocol progresses, it is expected that GET will increase in value; during these later phases the token will also serve as a unit of exchange and as a store of value.

The utility of GET  Within the ticketing ecosystem of the GET-protocol, GET is required for the creation and trading of smart tickets. Without GET, event organizers cannot create events or issue smart tickets, nor can they change the state of a contract. Users of the protocol also need GET assigned to their unique user accounts in order to sell their ticket(s), because the GET pays and accounts for all transaction and processing costs incurred on the protocol.

Every actor a wallet  In the GET-protocol every actor and user is assigned a unique smart wallet, providing the secure storage, transfer, and processing of digital assets to everyone in the GET ecosystem. A consumer’s GET-protocol account is connected to their identity, therefore these consumers will use the same smart wallet and GET-protocol account for every event that they attend, regardless of event organizer. These wallets can also hold an unlimited amount of event/event-organizer specific beverage and drink tokens and, of course, the event store of value: the GET. These features introduce several disruptive and innovative elements of crypto to the average consumer in an secure and user-friendly manner.
3.1 GET Utility Diagrams

The following two pages contain two high-level diagrams that illustrate how users and event organizers interact with the GET-protocol, and how tokens facilitate these interactions. Figure 4 on page 13 shows the GET utility of the most common protocol case: a consumer buying and using a ticket for an event. Table 3 lists the contracts displayed in the diagram. Table 4 describes the steps A-E that are taken by an end user who buys a smart ticket on the protocol.

The diagram in Figure 5 on page 14 describes the secondary market mechanics happening on the GET-protocol. If an user with a ticket wants to sell their ticket, the smart ticket can be offered to the event-specific secondary market built into the protocol. In this event-specific secondary market, tickets are sold for their original selling price alongside the tickets of the event organizer (also known as the primary ticketing market).

<table>
<thead>
<tr>
<th>Contract</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Event Ticketing Contract (ETC) - This contract is owned by the event organizer. In addition to being the instantiator and managing contract of all the smart tickets of the event, this contract is also a wallet that contains GET purchased by the event organizer.</td>
</tr>
<tr>
<td>2</td>
<td>Primary / Secondary Market Contract (PSMC) - This contract acts as a central matching market for both the tickets sold in the primary market (by the event organizer) and the tickets sold in the secondary market. After receiving a GET from the USTC contract, this contract will return a valid ticket to the USTC contract.</td>
</tr>
<tr>
<td>3</td>
<td>User Smart Ticket Contract (USTC) - This contract manages the GET users with valid tickets and is responsible for serving the QR code to users with these tickets right before the event starts. For providing this service the contract receives GET from those who use the contract.</td>
</tr>
</tbody>
</table>

Table 3: Functions and roles of the three contracts labelled in Figure 4 on page 13

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>An unknown customer enters the protocol with the intention to buy a ticket. If the user’s phone (or web browser) is unknown to the protocol after signing in (meaning the user never used his phone to buy a ticket on the protocol), the user will be asked to create an account on the protocol by providing some basic user data.</td>
</tr>
<tr>
<td>B</td>
<td>In the account creation phase (A) the user has provided the protocol with a phone number. In the following step, the phone number will be verified by means of an SMS/text message containing a verification code.</td>
</tr>
<tr>
<td>C</td>
<td>At this point the user will be shown an interface in which he or she is able to pay for the ticket using the available payment methods. The user will need tokens in order to interact with the protocol, so the price of the GET that the user will need is included in the ticket price. The event organizer (see Contract 1 / ETC) has already purchased GET from the open market. These GET are available for distribution to the event attendees and thus will be sent to the user’s wallet when the user completes the FIAT payment via the payment processor.</td>
</tr>
<tr>
<td>D</td>
<td>After payment is completed, the API will send the required amount of GET tokens to the USTC contract. At this point in the process, the user will buy the USTC contract. This contract will forward an amount of GET to the PSMC contract, which will transfer the user an available smart ticket object. This object is controlled by the USTC contract.</td>
</tr>
<tr>
<td>E</td>
<td>At the event horizon (the moment an event begins) the PSMC contract activates all of the users’ smart tickets, delivering the QR codes needed for entry to the ticket owners’ verified phones.</td>
</tr>
</tbody>
</table>

Table 4: Table describing the steps taken by a user as labelled in Figure 4 on page 13
Figure 4: The process of consumer verification and the purchase of a smart ticket on the GET-protocol. Note that the tokens the user receives after purchase of the smart ticket are partially used by different smart contracts of the GET-protocol. This diagram also shows the role of the event organizer within the protocol.
Figure 5: The mechanics of secondary ticketing market. Note that both the seller of the smart ticket as well as the buyer of the ticket pay an amount of GET to the PSMC contract (depicted as ‘Secondary market’ in Figure 4). For the seller this payment will cover the costs of FIAT settlement of the ticket by the payment processor to his or her bank account. For the buyer this payment will cover the regular FIAT and processing costs also displayed in Figure 4.

**IMPORTANT CONCLUSIONS ON THE TOKEN’S UTILITY**

- Purchase of GET for users is combined with the checkout flow when buying a ticket; thus, it can only be done via the ticket purchasing platform of the ticketing company that is using the protocol. This means that the purchase price of the minimum GET amount \(^1\) (or the number of GET needed to top up the user’s balance to the minimum GET amount) is added at checkout on the ticketing application. After a consumer pays in FIAT, GET is transferred to the user’s wallet and the smart ticket is linked with the user’s account. Both of these state changes are registered on chain.

- It is likely for a user to have a ‘residual’ GET balance (residue) after buying and using a smart ticket for an event. This means that the user will have to pay less transaction costs the next time he or she uses the protocol. Besides being a fair cost allocation mechanism these GET residues ensure that the tokens are distributed and benefit users that actually use the protocol.

- Every unique user account that interacts with the GET-protocol by buying a ticket is assigned a wallet to his or her user account. The user keeps this wallet and the funds on this wallet indefinitely.

- A consumer using the protocol to purchase, use, or sell a smart ticket must, regardless of how the user interacts with the protocol pay a certain amount of GET for using the protocol.

\(^1\) The minimum balance of GET needed on a wallet for a specific event varies as it is based on event specific characteristics.
In the first two chapters, two important facts about the ticketing problem have been established. First, registering and trading tickets on the blockchain adds security and transparency to both the primary and secondary market. Second, the GUTS API, which currently runs on the first version of the GET-protocol, has implemented both of these properties in a user-friendly and intuitive manner in a ticketing application. Because this smart ticket application is already developed, tested, and has been used by numerous event organizers for their events, why is adding a token to this system necessary? Why not implement a large-scale smart ticketing protocol with Ether as a metric for event and ticket value? These are valid questions, but there are several important reasons why the GET-protocol needs its own token to provide seamless solutions for the current ticketing market.

### 3.2.1 Why the protocol needs its own token

1. **GET as a stable store of value of the event ticket**
   The GET is both the metric and the vehicle for every value transfer between actors in the GET-protocol during an event ticket cycle. The incentive structure of the protocol ensures that as time progresses, actors within the protocol will use the token to account for a higher volume of transactions while also covering more of the ticket value overall. Due to several event-specific price stabilizing measures—covered in the following sections—end users and event organizers won’t suffer from the volatility of crypto markets.

2. **Funding the GET-protocol development**
   To develop a GET-protocol which is accessible for every ticketing company in the world, development funds are necessary to actualize the new smart ticketing standard proposed in this white paper. It would be an absolute waste if the Dutch market alone was dominated by a GET-powered smart ticketing protocol. As such, the protocol should be generalized and open sourced so that every company interested in joining the transparent ticketing revolution can do so. This endeavor requires not only a solid and open code base, but also marketing and sales efforts focused on obtaining key stakeholders in every target market.

3. **Providing transparency**
   GET solves the added-cost “black box” by using the token to pay for all the state changes the smart contract has to register on the blockchain. This setup creates a transparent system in which all actors (including the end user) can interact with and verify for themselves how value flows between all actors in the protocol.

4. **GET as a gatekeeper of the protocol**
   GET allows the protocol to monitor and control the GET-protocol wallets and event organizers via the properties assigned to the token. While it is not the intention to restrict actors in the ecosystem indefinitely, some control is needed in early stages of development to guarantee stability and usability at all times.

### 3.3 GET and transaction costs

One of the main design philosophies employed while designing the GET-protocol is its ability to gain market share under contemporary stakeholders in the event industry. GUTS Tickets has been operational in the ticketing scene since 2016 and knows through client acquisition, feedback cycles and networking that certain aspects of the crypto proposition would impose a higher acquisition barrier for the adoption of the protocol. To keep the sales proposition of the protocol competitive a more prominent role of GET as a value metric will be incentivized through the User Growth Fund (UGF). Details of this incentive structure will be disclosed in the sub-chapter dedicated to the mechanics of the UGF.

Due to the lack of risk appetite on the side of the event organizers especially towards the volatile reputation of crypto, the GET-protocol will initially assign the value holding function of GET on the segment of the event ticket cycle that is most quantifiable and essential, initially GET will be the metric for the transaction and processing costs involved with buying and using a ticket. Using GET for this cost segment of the smart ticket is mandatory, it is possible and encouraged (by the UGF) to use GET for other value adding elements of the smart ticket but this will be on a voluntary opt-in basis by the stakeholders. This gradual approach to adoption of the protocol is the most efficient in our opinion.

**Total value accounted for with GET**

Every actor in the ecosystem has the choice to convert their GET holding into FIAT at the end of every event-cycle. Besides from the lower transaction costs the next time the actors use the protocol the user growth fund stimulates actors to transact in GET.

---

2 A ticket cycle we refer to all the state changes a smart ticket goes through from the moment it is instantiated by the EO until the moment it is scanned at the entrance of an event.
1. **Transaction and processing value of an event ticket** In this most minimal value covering case only the transaction and processing costs are transferred into GET when the consumer purchases the ticket.

2. **In-event purchase value** Buying a strip of plastic tokens in order to pay for beverages and food during a festival seems just as dated of a concept as the usage of a static and fraud vulnerable QR code as a ticket. By adding additional GET to the ticket buying consumer when he or she is buying a ticket, the consumer is able to instantly buy event tokens (minted for this particular event-organizer or event) to their GET-protocol wallet.

3. **Full ticket price value** In this situation the actor (for example the event organizer (EO)) decides to fully convert the ticket value into GET when a consumer purchases the event ticket. By doing this the EO can settle payments to event merchants or artists in real-time.

### 3.3.1 The total value covered by GET

In the previous segment we posed that the beachhead market for GET would be to hold and account for the value of the transaction and processing costs involved with an event ticket. As this will be the first emergent function of the protocol token, this section will formalize the structuring of this cost segment.

**Buying a smart ticket** When a user buys a ticket, there are several ways it can be used. Buying a ticket and entering the event is the commonly used route. A user buying a ticket and then selling it with the GET-protocol is an example of a more complex route. An even more complex route is a user who buys four tickets, sells one and uses the remaining three, etc. Different routes mean that users incur different costs. Depending on user behaviour, different costs are applicable. To define and express these cost routes, several abstractions are needed. These abstractions (found on table 5 and 6 on page 17) provide the protocol with a metric to allocate the costs and provides the user with insight into the costs incurred in a ticket route.

### 3.3.2 Smart ticket buy-use cost path

A new user buys a ticket and uses it to enter the event; thus, the user does not resell the ticket with the GET-protocol. All the indicated price points are example data and act as an indicator at each point. The “type” column indicates what kind of cost is incurred at that step.

- ‘Gas’ indicates a cost within the protocol that accounts for the gas costs needed to process the state changes and contract instantiation on the ethereum blockchain.
- ‘FIAT’ indicates a cost segment of a protocol actor that in denominated (and possibly settled) in FIAT currency.
- ‘GET’ indicates a cost that should be paid to the protocol by the event organizer to use the system for an event. The ground level for this cost-segment is hard-coded at €0.50.

---

3 This term originates from military strategy, meaning that as you invade enemy territory, you need to focus your strength and concentrate on winning a small border area (the beachhead) that becomes the stronghold from which you’ll advance into the rest of the territory.
Table 5: All the possible cost points a user encounters in the back end of the GET-protocol for the buy-use cost route.

3.3.3 Smart ticket buy-sell cost path

When a new user buys a ticket and resells the ticket within the internal ticket market of the GET-protocol. All the displayed cost components are example data and should be interpreted as an indication of the costs a smart ticket encounters in the event ticket cycle. The only 'hard coded' cost component for each event ticket is the protocol cost variable. This cost component will charge at the minimum $0.50.

Table 6: All the possible cost-points a user encounters in the back end of the GET-protocol for the buy-sell cost route.

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Notes:
- The gas price needed is dynamic over the runtime of an event/contract and can change, therefore a certain comfort margin shall be added for reliability.
- Meaning a user that doesn’t have a GET-protocol account/smart-wallet assigned to their identity.
Total cost per ticket route and residual

Different ticket holder behaviours result in different costs for the stakeholders. The protocol should keep track of the costs incurred to present this data to the end user in a transparent way when assigning the minimal number of GET required for a user to interact with the protocol. Funds must be set aside by the protocol for the most costly route possible. If a user chooses a cheaper cost route, this results in a residual GET balance that stays on the user’s wallet for future use. This means that the user will have to pay fewer transaction/processing costs the next time he or she uses the protocol. Apart from fairly distributing costs, this concept also allows GET to be distributed among a very large user base, which will stimulate community growth.

<table>
<thead>
<tr>
<th>Cost Route</th>
<th>Total Cost of ticket route for GET-protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. New User - Buy ticket and attend event</td>
<td>€1.27</td>
</tr>
<tr>
<td>B. Buy ticket and sell ticket</td>
<td>€1.44</td>
</tr>
</tbody>
</table>

Table 7: Table displaying the total costs for a user. A and B indicate two different cost routes a user can follow when using the protocol. In this particular case, the $P_{buy-sell}$ route is more expensive than the $P_{buy-use}$. This means that the residual $Res_{user}$ for this user will be €0.17. Meaning that if the user buys and uses the ticket, he or she will have a wallet with €0.17 in GET after the event.

**TOTAL TICKET VALUE ALGORITHM**

Formual used to calculate the total GET amount on a per event basis. Output of this formula is used by the GET but option contract. In this example only transaction and processing variables are accounted for in the value of the smart ticket.

\[
P_{buy-use} = \frac{GET^{BUY-USE}}{price} = \sum(f, e, i, p, c, X, y, a, d)
\]

\[
P_{buy-sell} = \frac{GET^{BUY-SELL}}{price} = \sum(f, e, i, p, c, X, y, m, y, m, y, p, r, g, r)
\]

The costs routes have been formalized the protocol has to establish which of the costs routes is greater.

\[
(P_{buy-use} < P_{buy-sell}) \rightarrow P_{min} = P_{buy-sell} \\
Res_{user} = P_{buy-sell} - P_{buy-use}
\]

\[
\lor (or...)
\]

\[
(P_{buy-use} > P_{buy-sell}) \rightarrow P_{min} = P_{buy-use} \\
Res_{user} = P_{buy-use} - P_{buy-sell}
\]

\[
\lor (or...)
\]

\[
(P_{buy-use} \equiv P_{buy-sell}) \rightarrow P_{min} = P_{buy-sell} \\
Res_{user} = 0
\]
The GET-protocol is more than just a smart ticketing application that solves the inefficiencies of both the primary and secondary ticketing market. The standardizing properties of the protocol also allow for further optimizations in the event and ticketing market. Direct settlement of payments, controlled internal markets for event-specific assets (such as beverage and drink tokens), and the ability to securely transact with other actors in the protocol, are all made possible because each actor in the protocol has a smart wallet assigned to their verified unique identity.

The exact sizes and technical mechanics concerning the relationship of the actors within the GET-protocol system are beyond the scope of this white paper, but because these additional benefits of the GET-protocol are quite innovative, a short overview of the actors and their relationships will be covered in the upcoming paragraphs. The GET Token Economy and Ticket Vision report we explore the details of the protocols, actors in the event-cycle, and the structures and rules that form the foundation for the token economy of the GET-protocol. Actors within the protocol:

- **Event Organizer (EO)** — Smart wallet contract — Company organizing the event for which tickets are sold, these companies often hire ticketing companies to handle their ticketing but for simplicity this step is ignored.

- **GET user (GU)** — Smart wallet contract — The consumer buying a ticket for an event. Tickets are bound to a user identity and the assigned smart wallet stays under the users control after an event has ended.

- **Event Merchant (EM)** — Smart wallet contract - event specific — Company of business selling drinks, merchandise or food during the event. This smart wallet is instantiated and eventually settled for each event cycle.

- **Payment Processor (PP)** — Smart wallet contract - event specific — The company responsible for the payment settlement of both the primary as well as the secondary ticket market. This smart-wallet is instantiated and eventually settled for each event cycle.

- **Stability Fund (SF)** — Protocol Fund — The stability fund will provide instant liquidity for the GET needed by the EO and will buy these GET back from the open market.

- **User Growth Fund (UGF)** — Protocol Fund — This fund will promote protocol usage by giving discounts to the EO, as well as promoting usage of the GET inside the token economy by means of proof of processed payments between the EM, GU and PP.

- **Event Cost Fund (ECF)** — Smart wallet contract - event specific — This smart-wallet, that is instantiated and eventually settled for each event cycle, will collect all the fees paid by both the EO as the GU during the cycle.

- **The GET Price Oracle (GPO)** — The function of the GPO is to assess for the stability fund what a fair value for the GET is at the moment a EO needs GET to run an event. The oracle makes this price evaluation on the basis of data input of a set of curated exchanges that list GET.

**Pillars of the Token Economy**

The system of funds and actors in the GET-protocol have rules and restrictions associated with their smart wallets. The foundation of these rules and restrictions are based on the 5 pillars of the GET-protocol.

1. **Ensure usability for the event organizer**
   Event organizers are in the business of hosting and promoting events. These companies don’t have any intention in being a crypto speculator as well. Therefore certain levels of GET price stability and availability should be guaranteed by design. **This internal price stability within the GET-protocol is ensured by: the Stability Fund (SF).**

2. **Ensure usability for the consumer/user**
   One of the main selling points of the GET-protocol is the fact that all crypto related details are kept out of sight of the end-consumer. The GET and the user’s wallet are there as a means of value storage and to transfer/receive and pay for tickets as well as to provide cryptographic security for the end user. **This internal price stability within the GET-protocol is ensured by: the Stability Fund (SF).**

3. **Overall protocol security**
   The employees working at an event organizing organisation or at the ticketing company using the GET-protocol don’t have any knowledge about crypto and thus are not aware of the high levels of security and rigour needed for securely working with high value digital assets at tokens
and ether. The same lack of knowledge is present on the side of the end-user. **GET-protocol solution:** Actors within the GET-protocol don’t have access to their ethereum wallet’s private key and are only allowed to conduct transactions to addresses known/approved by the protocol.

4. **Transparency and de-central central control by token holders**

We believe that token holders should have certain voting rights according to their stake in the protocol. **GET-protocol solution:** Voting by token holders on the Event Cost Fund (ECF).

5. **Overall protocol competitiveness**

The ticketing market is extremely competitive and although the GET-protocol has several characteristics in which it improves upon existing solutions, being price competitive is a very effective tool in order to gain market share. **GET-protocol promotes protocol usage by means of:** The User Growth Fund (UGF) and incentive methods as proof of processed payments.

### 3.5 The User Growth Fund (UGF)

During the first phases of development, the superfluous GET (called the \( \text{Res}_{\text{user}} \) or residual of a particular event) obtained by the protocol to pay for more expensive cost routes of users is made available by the user growth fund. This means that this residual GET between the cheapest cost-route \( (P_{\text{min}}) \) and the most expensive cost route \( (P_{\text{max}}) \) is funded by the user growth fund. Formally, this means that for the period of time that the user growth fund contains tokens, all users who interact with the protocol and follow the cheapest cost path will have a residual in their wallets after an event ticketed by the GET-protocol. In formula 1-5 the algorithm / formalization used to calculate the \( \text{Res}_{\text{user}} \) on a per event basis is displayed.

**Spreading the GET**

Put simply, the GET-protocol subsidizes the higher cost of events ticketed by the GET-protocol for as long as the user growth fund is able to provide this subsidy. This mechanism of distribution among users is deemed effective as it distributes GET to consumers frequenting events. This give away creates a lock-in effect as it gives these “market-relevant” users a wallet with GET. By giving these users a discount the next time they purchase a ticket, the protocol gives these users a peek at the advantages of a more open and transparent ticketing system. At the same time, this subsidy by the UGF makes the GET-protocol competitive, as ticketing companies using the protocol have lower ticketing costs. This competitive edge is quite essential as it is the goal to gain significant market share in the ticketing industry.

**The GET Price Oracle (GPO)**

The function of the GPO is to assess for the stability fund what a fair value for the GET is at the moment a EO needs GET to run an event. The oracle makes this price evaluation on the basis of data input of a set of curated exchanges that list GET. The price evaluation method and price/volume data input-stream the oracle uses in its price assessment will be publicly available. The algorithm will include several random variables/components that will make it impossible for both traders, analysts and GET-protocol team members to perform ‘unfair’ forms of arbitrage\(^5\). An example of such a randomization present in the GPO is pulling from an uniform distribution between 6-10 days when deciding on the range of price data from a particular exchange to use in the price calculation.

### 3.6 The Stability Fund (SF)

In the sub-chapter covering the token economy the stability fund was shortly mentioned. This fund will act as the gateway of the GET-protocol and is a smart-contract that is able to hold both GET and ETH. This fund has a quite prominent role in the GET-protocol as it acts as a funnel for GET from the open market to be bought and used for ticketing by event organizers. In this role as gateway the stability fund achieves two of its functions, firstly providing the event organizers with the GET this actor needs to create smart tickets and account for the underlying ticket value during an event-cycle. Immediately after having sold the GET to the event organizer (for ether) the contract will open a buy contract towards the open market. This buy contract will offer to buy GET for ether from the open market. The price for this buy contract will be provided by the GET pricing oracle (GPO).

#### 3.6.1 Stability fund continuity

**The stability fund will act as a siphon** filled with GET and ETH and has the objective to always restore its original GET balance to 14% of the total GET issued. Right after the EO has purchased the GET that the EO needs to cover for the smart ticket value of a specific event cycle the fund will buy back the GET it has sold to the EO from the open market. In this role as siphon the SF is trading with the open market for a certain price.

\(^5\) With unfair arbitrage we are primarily referring to the manipulation of the price data used to make the fair-price assessment.
This price is provided by the GPO. As with any trade it is possible that this fund will eventually run up a net loss on a trade. This happen when the fund buys GET back from the open market for a higher GET price than when selling ‘internally’ to the EO.

In the “Token Economy and Ticket Vision” report more details about the stability fund and the price oracle will be disclosed. We are convinced that with the right mechanisms, data input and execution the stability fund will be able to ensure that the GET price will offer both the open market as the actors within the GET-protocol with a stable GET price.

**Summary of the Stability Fund** At initiation of the protocol the stability fund will hold 14% of all available GET. This GET will be used to supply event organizers with the GET they need to organize the event and account for all value in the smart ticket of the consumer. The SF will buy this GET back with the funds of the initial sale, and will balance itself out.

- The SF has no other incentive than provide the EO with instant access to enough GET to use the protocol for smart ticketing as well as provide token holders in the open market with a price bottom and a guaranteed demand for GET from the protocol.
- As the minimal price of a smart ticket is set at atleast €0.50 in GET, thus the SF will always have the EO pay at least €0.50 per 1 GET. [6]
- If the SF encounters trading losses and therefore isn’t able to regain 14% of the total supply of GET it will receive GET from the UCF until it is replenished.
- If the SF encounters trading profits (and thus will hold more GET as 14%) the superfluous GET will be transferred to the UGF.
- The SF will not be a completely automated/pre-determined fund from the beginning of the protocol. The GET-protocol team will closely monitor the stabilizing and pricing abilities of the fund and optimize its procedures and programming to ensure that the fund does what it is supposed to do: provide price stability and thus usability for protocol actors as well as provide token holders the option to sell their tokens to be used for events for a fair market price.

**GET Pricing on the Open Market** The oracle will ensure that the internal pricing of the GET will roughly follow the valuation of the GET price on the open markets/exchanges. In these markets the GET price is completely unrestricted in it’s valuation and how it is transferred from owner to owner. The GPO and the SF only act as gatekeepers that ensure actors within the protocol with relative price stability as well as offer token holders on the open market a buy-back guarantee of at least €0.50 per GET.

---

**Figure 6**: Diagram displaying a simplified overview of the GET acquisition process from the perspective of event organizers. The protocol is set up to ensure that the event organizer will be able to create a smart ticket without having to worry about currency fluctuations, non-liquid or stiff crypto markets.

[6] See ECF section/explanation for more details about this mechanism.
3.6.2 GET acquisition for event organizers

1. Event organizer specifies to the price oracle how much monetary value has to be covered by GET per ticket for the specific event the EO is hosting.

2. Price oracle calculates the fair GET price based on external data from several exchanges, based on that assessment GPO will calculate how much GET is needed to account for the total value that needs to be accounted for during the specific event-cycle. It is important to state that the minimal cost per smart ticket is at least €0.50 in GET and that the price for a GET sold to the EO by the SF is at least €0.50 / GET. This 'hard-coded' pricing rule forms the foundation for the buy-back guarantee.

3. The price oracle will instruct the SF to open a buy contract for the calculated price per GET. This buy contract can only be filled by the smart wallet of the EO that requested the event value coverage from the GPO.

4. Event organizer pays the buy-contract of the SF in ether (if the EO pays with FIAT this is done via an payment processor that transfers the payment to ETH).

5. The stability fund will instruct the protocol to create an smart ticketing contract which is owned by the event organizer. This smart ticketing contract will hold all the GET purchased by the EO and will distribute the GET to all buyers of the event ticket.

6. The stability fund will open a buy contract on the basis of price data provided by the GPO. This buy-contract can be filled by any token holder on the open market for as long as the SF isn’t replenished.

3.7 GET EVENT COST FUND (ECF)

This smart wallet collects all of the charged protocol costs for an event cycle paid by the smart tickets. The ECF charges at least €0.50 of FIAT value in GET per smart event ticket, with the SF assigning this base cost to maximally 1 GET per smart ticket on the protocol.

After each event cycle the ECF will have collected GET in the smart-wallet. This value of GET collected is always at least €0.50 multiplied by the amount of smart tickets that where sold during the event. The amount charged by the ECF per smart ticket depends on the event type and the total value included on the smart ticket in GET. Both the choice in smart ticket type as in how much additional credit/GET should be added to each ticket is made by the EO when creating the event for which the smart tickets are sold. There are several ways in which the funds in this smart wallet can be allocated within the protocol. One of these allocation destinations is mandatory when a certain condition has been met regarding the SF. If this condition has not been met there are non-exclusionary options for how the GET from the UCF can be allocated. Which of these to options is options depends on the assessment of the protocol by the GET-protocol team and the opinion of the token holders. This opinion assessment is based upon a token vote that will take place every quarter, the weighing of the vote will be based on the token stake within the protocol.

1. Mandatory IF If stability fund has a net loss due to unfavourable buy back trade all of the GET in the UCF fund will be sent to the SF, until the point the SF holds the initial 14% of GET.

2. Option 1 All or an percentage of the proceeds of the ECF will be sent to the user growth fund, sponsoring protocol growth by lowering price barriers for event organizers and stimulating token usage by means of proof of processed payments for transactions between actors of the protocol.

3. Option 2 Destroy all or a certain percentage or all of the GET collected in the ECF.

THE GET BUY BACK GUARANTEE It is set that the usage of the GET-protocol by an event organizer costs at least €0.50 per smart ticket. The minimal price for which event organizers are able to acquire this GET at the stability fund is 1 GET for €0.50. As the stability fund is the gatekeeper that acts as a siphon, selling to the EO and buying from the open market the minimal GET price creates a price bottom for the GET token holders.

As the total value accounted for by the token is expected to inflate over time, the value of GET both internally as externally on the open market is expected to exceed the buy-back guarantee price of €0.50. Since the oracle uses data from exchanges to calculate the internal GET price this higher price will be offered by the stability fund as well. This design will ensure internal price stability for EO’s and other stakeholders within the protocol and ensures that the risk exposure of the GET investor is significantly minimized.

7 Token holders will be able to cast a vote on the cost variables of the ECF as well as how the fund in the ECF will be allocated/used/destroyed.
Figure 7: Diagram showing both GET acquisition mechanism for the EO as the buy-back guarantee/mechanism for the token holder on the open market. With this mechanism the GET open token market will always be able to sell to the SF for the set price of at least €0.50. Table 8 details the different steps labelled in this diagram.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Event organizer provides the total event value algorithm with the total amount of value each smart ticket will have to carry for the specific event the EO is organizing.</td>
</tr>
<tr>
<td>2.</td>
<td>The conversion from FIAT value to GET is done with the help of the GPO which collects exchange data and calculates a fair GET price.</td>
</tr>
<tr>
<td>3.</td>
<td>The total event value algorithm creates a buy-option for the amount of GET needed by the EO. The EO will now be able to pay the SF and acquire GET (see step 4).</td>
</tr>
<tr>
<td>4.</td>
<td>The EO pays the buy-contract that was opened in step 3, this buy-contract only accepts ether a payment processor converting from FIAT to ETH might be necessary with a PP if the EO only can pay for the tickets in FIAT. The SF has to get back in balance after the GET-purchase of the EO. The SF will create a buy-contract for GET from the open market with pricing from the GPO. This contract will stay open for 7 days, if the contract is not filled in this timeframe then the SF will close the initial buy-contract and create another buy-contract based on a newly assessed price of the GPO. Repeat until SF is replenished.*</td>
</tr>
<tr>
<td>5.</td>
<td>After the GET purchase of the EO the tokens are transferred from the SF to the newly created smart ticketing contract. This contract will create and distribute the ticket and will assign the GET-value per ticket to the wallet GET-protocol user that bought the ticket.</td>
</tr>
<tr>
<td>6.</td>
<td>If the SF makes a trading loss due to a price bull run on the open market after the purchase of the EO the loss of the SF will be replenished by the UGF. *</td>
</tr>
</tbody>
</table>

Table 8: Table detailing the 6 steps shown in Figure 3.7 of the buy-back mechanism of the GET-protocol.
MAKING SENSE OF THE GET BUY-BACK GUARANTEE  From an ICO investor point of view a case can be made that this guaranteed minimal buy-back price of €0.50 "is too good to be true". At face value this seems like a logical conclusion as the guarantee of the GET-protocol basically promises that there is little to no risk of monetary loss. Since the investor will always be able to recoup his initial investment with profits by means of a buy back mechanism of the stability fund. This mechanism (which is played in figure 3.7 on page 23) will buy GET back for a price minimal price of €0.50 / GET. This buy-back promise doesn’t seem to make any economic sense from the perspective of the protocol as the buy-back price is higher that the price the protocol received for a GET at the ICO. Thus creating a net-loss from the perspective of the protocol. From this assessment one could come to the conclusion that this buy-back promise of the protocol must be simply untrue or at least unsustainable in the long run. However, this conclusion would be false, as one would have failed to distinguish the difference between the GET-protocol and the actor using the protocol; the ticketing company. This company is using the GET-protocol to serve their customers (event organizers / venue owners etc.) The ticketing company only uses the GET-protocol as a back bone to add the convenient features of smart tickets to the service they provide. The margins of the ticketing company lie in offering this full-service package to its clients, not in speculating in crypto tokens. The ticketing company, at the moment that they acquire GET, has already landed a client and thus ensured event specific revenue. As such the company won’t lose money paying €0.50 / GET price as minimum fee as this base fee is just a vehicle for company to acquire the margin they make on the service they are providing.

STRATEGIC PARTNERING  The ticketing industry is crowded and competitive. Although it is true that the ticketing applications of current ticketing companies create significant market inefficiencies, the companies providing these services have built relationships with event organizers. These relationships and shared history will make it harder to convince event organisers to make the switch to a blockchain-based solution. This means that apart from offering a superior product and having effective sales, competitive pricing is the most effective tool in convincing new clients. Thus our current partners are able to participate in the pre-sale stages of the ICO, enabling them to use the protocol in the future for a discounted price and thereby locking them in.

3.8 PROTOCOL DEVELOPMENT

Ease of use and stability above all  The fundamental design principle for a GET-protocol is that it should be easier to use than the current non-blockchain ticketing alternatives. At no point in the use flow will users be confronted with confusing hashes or anything of the sort. Users interacting with their smart ticket should never suffer the consequences of the price fluctuations of the volatile token market. It is not in our vision to force crypto tokens on people; it is our vision to use the properties of crypto currencies to show the general public the value this technology offers to control its own digital assets.

Ensuring protocol stability and security  In the first phases of development, only white-listed ticketing companies will be allowed to interact with the GET-protocol. This means that only ticketing companies that apply to standards set by GUTS are allowed to create event contracts on the protocol and thus acquire tokens via the described mechanisms.

With great power, comes great responsibility  The white-listing is a necessity for an array of reasons, one being that the protocol will be under constant development and improvement. The most important reason for this white-listing is that the protocol is already in use as GUTS Tickets uses an early version of the protocol to create and manage smart tickets. There have been enough crypto related blunders and failures that the technology has a sketchy and fragile image for the average non-interested consumer. As this proposed Ethereum token protocol adds a crypto component to every festival and concert visitor using its ticketing system, the protocol should promote the possibilities of crypto currencies—not the other way around. GUTS Tickets does not intend to make the protocol accessible only to white-listed companies for long. As soon as the protocol is deemed tested and robust enough for complete open sourcing, this is the route that the GET-protocol will take.

Minimizing possible attack vectors  In the first phases of the GET-protocol, the tokens are registered not only in the wallets but also in the central and heavily encrypted GUTS database. This essentially means that the GET-protocol could act as the central wallet for all transactions to mitigate risks. During the first phases, a user account is not able to handle its private key as it is not known to the user. Further development of the protocol will allow users to interact with their wallet contract, so that users can interact with their GET. Going into detail about these roll-out plans is beyond the scope of this white paper, but will be addressed shortly in the road map. It is our intention to fully decentralize and empower every actor in the system, but this empowerment will happen slowly in controlled and extensively tested steps.
In this chapter the planned phases of the GET-protocol will be briefly mentioned. The evolution of the GET project is divided into four phases.

**Phase 0 - Token Mutiny**  The current state of the GET-protocol as used and implemented by GUTS tickets in the Dutch market. With a marketed and ticketing application which uses blockchain to register ownership and properties of smart tickets.

**Phase 1 - The Token Intifada**  The second phase of development the GET becomes the only possible method of payment for the transactional and processing fees in the ticketing cycle. Furthermore this phase will introduce the GET-protocol API that can be used by white listed third party ticketing companies worldwide. Every actor in the protocol will have a smart wallet added to their uniquely verified identity, the actors within the protocol will not have full control over the private key. This phase would fully introduce the possibility for actors (especially consumers) to use GET to pay for drink and beverages tokens and other products before and during an event.

**Phase 2 - The Boston Token Party**  In the third phase of development of the GET-protocol the fully accessible smart-wallet would be added to the users account on the GET-protocol, allowing users to interact with their tokens. End users and event organizers can choose to hold and use GET as a method to store the value of event tickets. As multiple stakeholders in the event ecosystem would hold and use the token, this would add liquidity to the ecosystem. GET acquired on the open market.

**Phase 3 - Ticket Liberation**  The third and final phase of development the full range of functionalities and accessibility will be given to all the actors within the protocol. All aspects of the protocol will be completely on-chain and the economics of the ecosystem as a whole will be self-sustaining. In this phase, GET is the sole store and transfer of value used for storing all event related value. All organizers can create events on the GET-protocol via the public and open sourced API.

4.0.1 *About the GET development phases*

After the initial publication of the GET white paper the latest updates and in-depth articles concerning the ICO and the GET-protocol itself can be followed by subscribing to the GUTS ICO Medium blog: [www.blog.guts.tickets](http://www.blog.guts.tickets)

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1 Access to private key of an actors wallet might be already added in this phases on an opt-in basis if the crypto market is liquid and stable enough to sustain inflow of external GET.
5 BUSINESS LANDSCAPE

At the moment of publication of this white paper (August 2017) there are several blockchain protocol initiatives / smart contract focused start-ups that are trying to broadly solve the same problem. Although these initiatives confirm our assessment that this is a problem worth solving, there are several key differences that distinguish the GET-protocol from existing initiatives.

WORKING WITH THE INDUSTRY The most important difference is that GUTS Tickets—the company issuing this white paper and building this protocol—is active and fully operational in the industry and has gained in-depth knowledge of the nuances present in the ticketing market through first-hand experience. GUTS Tickets has already sold and is currently selling blockchain-registered tickets via its smart-ticketing platform in both 2016 and 2017. One of the Netherlands most prominent theater companies, Hekwerk Theaterproductie, has partnered with GUTS and its team, and several prominent artists have also shown their support for the GUTS initiative to cut out middle men.

5.1 COMPETITION

OTHER BLOCKCHAIN INITIATIVES

There have been several event-focused initiatives in the ICO heavy year of 2017. The most ‘prominent’ initiatives, Blocktix(TIX) and Aventus(AVG), are both still in the funding / white paper / alpha development phase at the moment of publishing of this white paper. The three main differences between these two initiatives and GET-protocol are:

- The GET-protocol is already fully operational and thus the application is currently being used by GUTS and its partners in the Netherlands. The GUTS ticketing application has long since cycled through its alpha and beta phases of development and thus has a significant head start.
- The GET-protocol uses existing market infrastructure for maximum market penetration. It is therefore able to handle an extremely high number of API requests, offer customers features like theatre seat selection, and provides insightful sales dashboards to event organizers and venue holders. The GET-protocol does not introduce voting and/or staking rights for token holders, because such an addition to the ticketing system addresses a problem that doesn’t actually exist.
- The GET-protocol allows users to attend events with the least effort and prior knowledge of crypto as possible. All things crypto are shielded from the regular user, providing them the benefits without the complexity.

TicketSwap

TicketSwap is a Dutch company that offers ticket holders interested in selling their ticket a market with a reputation system for both buyers and sellers, creating a trust bond. TicketSwap is successful in the Netherlands, but is merely a form of symptom treatment: TicketSwap is only active on the secondary market and therefore cannot guarantee the authenticity of tickets.

Ticketmaster/Ticketscript etc.

These companies are partially responsible for the problems faced by the public in the secondary ticketing market. In some cases the ticketing companies have an actual stake in the success of the secondary ticketing platforms. These companies would have to eliminate parts of their own business model to innovate or create a transparent market.
6 ICO DETAILS

Details of the GET ICO:

- **Maximum financing**: €15.0 million
- **Minimum financing**: €2.3 million
- **Indication of starting-date of ICO**: November
- **Length of the ICO**: 14 days

There will only be one GET ICO, the tokens issued during this ICO will be the only GET tokens ever to be issued by the protocol.

**ADDITIONAL ICO INFORMATION**  More detailed information concerning the number of tokens issued, the pricing tiers and the token-splits will be published on our Medium blog: blog.guts.tickets

6.0.1 ICO implementation

As GUTS has an operational ticketing application that is able to handle unique user requests, assign these requests dynamically to waiting lists and when needed, serve these users personalized data, this same infrastructure will make sure the ICO will be fully controlled and most of all, safe for both GUTS and the investor.

As the ticketing application will handle all the communication with the ICO investors it is important to note that:

GUTS will **never** approach and/or provide **crucial** information (especially sensitive instructions like contract addresses) to investors via Slack or any other messaging application with exception of Intercom. This type of communication will exclusively happen via e-mail or via the GUTS ticketing application.
The time needed for developing the complete GET-protocol as proposed in this white paper depends on the number of tokens sold during the ICO. Should the ICO be funded completely the expectation is that the last phase of the GET-protocol will be delivered 36 months after initiation. Trivially, should only the minimum number of tokens be raised, the development of the GET-protocol would take more time as the size of the development team would be smaller.

**GET-PROTOCOL DEVELOPMENT**: 55% of the budget. The current development team consists of 6 engineers which will grow, depending on the amount raised in the ICO, the team will grow gradually according to the needs of the tasks to be done.

**OPERATIONAL COSTS**: 17% of the budget. Consists of administration costs (legal, security, accounting), hosting costs, an office, and other operational costs.

**EXTERNAL CONTRACTORS**: 13% of the budget. These funds will be directed to third-party providers like external engineering, PR agencies, growth-hacking and more.

**MARKETING AND SALES**: 12% of the budget. In short, getting stakeholders in the market to use the GET-protocol.

**CONTINGENCY** 3% of the budget. Funds set aside for unforeseen costs.

Figure 8: Pie chart displaying the budget allocation of the funds raised in the ICO.
6.2 TEAM

MAARTEN BLOEMERS | CEO |
Is the general manager, lawyer and legal specialist of the team. After earning his master’s degree in corporate law, Maarten worked for the Dutch central bank and founded an invoicing platform with legal services called KasCo in 2012.

TOM ROETGERING | CCO |
Is the commercial force behind GUTS and is responsible for happy customers at the events. After earning his master’s degree in business administration, Tom worked for Rabobank, and founded a comparison platform for body shops called Deukweg in 2013.

IVO VAN DER WIJK | CTO |
Has more than 20 years of experience with software development, open source and Internet technology, and is the technical brain of GUTS. He earned his master’s degree at the Vrije Universiteit in Amsterdam, where he continued to work on a global distributed system. After starting a full-service IT company with 15 employees and a freelance career where he tried to continuously reinvent himself by discovering and applying new and disruptive technologies, Ivo has found his latest challenge at GUTS.

FRANS TWISK | UX / FRONT-END DEVELOPER |
Is responsible for the design, user experience, and front-end development. Frans is a designer and a developer “unicorn” with over 11 years of freelance experience with a Master of Arts in Interaction Design. He is also a DJ & founder of EINDBAAS: chip/8bit music events in The Netherlands.

IZEL NAKRI | FRONT-END DEVELOPER |
Is our front-end development specialist and all-round web developer with knowledge in Ruby, JavaScript and Elixir. Before joining GUTS, Izel worked for various start-ups in Amsterdam and taught an intensive web development course in JavaScript & Node.js at New York Code & Design Academy. Izel makes sure our user interface code is well-written and runs smoothly on every target browser.

STRAVROS CHAMPILONATIS | BACK-END DEVELOPER |
Is a full stack developer with a breadth of knowledge. He has experience in back-end and front-end work, contributing to multiple projects using Python, PHP, React, React-Native and Java for Android. Stravros has hands-on experience implementing secure and testable smart-contracts using Solidity.

MARK ARTS | BACK-END DEVELOPER |
Is a passionate and curious back-end developer who has been working as a programmer since the first year of his bachelor of science. Mark’s experience developing virtual reality projects with C++ for his thesis, his work at dev-ops / back-end development at full-stack web companies, and his passion for functional programming has given him a broad and unique range of programming expertise.

KASPER KEUNEN | BLOCKCHAIN DEVELOPER |
Holds two bachelor’s degrees (physics and economics/finance) from Vrije Universiteit Amsterdam and is currently on the verge of completing his MSc Computational Science from the University of Amsterdam. In 2015 Kasper co-founded the Bitcoin startup BitStraat, which was an official partner of Bitpay and initiator of Amsterdam Bitcoin City. The company was nominated as a financial innovator at the Dutch Fintech awards in 2015. As an early adopter of blockchain technologies, Kasper has a deep understanding of smart contracts and in particular the Solidity programming language.

SANDER REGUTUIJT | COMMUNITY/MARKETING MANAGER |
Is the one to create the buzz around GUTS. Responsible for both valuable international PR campaigns as well as setting up the community channels, Sander is as all-round as a basketball. He has been involved in the blockchain scene since 2013. First as Country Manager of the Netherlands for Swedish bitcoin exchange Safello and has been active later on at various bitcoin projects such as point of sale payment solutions provider BitStraat, where he had a active role in business development.