TRESARO

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Distributed Peer-to-Peer Marketplace Provides Support for Charity and Crowdfunding

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Abstract

Marketplaces exist to remove risk from peer-to-peer trades and enforce penalties on any actors that misbehave. They also play an important role as rating agencies - enabling customers and sellers to rate those they have transacted with and provide a level of reassurance to others considering a trade with either party. The idea of a fully distributed, peer-to-peer marketplace arises naturally with the advent of the completely decentralized blockchain public ledgers.

There are many implementations of digital marketplaces using various blockchain technologies, utilizing different sets of protocols, added value services and incentives. Naturally, these platforms are concerned with user-to-user (seller-to-buyer, buyer-to-seller, arbitrage-to-buyer & seller) interactions within the context of trading - exchanging goods or services for indirect financial incentives (coins or tokens) [1) 2) 3)]. While this is expected for any kind of marketplace or exchange, none of these services promote funding worthwhile causes as a central purpose. Being moral and helpful is not the primary driving force behind most economic interactions, but there are ways for this impetus to be incentivized by purely financial means.

Herein, we introduce a distributed, trustless peer-to-peer marketplace with charity and crowdfunding support and an optional arbitration component, where the service is shifted towards verified charity organizations and other crowdfunding initiatives, while the value is expressed in ERC-20 [4)] compatible tokens (**TRE**). While anything could be traded on such a platform, we emphasize the evaluation and trading of unneeded, second-hand goods (from now referred to as ***clutter***) for supporting (fully, partially or symbolically) a charity or a crowdfunding initiative. To put it simply, Tresaro provides an easy way of exchanging your ***clutter*** with others willing to buy your items for **TRE** tokens. Whatsmore, both sides are able to help a cause (or causes) during the transaction by donating items and/or tokens.

I. Introduction

Online marketplaces are the future of retail and are growing rapidly, disrupting both brick and mortar shops and exchanges as well as small niche ecommerce sites. While some conventional marketplaces do support charitable giving, this is not the focus of most corporations - whose raison d'etre is to provide a return on shareholder's investment by facilitating conventional trade.

While there will always be a need for new goods, many of us are victims of consumerism - accumulating clutter that can act as a millstone around one's neck rather than provide the benefit the items were designed to. One in ten Americans rent storage lockers despite the fact that the average home in the US has nearly tripled in size over the past 50 years. In Great Britain, the average 10 year old owns over 200 toys and games but uses no more than 12 of them. Examples like this are easy to find, and someone's clutter is usually someone else's treasure.

Most of us would like to think of ourselves as a generous, and happily donate unused items to charity. But there is no guarantee that dropping off unwanted items at charity shops will see the items donated provide their maximum benefit - and sometimes we'd like a share of the proceeds too.

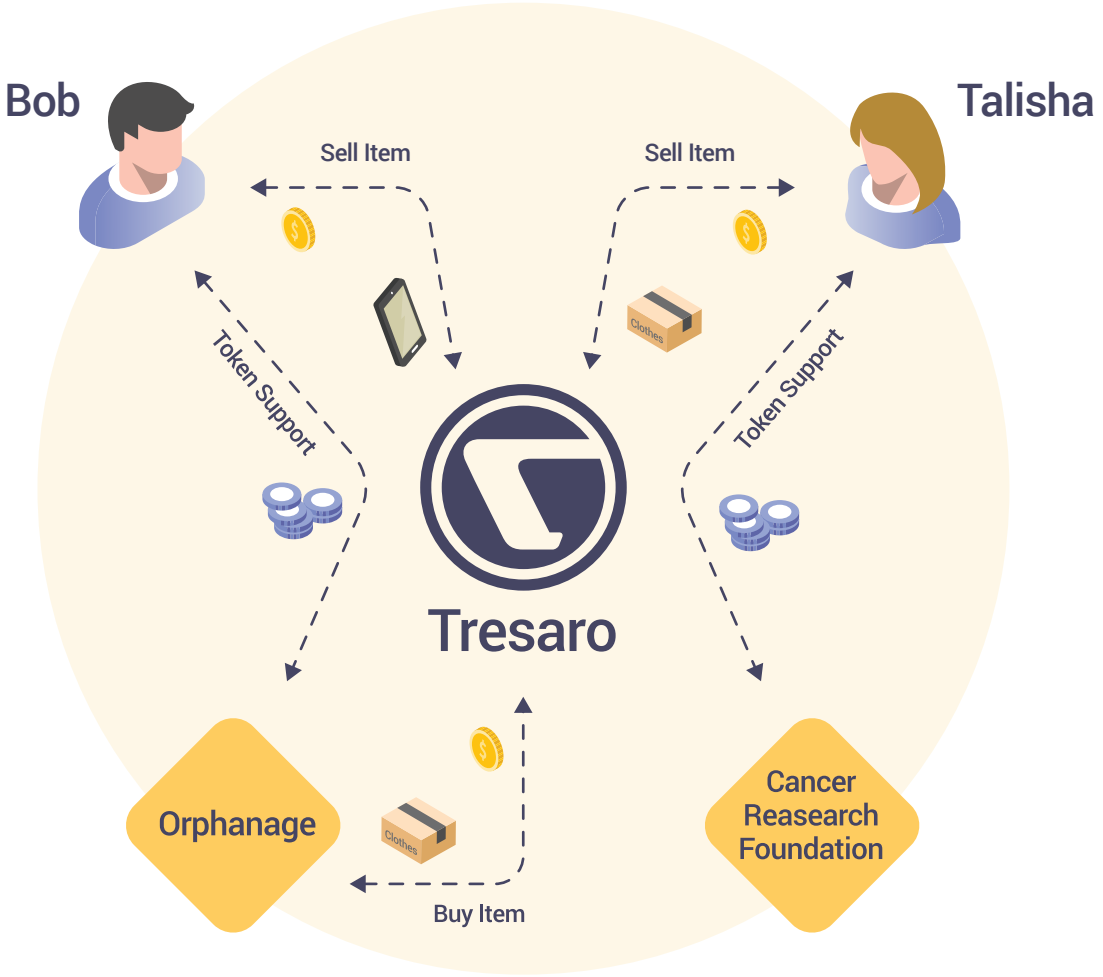
The advent of modern blockchain technologies, opens up possibility to help solve the clutter problem and maximise the benefit a donation or sale would provide by tapping into the power of decentralized economy dynamics. An example of such dynamics is the proposed Tresaro platform - a distributed, trustless marketplace with charity and crowdfunding support as well as an optional arbitration component.

Let's consider the following case:

- Bob has ***clutter*** - an old iPad. He's willing to sell it and donate the tokens to an orphanage charity;
- Talisha is having a pair of kid's clothes she can't use anymore and is willing to sell for tokens. She also wants to donate these tokens to a cancer research foundation.

The Tresaro market model gives the following options to the participating peers (Bob, Talisha, the orphanage and the cancer research foundation):

- Sell the ***clutter*** to somebody willing to buy it and keep the tokens as a future financial prospect;
- Sell the ***clutter*** to somebody willing to buy it and (fully or partially) donate the tokens from the trade to a charity or crowdfunding of choice. In our case, Bob will donate his tokens to the orphanage, while Talisha will donate hers to the cancer research foundation.



While these options seem trivial, their dynamics raises the following set of possibilities:

- **Charities synergy and cooperation.** Usually charities are competing for a single pool of resources (donations) [5]. The Tresaro market implicitly turns this competition into cooperation. For example, if the orphanage needs Talisha's kid clothes, it could use the tokens, donated by Bob's tablet trade to pay Talisha and receive the clothes;

- ***Clutter*** envisioned as added value in a predominantly consumer society [6]. This is the psychological breakpoint where every participant in the trade is having some kind of inherent incentive;

- The inherent ***clutter*** value in **TRE** tokens as trading and donation instrument instead of a direct value asset. Thus token market value is not just related to the trading levels, but also to the extent of charity and crowdfunding support;

- **Charity auction support**. If the ***clutter*** item is designated solely for charity or crowdfunding, it could be auctioned either at the highest proposed price or for the cumulative price range of all the participants willing to fund the charity, no matter whether they receive an item or not. In the former case, the item is received by the party proposing the highest price;

- **Rating system**, based on trading feedback (successful and failed transactions), *arbitration polls* success rate (whenever requested) and donation statistics (quantity, repeatability, spread or narrow charity spectrums).

Any trade could have an undesired outcome for at least one of the participating peers. Usually this is the buyer, the side receiving a traded good or item. Thus another desirable property of the Tresaro marketplace is the **Optional Arbitration Systems (OAS)**, based on polls and incentivized by commission from the disputing sides. Any marketplace peer who doesn't participate in the deal of interest, and who is having at least ***16*** successful consecutive trades and rating above ***32*** points, could apply for an arbitrator. The arbitration system is thus community-based, while employing different incentivization mechanism for promoting arbitration application and fair judgment. Tresaro's arbitration mechanisms are described in details in the following sections.

II. Problem identification

Tresaro's decentralized marketplace will solve a set of pressing, real-world problems that are inherent within the centralized nature of marketplaces, charities, and crowdfunding campaigns in the current landscape. Carefully identifying these problems has informed the very core and structure of our distributed marketplace solution. Tresaro SWOT analysis is addressing two major groups of issues - business (ideological) and operational (technical).

Tresaro business agenda specifies the following list of pressing problems:

- Centralized marketplaces are not even optionally trustless. No peer-to-peer trading is possible. Arbitration is not optional as well;

- ***Clutter*** marketplaces are scarce. Decentralized ***clutter*** marketplaces do not exist;
- ***Clutter*** is usually discarded as any kind of valuation in any context [6];
- Charities are competing the same pool of resources (donations) [5];
- Some (major) part of charity and crowdfunding donations is spent on solving logistic or side problems - mediation fees, administrative expenses, OpEx, international transfers, induced fraud and many others [7].

Combining ***clutter***, marketplace, charities and crowdfunding conceptual economies in a decentralized ecosystem with an optional arbitration layer is a challenging technical and operational task as well. Operational pressing problems include:

- Decentralized economy - generic, cheap, real-time decentralized key-value (KV) storage.
- Planned to store user, transaction and market-related metadata. Desirably operating off-chain to fulfil the 'real-time' and 'being cheap per transaction' requirements;
- Decentralized economy - off-chain node incentivization system and distributed economy base;
- Decentralized economy - community-driven arbitration process; challenges - 'lynch mob' and 'syndicate' prevention;
- Decentralized economy - arbitration incentivization system;
- Decentralized economy - user and arbitration ratings;
- Distributed marketplace - decentralized network build process - The Startup Core;
- Distributed shipping - a network of localized carriers;
- Distributed shipping - incentivization;
- Distributed Arbitration - poll system and incentives;
- Distributed Auction - procedures and contracts.

III. Tresaro - the decentralized marketplace for charity donations and crowdfunding with optional arbitration system

1. Goals

Tresaro's decentralized marketplace model targets a well defined agenda of goals, based on the set of pressing problems described in the previous section. This includes addressing both the business and technical challenges. Our SWOT analysis outlines the following list of goals:

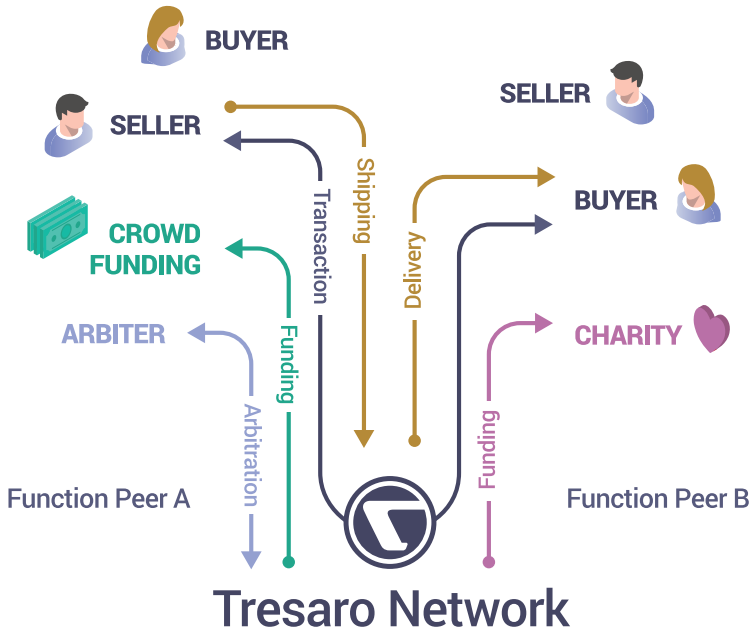
- Completely decentralized, incentive-controlled economy for all functional peers. That is - anybody, obeying the fairplay and providing or requiring service, could be any kind of functional peer. Obviously, operationally-critical peers would require mandatory KYC identification (licensing);
- Serving charity and crowdfunding specific-operations - token donations, needed items delivery, auctions;
- Decentralized marketplace - optional trustless peer-to-peer trades. Optional peer-

to-peer carriers for physical goods shipping. Optional dispute resolution with implicit arbitration protocol;
- Turning charities competition into synergy. A charity could spend some of its token donations to buy anything it needs from within the same marketplace, thus supporting another charity;
- Creating an incentive to trade ***clutter***, instead of throwing it away. Adding a share-like value to ***clutter*** in the form of tokens;
- Adding a moral value to ***clutter*** by supporting different charities and crowdfundings;
- Giving additional platform to the charities and crowdfunding initiatives;
- Using the public ledger technology for transparent trading and fraud prevention.

2. Functional structure; economic and fairplay incentivization

The Tresaro model resolves (and requires) the following list of functional network participants:
- **SELLER** - Peer wishing to exchange goods (including ***clutter***) for tokens or wishing to directly donate goods for a cause. SELLER could donate (fully or partially) tokens from a sale to a cause;
- **BUYER** - Peer wishing to possess particular goods (including ***clutter***) in exchange for agreed token value. The same peer may donate arbitrary amount of tokens to a cause on top of the received goods' cost;
- **CROWDFUNDING** - Peer looking to raise funds for a personal or undisclosed cause. If the peer has passed KYC it becomes a **licensed** crowdfunding;
- **CHARITY** - Peer looking to raise funds for a particular charitable organization;
- **ARBITER** - Peer servicing the arbitrage polls as a voter. Arbitrage polls are Tresaro's mechanism for mediating disputes between peers. To register as ARBITER, a peer must have at least ***16*** successful consecutive trades and rating above ***32*** points and to pass the KYC identification process;
- **CARRIER** - Peer servicing the shipping of the physical goods. Any locally-licensed carriers or entities with rating above 100 points, that have also passed KYC, could apply for CARRIER function;
- **SERVER** - Peer servicing distributed KV storage for Tresaro functional metadata - transactional, user-related, marketplace-related, etc. KYC is required;
- **KYC NODE** - Peer servicing know-your-client (KYC) identification.

A physical peer could possess the characteristics and purpose of several (or all) functional participants. For example, a peer could sell goods, buy ***clutter***, be a charity and arbitrate at the same time, effectively being SELLER, BUYER, CROWD FUNDING and ARBITER.



Simply having these types of network participants (peers) implicitly solve logistic marketplace problems is not enough for a functional decentralized economy. That is, every peer needs to have one or (ideally) several economic incentives to participate. Adding complexity to the situation is the fact that some incentives require reaching certain 'critical mass' node quantity to function as expected. The following comparative table clarifies the incentivizations of any of the peer types, while norming the incentives by the 'critical mass' criterion (underscored):

Functional Peer	Incentives
SELLER	- selling goods and ***clutter***; - donating to a cause; - good *transactional* rating.
BUYER	- buying goods and ***clutter***; - donating to a cause; - good *transactional* rating.
CROWDFUNDING	- receiving funding and needed items; - having a platform for the cause; - good *charitable* rating.
CHARITY	- receiving funding and needed items; - having a platform for the cause; - good *charitable* rating.
ARBITER	- receiving a commission; - receiving bonus if participating in majority vote; - good *arbitration* rating.
CARRIER	- receiving funds for the service; - having a platform; - donating to a cause; - good *carrier* rating.
SERVER	- receiving commission from SELLERs and BUYERs; - receiving commission or service from other SERVER nodes for relaying and storing data; - donating to a cause; - good *server* rating.
KYCNODE	- receiving funds for the service; - good *KYC* rating.

Table I *Functional Peers, their incentives and ratings*

There is an implicit incentive that corresponds to any peer type - the rating. Ratings stimulate fair play between peers. Lower rated peers have a lesser chance of remaining as active in their related functional performance on the marketplace. Various types of ratings are achieved by function-dependent, automatic or user feedback.

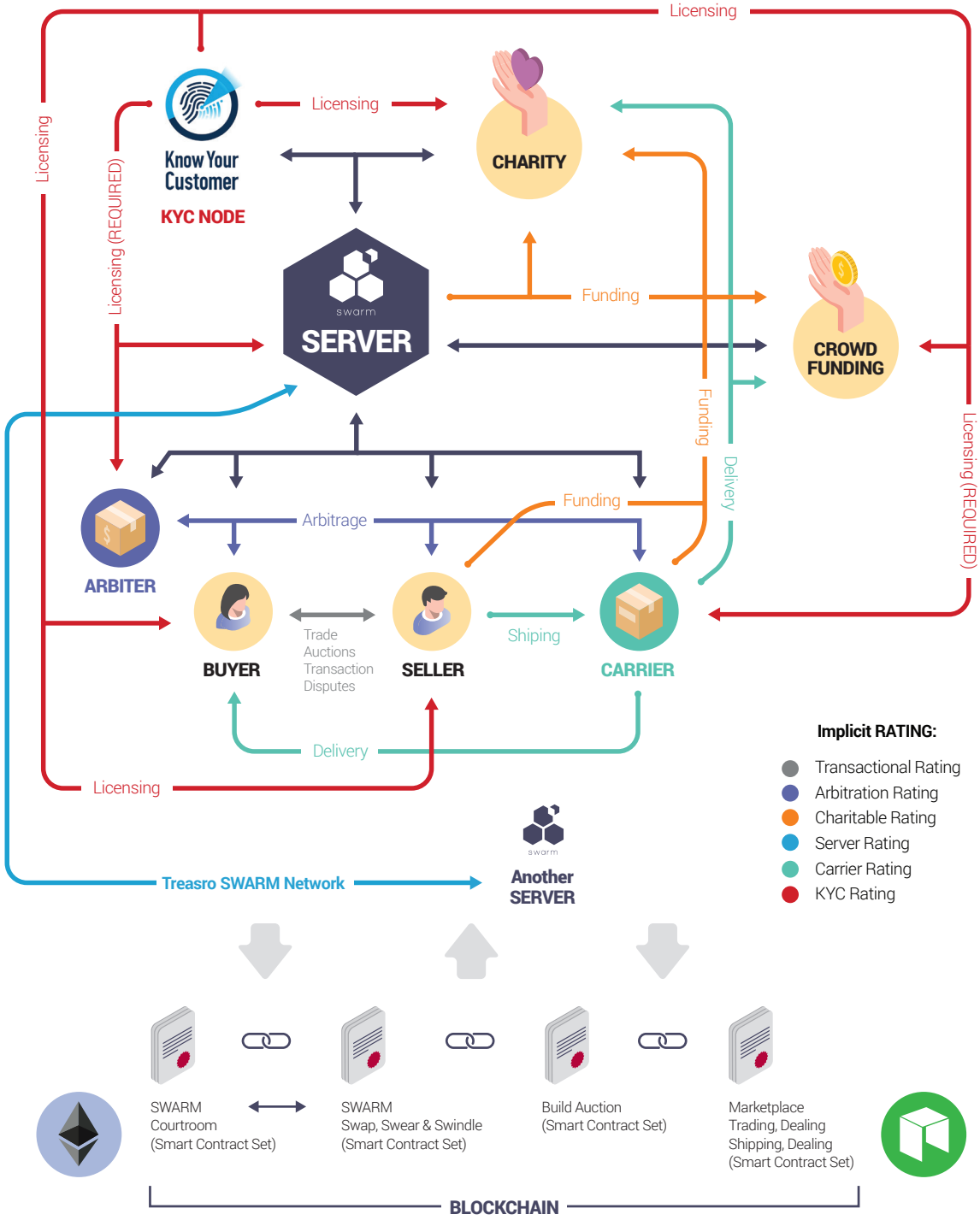


Fig. 1 *Decentralized Tresaro Marketplace - Functional diagram*

To incentivize the peer identification, KYC-processed peers are considered **licensed**. The **licensed** status imposes higher limits on the performed functional constraints. For example, a SELLER with a higher *trading* rating has a better chance of populating her items on the network than SELLERs with lower rating. Or an ARBITER with lower *arbitration* rating has less chance to be selected to participate in an arbitration poll than an ARBITER with higher *arbitration* rating.

3. Architecture

Naturally, any decentralized network emerges from a startup core. These are the self-incentivized nodes, which service the network until the *critical mass* of users and other functional (servicing) nodes is achieved. Tresaro's decentralized marketplace starts with a core test network of functional peers of the following types - KYC NODE, SERVER, ARBITER and CARRIER, thus insuring the reach of *critical mass* and the ultimate goal - completely distributed, incentive-controlled economy for all functional peers. SERVER and KYC NODE qualifications will be on hold until moving to semi-production testnet.

To address most of its decentralized economy-induced challenges, Tresaro is utilizing a private SWARM [8) 9)] network, which inherently operates with the Ethereum blockchain (although it could be deployed on any smart contract-enabled blockchain). Building over SWARM network inherently solves most of the decentralized economy business and technical problems - specifically, having generic, cheap, real-time decentralized KV storage with an applicable incentivization system. It also adds enough flexibility to the project structure to ease the case of migration to a new blockchain technology, if needed.

Insuring the required distributed key-value storage and its economy allows further infrastructural development, which is not bound to the blockchain scaling problems - price and speed. This is done by creation of a protocol for serving the functional peers - the **TRE Protocol**. The **TRE Protocol** is defined by two layers - SWARM servicing protocol and blockchain smart contract set.

3.1. TRE SWARM Servicing Protocol (TRE-SWARM)

This protocol governs the storage, accessing, interactions and processing of the functional nodes metadata. A list of resolved metadata structures and their related functional nodes follows:

(ALL NODES) - Transaction metadata;

(ALL NODES) - Functional Rating metadata;

(BUYER, SELLER) - Order metadata;

(SELLER) - Item List metadata;

(CARRIER) - Shipping and Delivery metadata;

(ARBITER) - Arbitration metadata;

(CHARITY, CROWDFUNDING) - Funding metadata;

(CHARITY, CROWDFUNDING) - Presentation metadata;

(SERVER) - Marketplace content metadata;

(SERVER) - Functional peers metadata;

(KYC NODE) - Licensing metadata;

All functional metadata exchange is planned through **WebSocket** [11)] layer; optional **REST** [12)] protocol will function for the testnet. Metadata processing and interactions are governed by functional nodes' application-specific components, whose source code would be accessible alongside API documentation in the upcoming PoC series.

3.2. TRE Smart Contract Set (TRE-SCS)

The TRE Smart Contract Protocol Suite is based on SWARM Swap, Swear & Swindle [9] and it's derived Courtroom protocol [10], alongside Solidity Blind Auction [13] [14] and Standard Marketplace [15] [16] contracts. All smart contracts require operational escrow, except the ones serving some inherently direct fees, like *Arbitration* and *Auction fees*.

4. Order and transaction flow

Order flow in a marketplace is a complex process, which often requires third-party settlement and human interaction. The process is being complicated even more, considering the specifics of the SWARM network distributed economy. To insure stable and well organized order and transaction flows, Tresaro follows well-established structural practices in the world's biggest e-markets and payment processors, such as Amazon [19], EBay [20] and PayPal [21].

An ***Order*** is being defined by its type and current state. Order types are based on the nature of the traded goods. A ***Transaction*** is the financial aspect of and ***Order***, that's why Transaction state machine is completely covered by the ***Order*** state machine. Tresaro plans to support the following ***Order*** types:

- **ITEM** - Physical goods, requiring shipping and other human interactions;
- **ASSET** - Digital goods, allowing immediate property transfer;
- **SERVICE** - Physical service, requiring human performance, paid at once;
- **SERVER** - Digital service, paid at once;
- **SUBSCRIPTION** - SERVICE, requiring recurrent payments;
- **SUPPORT** - SERVER, requiring recurrent payments;
- **BROADCAST** - SWARM internal, used for allocation of bandwidth and storage.

Order state describes the current Order condition:

- **PENDING** - Initial Order state;
- **UNSHIPPED** (Physical goods and services only) - Awaiting shipping;
- **SHIPPED** (Physical goods and services only) - Shipped to a CARRIER;
- **DELIVERED** - Service or good has been delivered;
- **DISPUTED** - Disputed and requires arbitrage;
- **ARBITRAGE** - Under arbitration process;
- **SUCCESS** - Completed.

A following list of states is being considered for inclusion in the Order state machine:

- **REVOKED** - Canceled by the BUYER;
- **CANCELED** - Canceled by the SELLER;
- **FAILED** - Failed for third-party reasons.

Tresaro's major ***Order*** Use Cases are described in detail in the following diagrams.

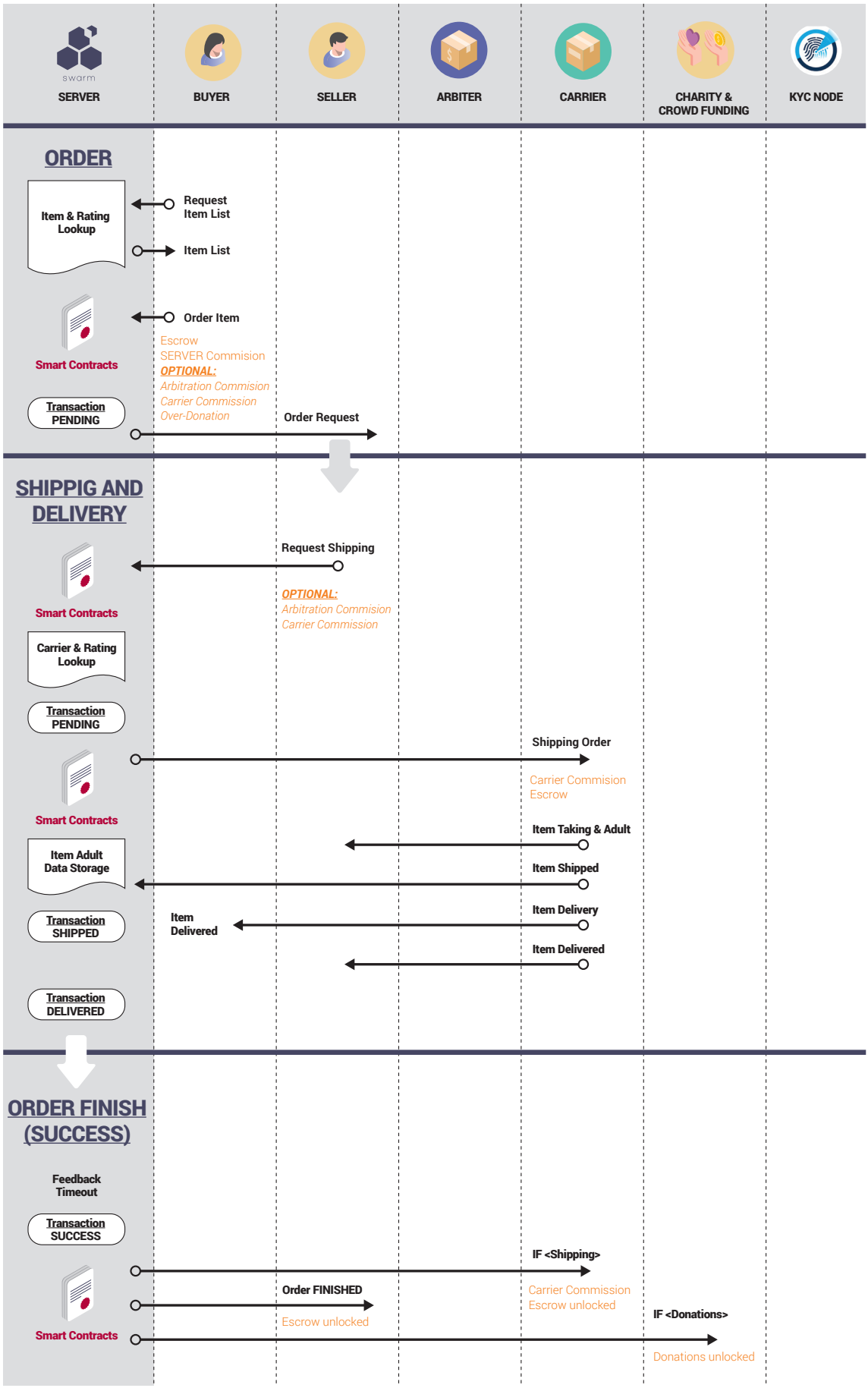


Fig. 2 *Normal Order Flow*

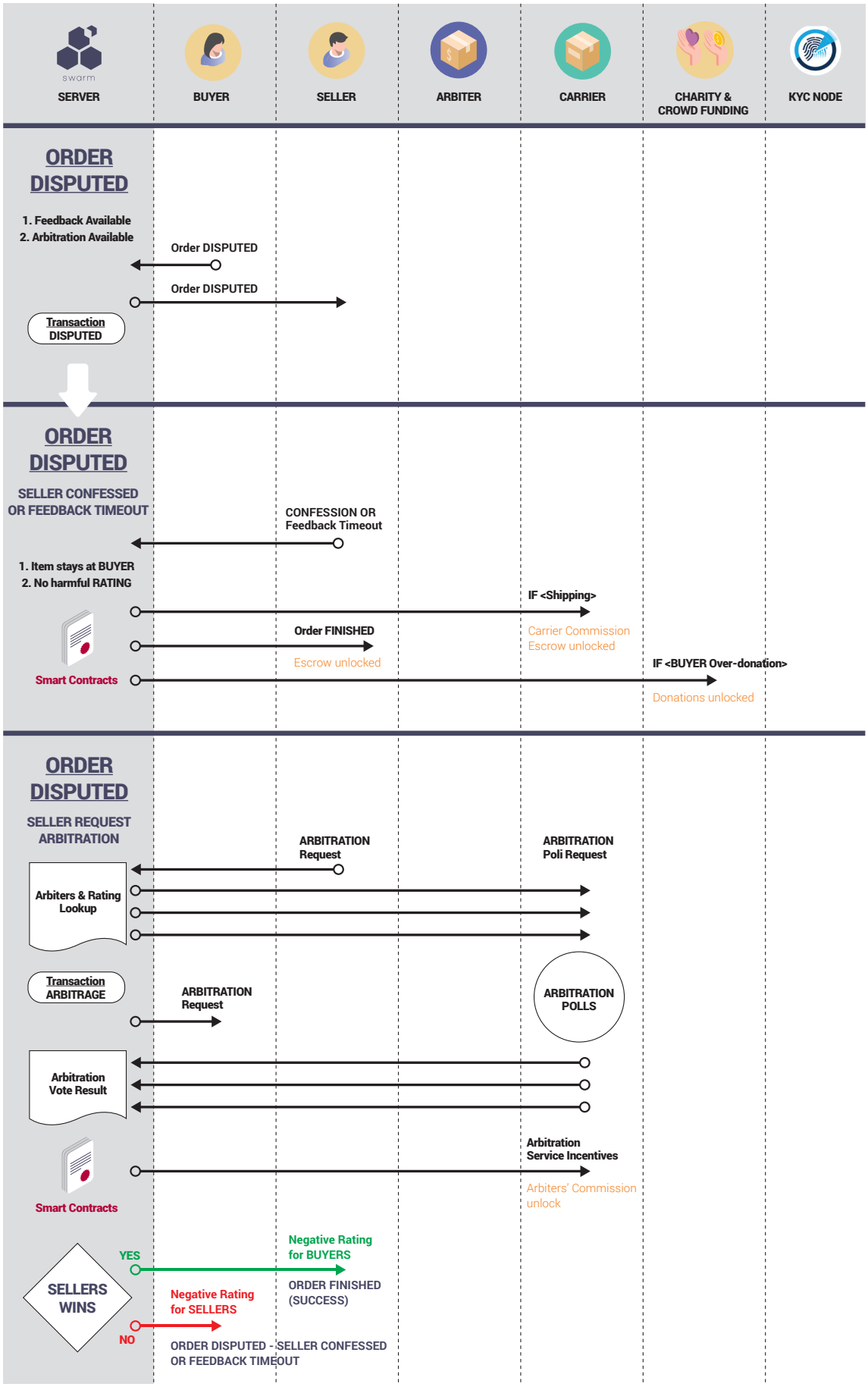


Fig. 3 *Disputed Order Flows*

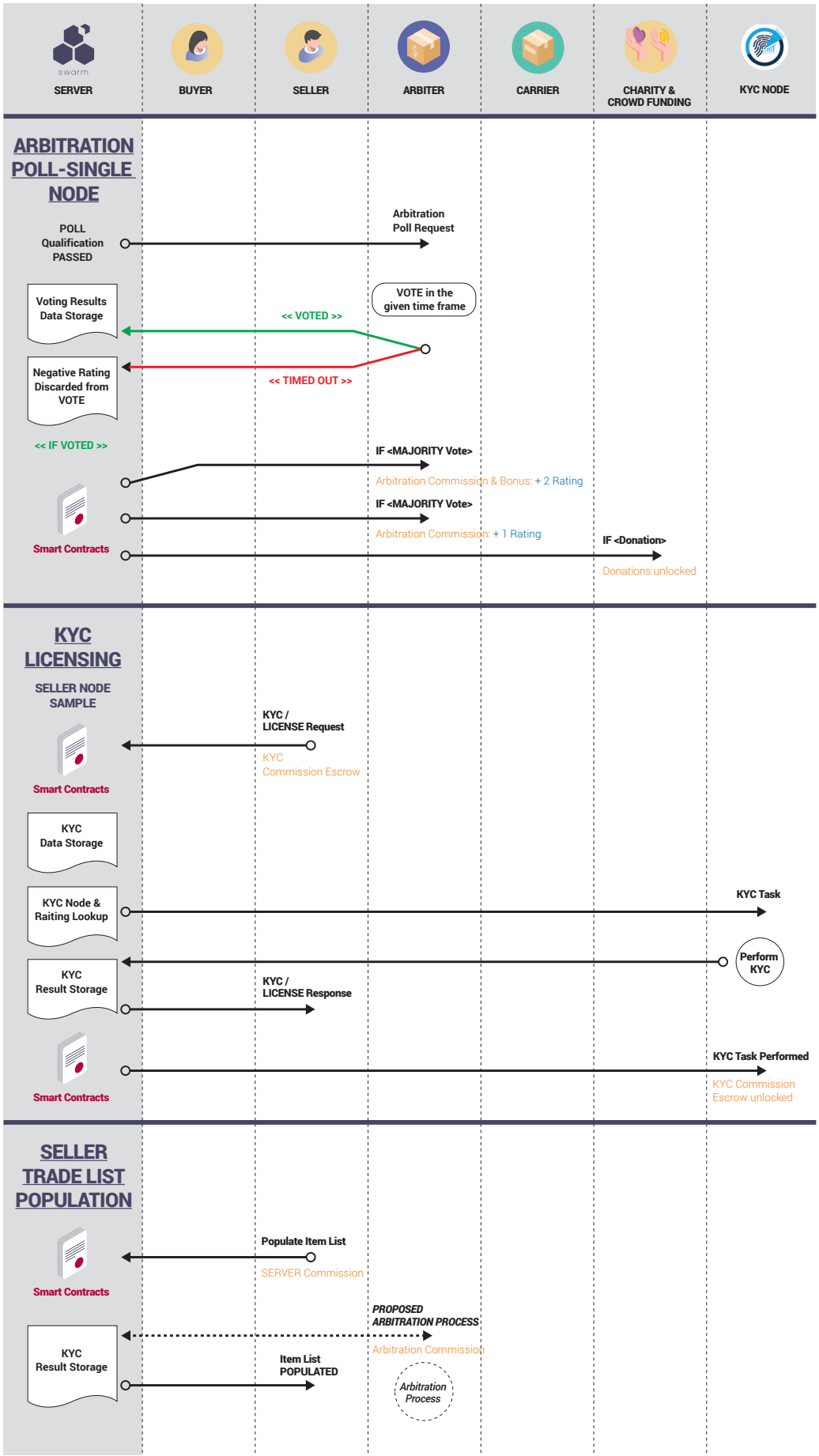


Fig. 4 *Arbitration Polls, KYC Licensing, Listing Items*

5. Content delivery

The generic content is served through HTTP+TLS (HTTPS) [17] endpoints (SWARM node Web Servers), while most of the data is being exchanged through WebSocket (WS) layer for bandwidth optimization reasons. SWARM BZZ [18] protocol is being utilized for serving Web 3.0 content (User Interface [UI] and User Experience [UX]).

6. Rating system

Tresaro's rating system is based on the active properties of the marketplace participants (functional peers). Any functional peer is being represented by its specific rating (described in ***Table I***), thus allowing assessment of peer's current service quality.
Ratings are being assigned automatically (direct assessment by an automaton) or manually (user feedback). The following set of additive rules by rating type is being proposed:

- *Transactional* (BUYER and SELLER) **[Semi-Automated]**
  - **+1** on successful Order
  - **+1** on winning a Dispute
  - **+1** on positive ***licensed*** user feedback
  - **0** on revoked/cancelled Order
  - **-1** on losing a Dispute
  - **-1** on negative ***licensed*** user feedback
- *Charitable* (CHARITY and CROWDFUNDING) **[Semi-Automated]**
  - **+1** on successful Order with charity fee < 75% of the Order value
  - **+2** on successful Order with charity fee 75% of the Order value
  - **-1** on negative ***licensed*** user feedback
  - **+1** additional rating upon being licensed CHARITY or CROWDFUNDING
- *Arbitration* (ARBITER) **[Automated]**
  - **+1** on voting
  - **+1** additional rating upon being part of the MAJORITY vote
  - **-1** on vote timeout
- *Carrier* (CARRIER) **[Semi-Automated]**
  - **+1** on receiving an ITEM for shipping
  - **+1** on ITEM delivery
  - **+1** on winning a Dispute
  - **+1** on positive ***licensed*** user feedback
  - **0** on revoked/cancelled Order
  - **-1** on losing a Dispute
  - **-1** on negative ***licensed*** user feedback
- *Server* (SERVER) **[Automated]**
  - **+1** on providing specific chunk of data upon request
  - **+1** on storing specific chunk of data for given time
  - **+1** for being available for a day
  - **-2** for being offline for more than $^1/_6$ of a day (4 hours). Accounted per day
  - -**10** on pretending to store a specific chunk of data for given time, but not doing it. This rating is assigned per request

- 1000 after a successful number of cheque waivers led to exceeding specific overdraft (if any)

- 1000000 AND NETWORK DISCONNECTION on consecutive overdraft excesses to 10 or more different SERVER nodes

- 1000000 Node is being disconnected from the network. It's security stake is being shared between the remaining nodes

- *KYC* (KYC NODE) **[Semi-Automated]**
  +10 for licensing
  +1 on positive ***licensed*** user feedback
  -1 on negative ***licensed*** user feedback

7. Optional Arbitration System (OAS)

Tresaro's OAS is based on a core of special purpose functional peers, called ARBITERs. Any ARBITER is a **licensed** node, who declares it's availability for service time and is awarded and penalized upon successfully fulfilling or not its duties. ARBITER who misses the vote time frame or refuses to vote when being chosen for the voting polls is being penalized with rating subtraction. Smaller or negative ratings result in rare chances of vote participation or completely being disconnected from the network.
ACTIVE ARBITERs are the ARBITER nodes, responding positively when asked if willing to vote at any particular moment. Such a nodes are chosen semi-randomly (semi, because choosing with priority from the nearest local vicinity), which prevents organized votings, such as *lynch mobs* and *syndicates*.
Every arbitration poll is being funded by a smart contract-insured security deposit, issued by the BUYER upon requesting an **Order**. The funds are being split as $^2/_3$ are given for the MAJORITY vote to split and $^1/_3$ to the MINORITY vote.

Arbitration Poll Qualifications Method

Choose random N + N (N is an odd number) ACTIVE ARBITER nodes in the direct kademlia vicinity (least kademlia routing *distance*) of the SERVER node performing the Arbitration Poll. Let *weight* be an arbitrary number between 0.1 and 10, associated with the rating and individually chosen by the SERVER node performing the polls. Let's sort the resulting 2 * N nodes, by utilizing the *Priority function*:

$$(1)\ PRIORITY_{node} = rating_{ARBITER} * weight \div distance$$

The *Priority function* is used to resolve a list of desirably sorted ARBITER nodes. If $weight < 1$, the *distance* term will proportionally take over, while otherwise the $rating_{ARBITER}$ term will be more relevant. Higher distances are more tolerated with higher weight values.

An ACTIVE ARBITER is considered ARBITER node, who is available at the voting period. ARBITER nodes explicitly fix their expected availability hours and days. Unavailability or bypassing a vote causes rating penalty and no commission for the faulty node.

The value of N is obeying $N \sim J\ Escrow^{ARBITER}$; $N \geq 7$, that is - N is dependant on the total *Arbitration Commission*, issued by the BUYER and/or SELLER nodes.

Any ARBITER node group of K nodes with the same *rating* is then divided into two subgroups G_1; G_2 of L (G_1 , G_2) = K ÷ 2 ARBITER nodes. If $L \bmod 2 \neq 0$ (e.g. *L* is not a whole number), then $L\ (G_A) = (K + 1) \div 2$; $L\ (G_B) = (K - 1) \div 2$, where I^P => A = 1; B = 2 and I^N => A = 2; B = 1, I^P and I^N being the events of previous and next calculation of K. I^P always precedes and follows I^N and vice-versa (e.g. calculations of K follow this order of events - I^P; I^N; I^P; I^N; I^P...). All node subgroups G_1 form a *Primary Voting* Group, consisting of L_1 = J *L* (G_1) ARBITER nodes, the same being applied for all node subgroups G_2, forming a *Backup Voting Group*, consisting of L_2 = J *L* (G_2) ARBITER nodes. If $L_1 \bmod 2 = 0$ (meaning $L_2 \bmod 2 = 0$ as well), then the bigger group transfers the node with lowest $\text{PRIORITY}_{\text{node}}$ to the smaller group. *Primary Voting* Group are the nodes allowed to vote, while the ones from the *Backup Voting Group* are used for backup - in case of ***Primary Voting*** node failure of vote bypassing. The replacement procedure is based on the same or similar $\text{PRIORITY}_{\text{node}}$ value of the switching nodes, that is - whichever of the following is holding TRUE first:

$$PRIORITY_{node}^{SOURCE} = PRIORITY_{node}^{REPLACED};$$
$$PRIORITY_{node}^{SOURCE} > PRIORITY_{node}^{REPLACED};$$
$$PRIORITY_{node}^{SOURCE} < PRIORITY_{node}^{REPLACED}.$$

Arbitration Poll Voting Algorithm

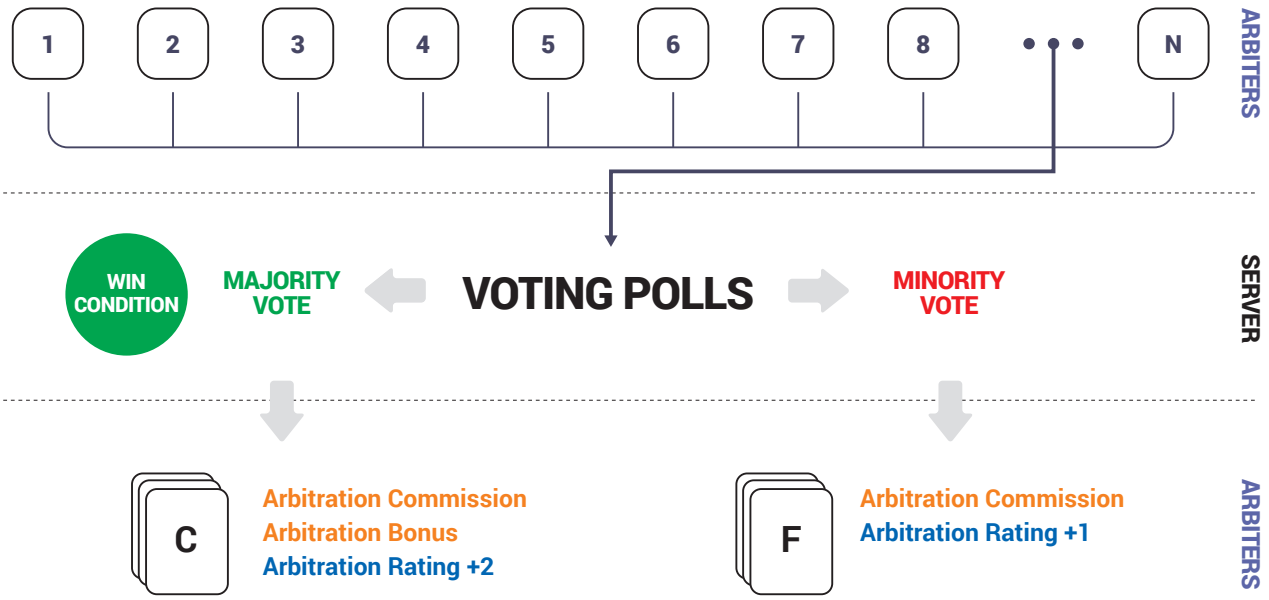


Fig. 5 *Arbitration Poll - Voting*

8. Carriers

Shipping of the physical goods is one of the most important aspects of the marketplace ecosystem. That's why for becoming a CARRIER node, one needs to apply as such to the KYC NODE. Applying for CARRIER requires presenting a set of documents to the KYC NODE, certifying the candidate as a legitimate carrier in a given region. Application should include guarantees for having a 24/7 interconnected SWARM CARRIER node server infrastructure, as well as particular region coverages and shipping rates.
Once CARRIER node is being approved, it is required to stake particular amount of security deposit tokens (proportional to the median of its shipping rates) to start servicing. All the service log is produced by communication with the SWARM network in form of **Order** state change requests. Delivery payments are provided after having an **Order** in SUCCESS state.

9. KYC

KYC Nodes are the authorities, who license (or refuse to license) requesting functional peers. If a peer doesn't pass the licensing which is mandatory for performing a function, it is being restricted to apply for the same license for a period of 1 month. KYC Nodes are expected to converge a lot of economic authority and to be completely credible and liable entities. That's why they are required to deposit the equivalent of **100,000 EUR** in **TRE** tokens as a security stake. Another mandatory requirement is continual service guarantees, that's it - KYC Nodes are expected to be online most of the time. If the licensing service is unavailable for a specific KYC Node for more than 4 hours per day for more than 3 consecutive days, a sanction of 10% of the stake is applied. Funds from this sanction are being equally shared between the rest of the KYC Nodes in the SWARM network.
Personal and (particularly) Business/Service identification in general is a time consuming process, which also requires manual labor, access to expensive assets and insuring certain guarantees. Having a licensed KYC partner like SBS gives the Tresaro project a critical startup core of guaranteed KYC Nodes, which will cover the initially expected service usage peaks.

IV. The TRE token - planning, distribution and economy

1. World Marketplaces and Charity - quick figures

Amazon's revenue for 2017 is estimated on $177.866 billion, selling 562.3 million of various products in its Amazon.com marketplace [22]. It has also shipped 2 billion third-party seller's items in 2016 [22].At the same time, charities in the UK have raised £9.1 billion for 2016/2017, 10% of which (£910 million) were spent on fundraising costs [23]. According to Forbes, similar amounts were raised for charitable gifts in the United States just for 2017 - around $10.2 billion [24].
These figures imply that an intersection between a marketplace and charitable fundraising,

and gluing, genuine idea, such as ***clutter***-based donations in a distributed marketplace, would generate substantial operational revenue - even in local markets, such as the United Kingdom. It has also the potential of a million-grade user base and helping billions worldwide by promoting charities and crowdfunding.

2. The Tresaro TRE token economy outline

The Tresaro distributed economy is mainly driven by the incentivisation mechanisms, described in detail in section **III.2 Functional structure; economic and fairplay incentivization**. To ensure functioning economy, Tresaro defines a ***utility*** token ***TRE***, with the following properties:

- ERC-20 compatible;
- Fungible and transferable;
- Fixed supply / Non-inflationary;
- Fractionally divisible.

As Tresaro is inherently a blockchain-agnostic solution, the ERC-20 compatibility is only in the context of the initially used Ethereum blockchain. The ***TRE*** token is purposed to ensure the following economic functions:

- Clutter valuation*;
- Decentralized economy incentives* - security stakes, deposits, commissions, overdrafts;
- Deal* instrument in the trades between BUYER and SELLER nodes;
- Fundraising* organisations synergy instrument (as a shared-asset value);
- Fundraising* donations valuation (as a shared-asset value);

Future Tresaro phases will consider the utilization of different backbone blockchains, supporting smart contract functionality similar to that provided by Ethereum, such as NEO[25] and Zilliqa [26]. This development vector would ensure further growth, generalisation and globalisation of the Tresaro marketplace solution.
The ***TRE*** token security stake escrows, service and end user rewards ensure a marketplace ecosystem, dominated by fairplay and marked with constant growth.

3. TRE token allocation, distribution and sale

- Token allocation and distribution terms follow:
- ERC-20 token: ***TRE***
- Issued tokens quantity: 500 million (500,000,000 ***TRE***)
- 10% (25,000,000 ***TRE***) reserved for incentivisation, rewards and exchanges
- 25% (100,000,000 ***TRE***) reserved for the Founders, locked for 1 year.
- 65% (325,000,000 ***TRE***) allocated for presale and public sale
- Sale Accept: ETH, BTC, BCH, NEO

- ***TRE*** Token nominal price: 0.0001 ETH
- Sales Soft Cap: 5000 ETH
- Sales Hard Cap: 25000 ETH
- Unsold ***TRE*** tokens (after the public sale): **Burned**

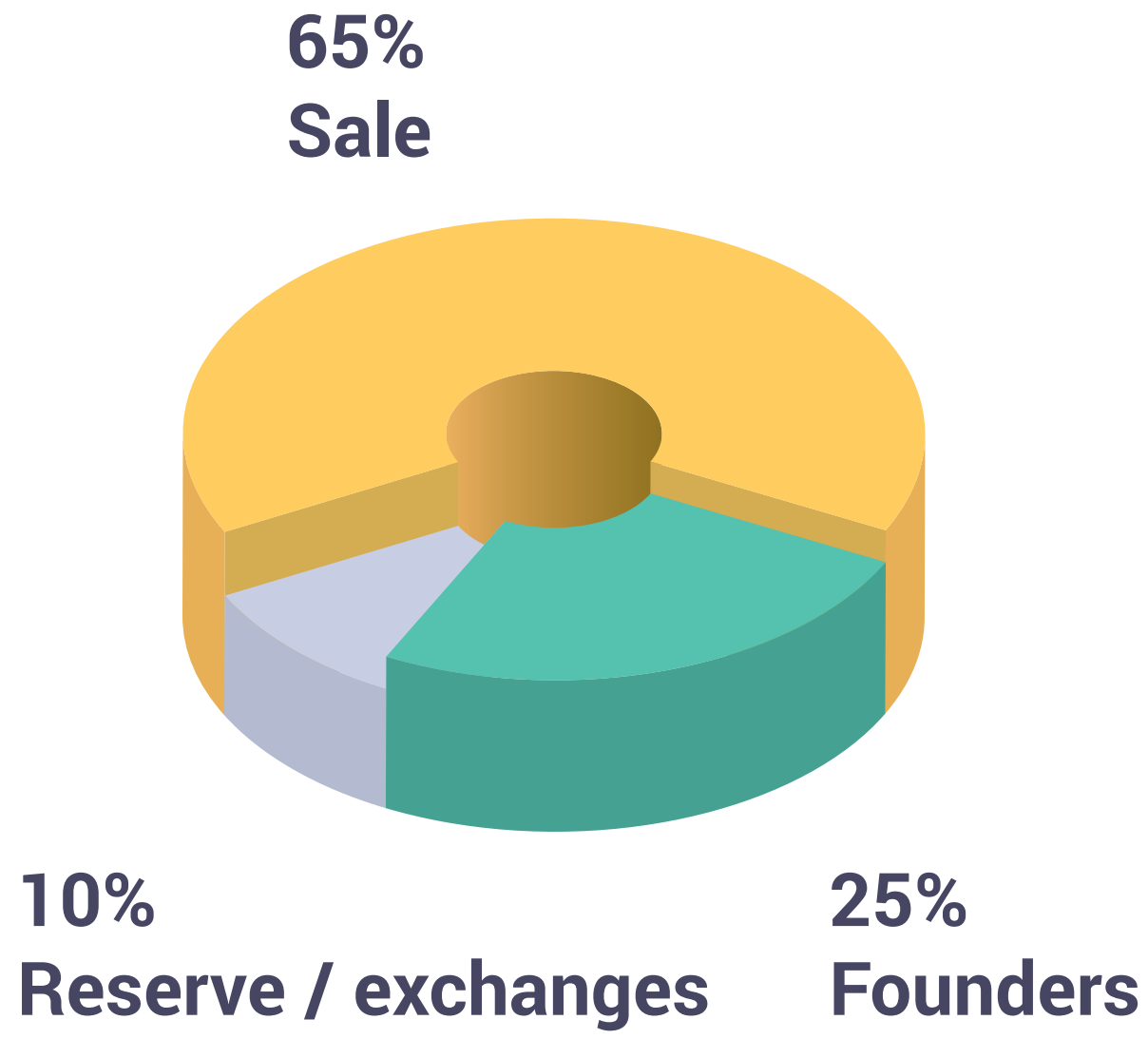


Fig. 6 *TRE token distribution*

***** ***TRE*** is ***utility*** token, thus '*deal*', '*valuation*', '*value*', '*fund*' and '*incentive*' are used in a barter context here.

4. Preliminary Roadmap

- **Q4 2017** - Tresaro Project Initiated
- **Q1 2018** - Fixed targets; PoC development started
- **Q2 2018** - Fundraising started
- **Q1 2019** - POC development finished
- **Q1 2019** - Deployment of the Tresaro marketplace Alpha
- **Q2 2019** - Consensus Event @NYC
- **Q4 2019** - Deployment of Tresaro marketplace

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- ***SWARM Service Network and Smart Contract Set***

EtherSphere

swarm

- ***Auction and Marketplace Smart Contracts***

Solidity

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