

# SMSCHAIN: a Decentralized SMS Gateway

## White Paper

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# Abstract

Blockchain technology finds its application and gradual adoption in various industries today, enabling inefficient proprietary centralized services to be replaced with decentralized peer-to-peer networks that rely heavily on verifiable computation.<sup>1</sup> The innovation of the blockchain has proven to be very successful within the fintech industry, more specifically, the innovation of public economic consensus by Satoshi Nakamoto in 2009.<sup>2</sup> The successful application of the blockchain technology in the telecommunications industry is yet to be developed, tested, and adopted.

SMSCHAIN is the first blockchain-based SMS Gateway solution that provides a reliable, decentralized global SMS delivery network, enabling mobile subscribers and SMS Aggregators to act as Miners, making useful work by delivering messages and mining Short-Message-Tokens (SMSTO) as a reward.

Despite the overall global decline of peer-to-peer SMS,<sup>3</sup> most subscribers still pay monthly fees for SMS bundles that are rarely used. In contrast, the demand for automated Application-To-Person SMS is constantly increasing, and is expected to grow at least \$70 billion by 2020.<sup>4</sup>

In this white paper, we introduce the novel concept of Proof-of-Delivery as a type of Proof-of-Work. However, there is no need for Miners to waste computational resources to be rewarded. The useful work is considered to be the message delivery to the mobile network subscribers for sending entities of the network. Proof-of-Delivery is provided with the help of embedded testing infrastructure, as well as testing Miners of the network.

As a result, the adoption of SMSCHAIN technology will provide SMS market members with new opportunities to exchange the traffic and mine tokens for an incentive. This technology could combine small SMS Aggregators and Units with limited regional coverage for one global network, as well as provide the market tools to trade the traffic. Plus, global market makers who have any coverage could deliver the messages internationally for reasonable costs, regulated by the SMS market protocol.

Easy deployment and globalisation, equipment and maintenance costs reduction, as well as sufficient reduction of the promotional costs and the assurance of contract and payment compliance, are also discussed thoroughly within this white paper.

**Note: SMSCHAIN research is currently an active progress. The updated versions of this white paper will appear at: [https://smschain.org/wp\\_smschain.pdf](https://smschain.org/wp_smschain.pdf). For comments and suggestions, please contact us at [info@smschain.org](mailto:info@smschain.org).**

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1 "Blockchain Top Trends In 2017". The Innovation Enterprise by James Ovenden, 4 December 2016.  
URL: <https://channels.theinnovationenterprise.com/articles/blockchain-top-trends-in-2017>

2 "The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology" by William Mougayar and Vitalik Buterin, 9 May, 2016

3 Estimates based on Nielsen (cf. statisticbrain.com), press releases, International Telecom Union (ITU) and news articles

4 Zion research analysis  
URL:<https://globenewswire.com/news-release/2017/05/23/995205/0/en/Global-A2P-SMS-Market-Size-Will-Reach-USD-70-0-Billion-by-2020.html>

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# 1 Introduction

## 1.1 Definitions

- 1 **SMSCHAIN Delivery Network (SDN)** is a blockchain-based SMS delivery network, operated and maintained by Nodes' hardware and software. The members of the decentralized Delivery Network data interchange consists of sending and delivering entities.
- 2 **Node** is a member of the network who helps to keep the blockchain in working condition by servicing the hardware and software infrastructure of the blockchain.
- 3 **Sending Entity (SE)** is a member of the network who sends text messages to end receivers and pays rewards for it in tokens.
- 4 **Proof-of-Delivery** is a scheme that allows members of SDN to verify real delivery of text messages to end receivers. Proof-of-Delivery is provided by Testing Entities, which are capable of receiving test messages and forwarding Proof-of-Delivery results back to the network. Delivering entities are required to submit their proofs to the blockchain in order to receive rewards.
- 5 **Miner** is a member of the network who makes useful work for the SDN either by delivering text messages to end receivers or by participating in testing infrastructure in exchange for rewards in tokens.
- 6 **SMSCHAIN Application** is the Android-based application, which allows Units to identify themselves, choose their preferences based on the type of SMS traffic they want to transmit, set daily traffic limits, and select payment information. The application can provide the functions of test unit entity as well.
- 7 **Unit** is a Miner represented by a member of the SDN. They have access to an unused or unlimited text messages bundle with SMSCHAIN application installed on a smartphone, delivering the text messages using the application in exchange for a reward.
- 8 **Test Unit** is a Miner represented by a member of the SDN with the SMSCHAIN application installed on a smartphone, receiving and handling the messages from the test infrastructure and sending the details about received message back in exchange for a reward. Testing Unit and Unit can be the same member of the network carrying both functions simultaneously.
- 9 **Delivering SMS Aggregator** is a Miner and a member of the network who has proprietary SMS gateway delivery channels and contracts with mobile network operators and other SMS aggregators. They are interested in delivering SMS traffic for sending entities through the channels in exchange for a reward. Delivering SMS aggregators are typically regional bulk SMS providers.

**10 SMSTO** is an ERC20-compliant token,<sup>5</sup> which is used for mutual settlements between members of the network.

**11 Sending SMS Aggregator** is a Sending Entity and a member of the network who is interested in sending their own SMS traffic, as well as their customers' traffic, through the SDN. Sending SMS aggregators are typically international SMS gateway<sup>6</sup> providers.

**12 Sending customer** is a sending entity represented by a member of the network who is interested in sending their own text messages to the end receivers, either directly through the network connection, or with the help of Sending SMS Aggregators as one of their customers.

## 1.2 Acknowledgment, Acceptance of all Risks and Disclaimer of Warranties and Liabilities

- 1 SMSCHAIN, the group of developers, and other personnel that is now, or will be, employed by, or contracted with, SMSCHAIN (the "Development Team") are the creators of the open-source blockchain-based platform known as the SMSCHAIN. The purpose of the blockchain is to facilitate the exchange of available text messages between supplier ("Unit") and traffic consumer ("SMS Aggregator").
- 2 The members of the network who maintain the blockchain are referred to as "Node(s)." The Node maintains the operability of the network. In exchange, the Node receives a commission for each successful transaction. The commission will be due from the deductible remuneration of Unit.
- 3 The Unit expressly knows and agrees that the Unit is using the SMSCHAIN blockchain at the Unit's sole risk.
- 4 The Unit represents that the Unit has an adequate understanding of the risks, usage, and intricacies of cryptographic tokens and blockchain-based open source software, SMSCHAIN.
- 5 The Unit acknowledges and agrees that, to the fullest extent permitted by any applicable law, the disclaimers of liability contained herein apply to any and all damages or injury whatsoever caused by or related to risks of, use of, or inability to use, SMSCHAIN under any cause or action whatsoever of any kind in any jurisdiction, including, without limitation, actions for breach of warranty, breach of contract or tort (including negligence) and that neither SMSCHAIN nor the development team shall be liable for any indirect, incidental, special, exemplary or consequential damages, including for loss of profits, goodwill or data.

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5 ERC20 Token Standard. URL: <https://github.com/ethereum/EIPs/blob/master/EIPS/eip-20-token-standard.md>

6 SMS Gateway. URL: [https://en.wikipedia.org/wiki/SMS\\_gateway](https://en.wikipedia.org/wiki/SMS_gateway)

- 6 In particular, the Unit should not use the SMSCHAIN where its use may cause a Unit to breach any other legal obligation, including contractual obligations, which it owes to a third-party. SMSCHAIN neither invites nor accepts any legal responsibility of any kind for ensuring compliance with contracts with third parties.
- 7 Some jurisdictions do not allow the exclusion of certain warranties or the limitation or exclusion of liability for certain types of damages. Therefore, some of the above limitations in this section may not apply to an Unit. In particular, nothing in these terms shall affect the statutory rights of any Unit or exclude injury arising from any willful misconduct or fraud of SMSCHAIN.
- 8 This document is for informational purposes only and does not constitute an offer or solicitation to sell shares or securities in SMSCHAIN or any associated company. Any such offer or solicitation will be made only by means of a confidential offering memorandum and in accordance with the terms of all applicable securities and other laws.
- 9 SMSTO Tokens are not securities, shares, or investments. They are utility-based tokens designed to work in our ecosystem as the means of mutual settlements between members of the network, as well as for the formation of deposits to obtain licenses for Units and Nodes in order to be able to operate them. The SMSTO tokens provide you with no passive income and have a purely functional utility nature.

# 2 Project Overview

## 2.1 Application to Person (A2P) SMS

An Application To Person (A2P) SMS is sent from an application – typically a web app – to a mobile subscriber.<sup>7</sup>

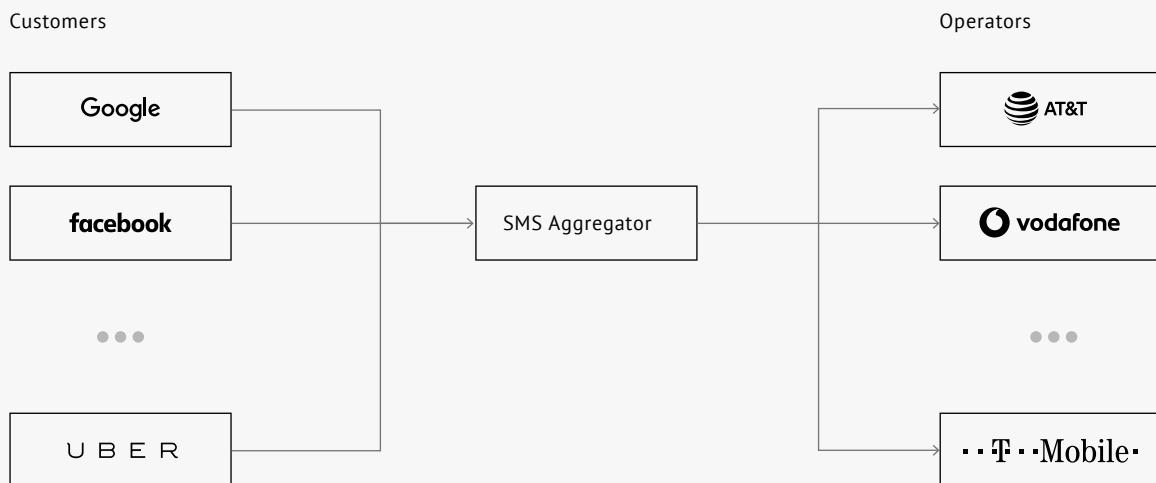


Fig 1. A2P SMS

### TYPES OF A2P (APPLICATION TO PERSON) SMS

- SMS notifications;
- SMS-based two-factor authentications;
- Automatic booking confirmations;
- One-time passwords;
- Loyalty programs and marketing messages.

### COMPANIES WHICH USE A2P SMS

Companies which use A2P SMS for two-factor authentication purposes and one-time passwords include **Google**, **Facebook**, **Instagram**, **WhatsApp**, **Twitter** **Airbnb** etc.

### EXAMPLES OF A2P SMS

- **Google:** G-924089 is your Google verification code.
- **Instagram:** Use 106 837 to verify your Instagram account.
- **Twitter:** Your Twitter confirmation code is 788851.
- **Airbnb:** Airbnb security code: 1077. Use this to finish verification.

<sup>7</sup> "What is the difference between A2P and P2P SMS?" by Plivo. URL: <https://www.plivo.com/faq/sms/a2p-sms-p2p-sms-definition-use-cases/>

## 2.2 Current SMS Gateway Solutions on the Market

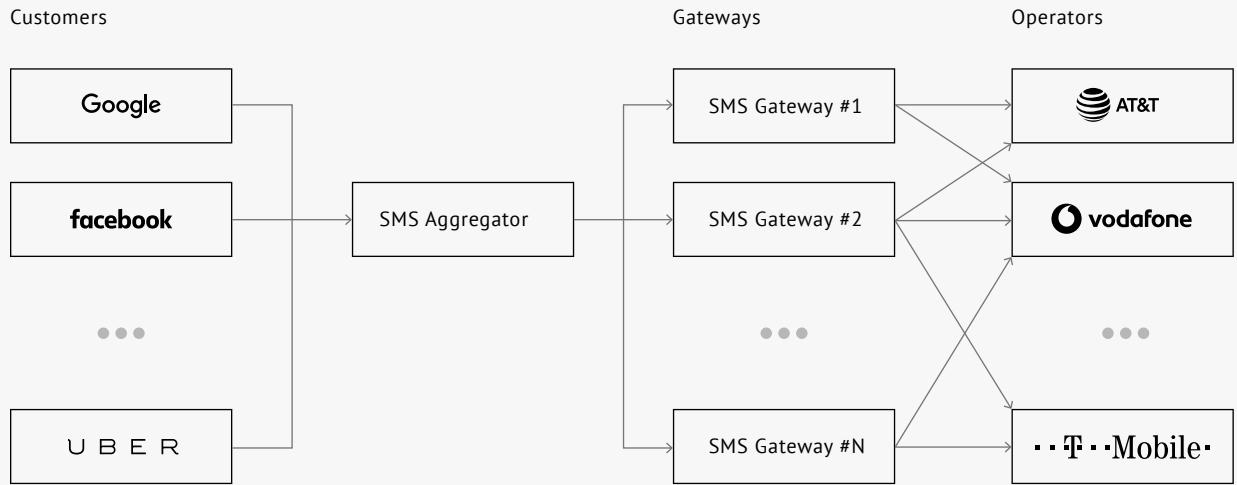


Fig 2. Current SIM-based Solutions

### SIM-BASED SOLUTIONS

At the moment, most SIM-based SMS traffic is carried out via GSM SIM gateways, which are pieces of hardware with many SIM slots that can send text messages. This equipment is typically hosted and maintained by professional SMS Aggregator companies in the countries where they are geographically located. It is difficult to deploy GSM SIM gateways in countries where SMS Aggregators are not physically present.

### MAIN DISADVANTAGES

- Expensive and heavy equipment
- Requires geographical presence in a country to handle SIM cards
- Requires continuous maintenance
- Not all suppliers and consumers comply with the terms of the contracts
- Some consumers end up not paying invoices after sending messages
- Individual contracts are needed with each client/supplier. It takes many years to build a good network of suppliers. Hence, not everyone has access to all available offers on the market instantly.

## **SMS AGGREGATORS**

Bulk SMS providers predominantly utilize SMPP protocol in order to exchange SMS messages among themselves for connecting with mobile network operators. SMS aggregators terminate SMS traffic via various channels, which may include SIM-based gateways or direct connections to mobile network operators. This approach requires a signed commercial agreement with all individual suppliers and customer

## **MAIN DISADVANTAGES**

- SMPP protocol does not have embedded quality control, which frequently results in technical delivery problems.
- Cross-border trade is difficult to manage due to language barriers as well as fiat currency transfer and conversion fees.
- Individual contracts have to be signed with each member, which slows down the interconnection process significantly.
- Smaller regional players do not have resources to promote their brand internationally and offer their services outside of their country.
- Unfair behaviour of market players frequently brings troubles into settlement procedures and obligations.

## **2.3 The Essence of the Project**

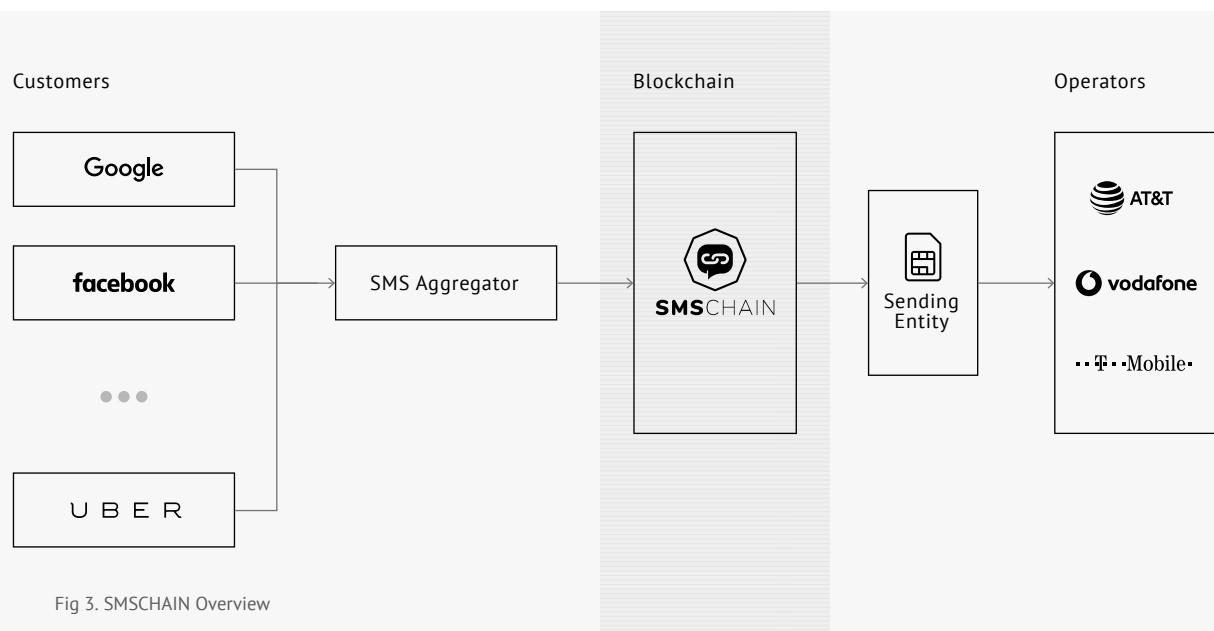
### **WHAT SOLUTION WE ARE CREATING**

The intent of the SMSCHAIN project is to create a reliable interconnected infrastructure between Telecom companies that would like to send A2P SMS and Miners who would like to exchange their delivery capacity for a reward. It is a fully decentralised system in which any Miner can participate and benefit from by installing our software on either an Android phone, GSM SIM gateway, or integrate existing SMS Gateway with the blockchain infrastructure.

Any person in the world who has an unlimited SMS bundle or unused text messages can become a Unit Miner by installing SMSCHAIN application on their Android smartphone.

There are many SMS aggregators who have regional reliable coverage and are looking to sell their routes to the external market, but do have not enough funds to start a promotional campaign. It is very profitable for such companies to join the SDN and contribute to global SDN coverage for a reward as well as gain access to the decentralised global market at no promotional costs.

Decentralisation will also significantly increase the efficiency of SIM gateways, allowing networks to be easily scaled up at a low cost while providing global coverage, which is impossible to achieve with current solutions.



## SHORT SUMMARY OF OUR MAIN GOALS

- To create an infrastructure that allows Miners to earn SMSTO in exchange for the text messages delivery service they provide
- To create an infrastructure that allows Miners to exchange SMSTO for provided SMS delivery capabilities by Miners
- To create independent blockchain SMS Market protocols that allow Sending Entities and Miners to trade with each other
- To create a decentralized solution of mutual agreements based on SMS Market and Billing procedures between the network members in order to ensure reliable reimbursement in SMSTO to Miners and Nodes
- To provide autonomous and independent testing infrastructure that evaluates the quality of Miners and builds the rating scores for them.

## BLOCKCHAIN INFRASTRUCTURE

SMSCHAIN is a blockchain infrastructure that consists of Nodes, Miners and Sending Entities software, billing, decentralized token exchange, as well as software for SMS aggregators to participate in SMS market procedure and to send SMS transactions. For Units, SMSCHAIN provides an Android-based application that does not require any special equipment.

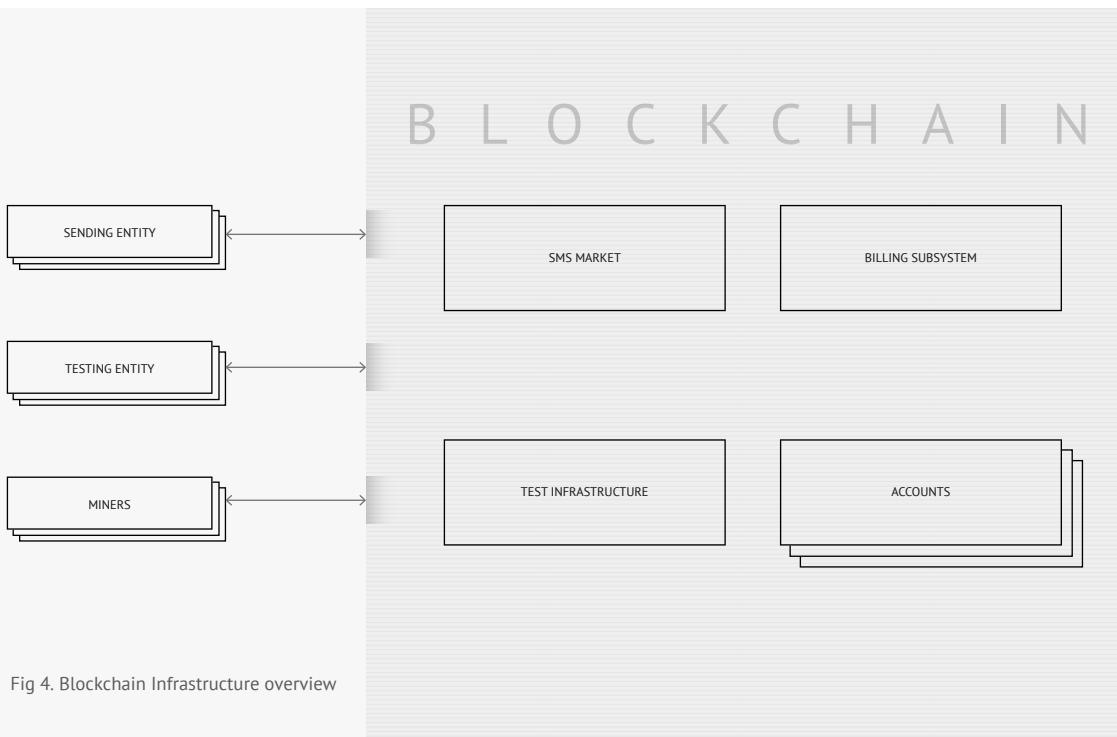


Fig 4. Blockchain Infrastructure overview

Existing public blockchains, such as Ethereum and Bitcoin, are too slow in terms of throughput and too expensive in terms of commission for transactions because it is comparable to the cost of sending SMS. In order to solve this challenge, we plan to build our solution using a sidechain model<sup>8</sup> with high transactions throughput, whose security and auditability will be ensured by the periodic anchoring to a public blockchain, such as Bitcoin.

Proof of work, on which the Bitcoin blockchain is based,<sup>9</sup> is made predominantly redundant on sidechains. This approach allows the increase of transaction speed and throughput, as well as reduction of the cost of operations. In order to ensure sufficient scalability, speed and low operation costs, the internal blockchain technology will be based on one of available open-source blockchain frameworks like Exonum,<sup>10</sup> Hyperledger Fabric<sup>11</sup> or other similar frameworks available in the market.

<sup>8</sup> Bitfury Group (2015). Public versus private blockchains. Part 1: permissioned blockchains  
URL: <http://bitfury.com/content/5-white-papers-research/public-vs-private-pt1-1.pdf>

<sup>9</sup> Satoshi Nakamoto (2008). Bitcoin: a peer-to-peer electronic cash system URL: <https://bitcoin.org/bitcoin.pdf>

<sup>10</sup> Exonum. URL: <https://exonum.com>

<sup>11</sup> Hyperledger Fabric. URL: <https://www.hyperledger.org>

## NODE LICENSE

It is required to keep at least 15,000 SMSTO in order to acquire Node operational license.

Every SMS transaction carries fee expenses, which are distributed among the Nodes as the reward for operational costs. The more SMSTO balance a Node has, the more fee it will take during the distribution.

If a Node has less than 15,000 SMSTO in its balance, they cannot participate in distribution.

## PROBLEMS SMSCHAIN IS SOLVING

- Cuts special equipment and high maintenance costs for Units members
- Provides much easier deployment globally
- Allows easier international trading
- Embedded testing procedure ensures high quality and reliability
- Provides stable, low-cost SMS routes to Aggregators
- All members of the network, including sending entities and Miners, will comply with the terms and conditions of SMS market and billing procedures, allowing complete automation
- All payments will be regulated by Billing Procedures, so all Miners and Nodes will be guaranteed receipt of payment if the Delivery Agreement has been fulfilled.
- There is no need to sign separate physical contracts with multiple SMS consumers or suppliers, since everything will be regulated by SMS Market and Delivery Agreements

## HAVE WE DONE THIS BEFORE?

The team behind the project has over 10-years of experience in the Telecom SMS industry, namely working as an international SMS Aggregator, as well as functioning as a large consumer of SMS services purchased from leading mobile network operators. The team has developed its own proprietary SMS Aggregator infrastructure, which is currently used to deliver hundreds of millions of text message worldwide monthly.

The team has also successfully launched an SMS quality assurance service that is currently being utilized by most top international SMS service providers in the world. The SMS quality assurance infrastructure will be used as a prototype for Testing Subsystem. It is based on similar existing app which has nearly 100,000 downloads. Its current users capacity could be the first Testing Miners.

# 3 Blockchain Infrastructure

## 3.1 Proof-of-Delivery

Proof-of-Delivery is considered as a useful Proof-of-Work in our network. This means that our miners have no need to waste computational resources. Instead, they must do the work on the text messages delivery.

Proof-of-Delivery is provided with embedded Testing infrastructure that consists of Testing Subsystem, which mixes test text messages into live traffic. The test messages have Testing Entities phone numbers as the destination numbers. Testing subsystem randomly selects the test numbers and mixes in the test messages into the Delivery Agreement messages batch.

Such an embedded testing process is a way to prove that the miner works well and doesn't abuse the system by providing fake delivery receipts.

### TESTING SUBSYSTEM ABUSE DETECTION

If the Testing Subsystem recognizes a miner to be abusing the system according to one of preset criterias, the system stops sending all the delivery agreement parts that are handled by this miner. In such a scenario, the system seeks for a new Miner to deliver the rest of messages. All of the messages in the Delivery Agreement part that were already sent are re-queued and the reward is redistributed to the newly selected Miner.

Proof-of-Delivery is ensured by sending the SMS traffic to Testing Entities that are capable of receiving text messages and forwarding the receipt back to the blockchain.

### TESTING SUBSYSTEM PENALTIES

In cases of violation of delivery quality standards, the Testing Subsystem reduces the Miner's rating to a lower level. That is the quality index for the Miner, which affects the SMS Market competitive abilities as well as other factors during the matching procedure. If the miner works well in the future, then his/her quality index could increase again.

At the same time, the fee is increased for the Miner with low quality indexes because the Testing Subsystem increases the amount of the testing traffic towards the Miner. The reward will increase when the miner regains its reputation.

The common rule could be written as follows: the higher quality index a miner has, the lower level of testing traffic is needed, and therefore the fee is lowered while the reward is increased.

It is worth mentioning that a Miner receives the rewards only when the Delivery Agreement Part has been successfully completed and there are no Testing Subsystem penalties

## 3.2 SMSCHAIN Protocol

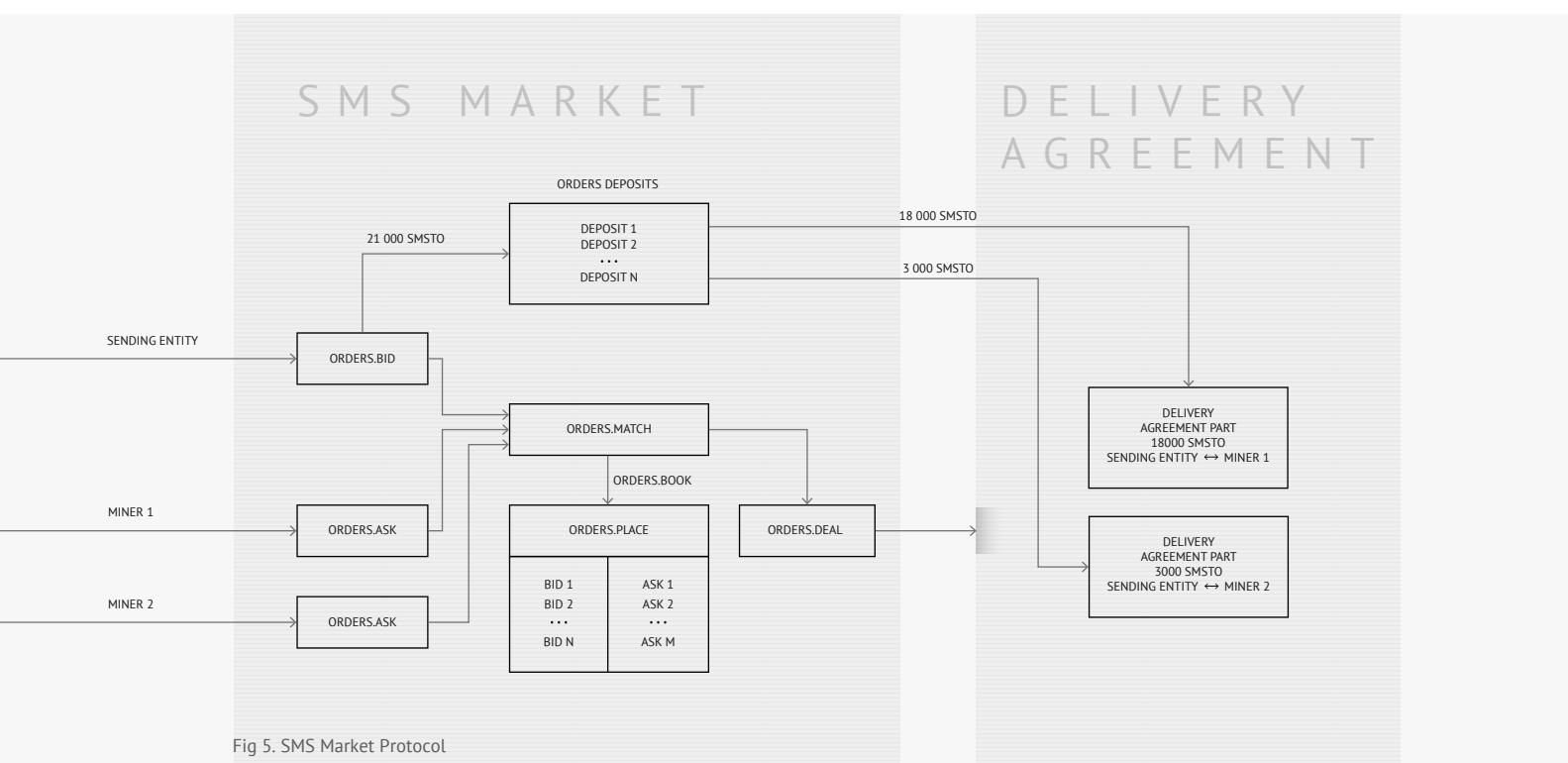
**SMSChain Protocol** is a protocol built on-top of the blockchain infrastructure with a native token. Sending Entities distribute the tokens for sending text messages and the Miners earn tokens by delivering the messages to the end receivers.

SMSChain Protocol consists of 4-subprotocol levels, which define the rules and algorithms for different parts of the distributed delivery network operations:

- SMS Market Protocol (Orders)
- Message Flow Protocol (Messages)
- Antifraud/Anti-Spam Protocol
- Billing Protocol (Billing)
- Testing Infrastructure Protocol (Test)

## 3.3 SMS Market Protocol (Orders)

Defines how the **Orders** from Sending Entities and from the Miners are handled and matched.



Sending entities send **Orders.Bid** transactions to the blockchain. This transaction contains the funds for the SMS campaign as well as the SMS campaign parameters and requirements. Every **Orders.Bid** transaction should define the desired testing depth for the campaign plus the fee that would affect the priority of the order during matching procedure.

The Sending Entity should set the fee for this transaction, which affects the order priority during **Orders.Match** procedures and provides the funds for the desired test inspection level (a detailed description is in the Testing Infrastructure protocol section).

When transaction is handled by the blockchain, the **Orders.Match** smart contract takes place.

### THIS SMART CONTRACT ACTS AS FOLLOWS:

- Looks for **Ask** positions in the **Orders Book** with the suitable parameters
- If nothing suitable is found, a security deposit is made into **Orders Deposits** and the **Bid** record is inserted into the **Orders Book** to wait for incoming suitable **Orders.Ask** transaction
- If found one or more **Ask** positions for the **Bid** parameters are found, the **Orders.Deal** procedure takes place, creating the **Delivery Agreement** record.

This record in most cases could consist of several **Delivery Agreement Parts** for different miners if there is no suitable **Ask**.

The funds from the security deposit for the SMS Campaign are distributed within the parts according to the traffic.

### MINERS AND ORDERS.ASK

Miners create **Orders.Ask** transactions in the blockchain.

**Orders.Ask** transactions should define available directions for delivery, desired costs for the traffic, and requirements to the traffic content among other parameters.

When **Orders.Ask** is being handled by the blockchain, the **Orders.Match** smart contract starts processing accordingly:

- Looks for **Bid** positions in the **Order Book** with the suitable parameters
- If there is nothing suitable in the **Order Book**, then **Ask** record is created in the **Orders Book** to wait for suitable incoming **Orders.Bid** transactions
- If any suitable **Bid** record is found, then **Orders.Deal** creates necessary **Delivery Agreements**

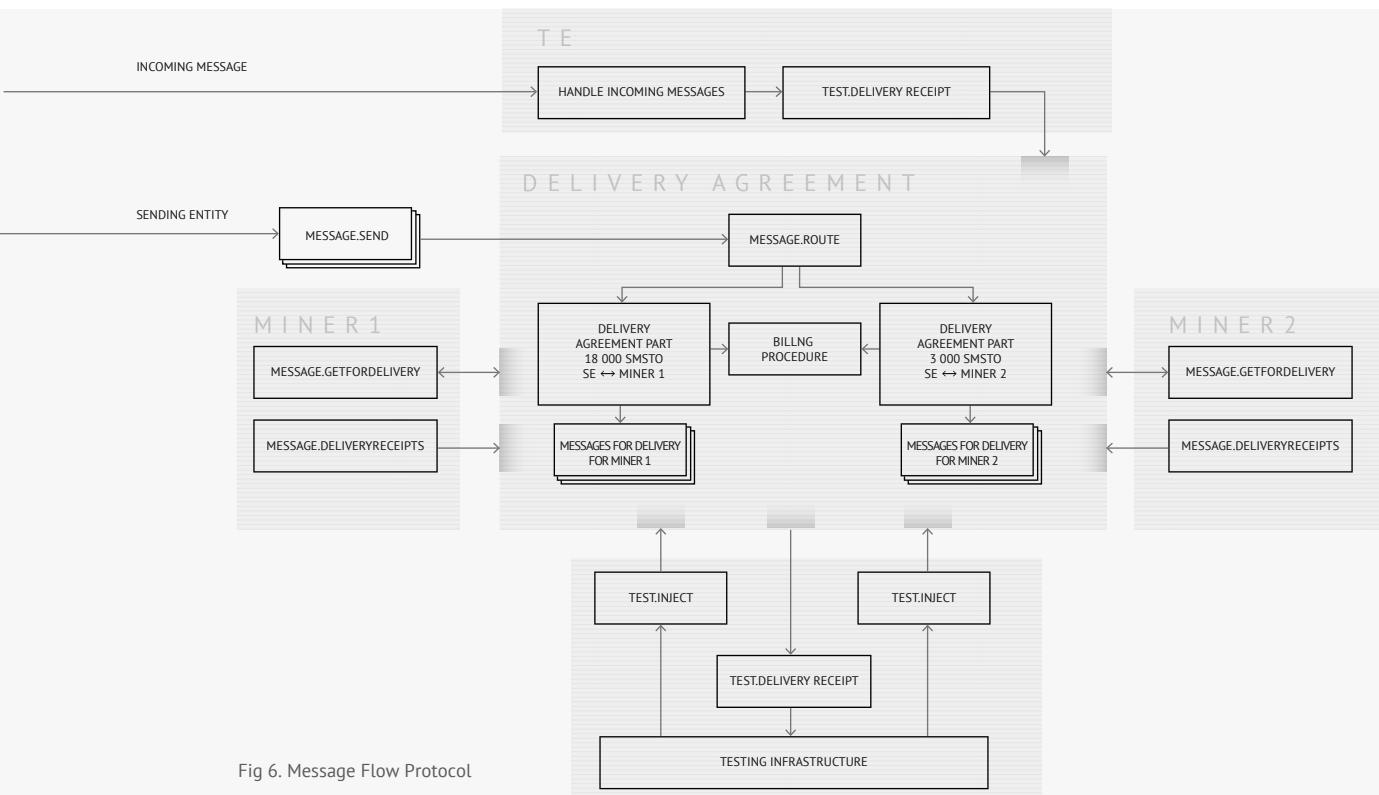
The priority of the **Orders.Ask** position is defined by **Quality Index** of the Miners' Ask and it's **balance amount** while **Orders.Match** performs.

Finally, every **Delivery Agreement Part** record is associated with Sending Entities and a Miner, containing the amount of tokens as a security deposit to cover the delivery costs. Other parameters of the traffic to be sent in scope of the agreement include destinations list, delivery costs, etc.

These records are used further during billing, routing, and testing procedures.

## 3.4 Message Flow Protocol (Message)

Message protocol defines the rules as to how the messages should be sent, routed, handled, and delivered by the components and the members of the network.



When Delivery Agreements are arranged, the Sending Entities can send the text messages using the **Messages.Send** transaction.

When a **Messages.Send** transaction arrives in the blockchain, the **Message.Route** smart contract starts processing.

## **THIS SMART CONTRACT ACTS AS FOLLOWS:**

- It looks for corresponding **Delivery Agreement Parts**
- The funds are locked with the help of the **Billing Procedure**

The prepared text message is stored as message for delivery record in the corresponding **Miner batch**

- Miners take the messages for delivery using **Message.GetForDelivery** request to the blockchain, receiving available messages batch with the response
- Miner delivers the messages and sends **Message.DeliveryReceipt** for the delivered messages
- Delivery receipts trigger the **Billing Procedure** to distribute the reserved funds to the **Accounts**

## **3.5 Antifraud/Anti-Spam Protocol**

During the work on the messages delivery, Miners may receive fines for violation of anti-fraud or anti-spam conditions if they were stipulated in a Delivery Agreement Part. This kind of activity is part of arrangement issues and depicted in the section security and risks.

## **3.6 Testing Infrastructure Protocol (Test)**

Testing infrastructure protocol defines the routines to detect abusive behaviour of the unreliable Miners.

Every SMS Campaign is initialized with an Orders.Bid transaction, equipped with desired testing inspection levels as one of the parameters.

The higher the level, the higher minimal transaction fee is required to send it and receive acceptance by the blockchain

### **QUALITY INDEX**

Each miner has a delivery Quality Index. This index defines its personal test intensity and as a result, it affects the personal fee amount for the Miner.

The lower the quality, the higher fee value is set for the Miner.

Testing infrastructure mixes the test messages addressed to the **Testing Entities** of the network into the **Sending Entities** traffic, and receives the proofs of delivery for each miner.

These test messages arrive to the blockchain with **Test.Inject** transactions. Testing entities receive the test messages from the mobile operator network and send the proof of delivery with **Test.DeliveryReceipt** transactions.

The **Test.DeliveryReceipt** arrives to the testing infrastructure and the infrastructure makes the matching **Test.DeliveryReceipts** from testing entities vs. **Message.DeliveryReceipts** from Miners.

If the matching is negative, then the testing infrastructure decreases the quality index of the Miner and starts **Billing.Refund** procedure. The procedure refunds the Miner's deposit back to the **Delivery Agreement Part** record.

## 3.7 Billing Protocol (Billing)

Billing protocol defines the rules for token distribution during SMS campaigns. Let's assume that the cost for delivery of a text message according to the Delivery Agreement Part equals 1 SMSTO. Therefore, the whole cost of the Delivery Agreement Part is equal to 18,000 SMSTO.

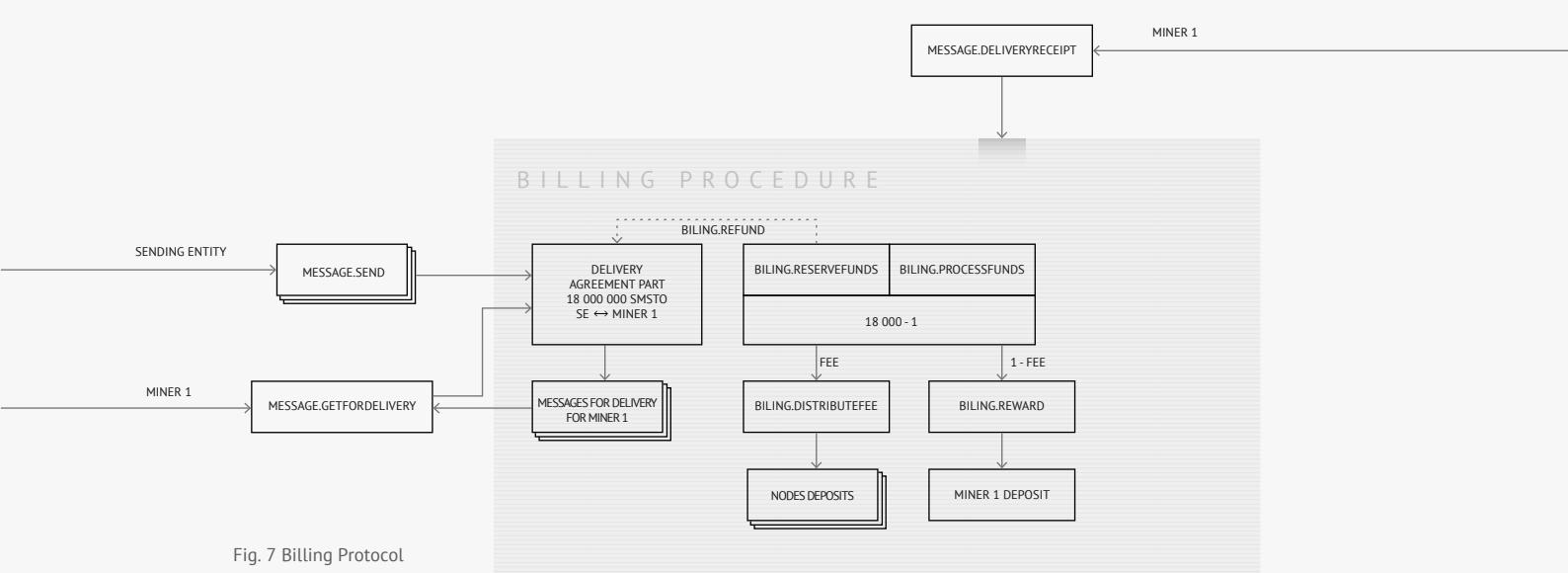


Fig. 7 Billing Protocol

When a **Message.Send** arrives from a **Sending Entity** after the **Message.Route** smart contract is executed, the **Billing Procedure** takes place.

As the part of delivery agreement procedure, it reserves the funds of 1 SMSTO for the **Delivery Agreement Part** record. The messages arrive in delivery batches to Miners.

Miners deliver the messages to the mobile network subscribers and send **Message.DeliveryReceipt** transactions.

## THE BILLING.PROCESSFUNDS SMART CONTRACT

- The **Message.DeliveryReceipt** triggers the **Billing.ProcessFunds** smart contract, which is intended to distribute the reserved funds to beneficiary accounts.
- The funds are distributed with the help of the **Billing.DistributeFee** procedure distributing the Fee SMSTO amount among the Node deposits.
- The Miner1 Deposit receives 1 - Fee SMSTO. If the Delivery Agreement Part is successfully completed, then Nodes deposits and Miner1 Deposit move to the corresponding members' accounts.

Tokens will accumulate in the accounts of Miners, which have successfully completed a **Delivery Agreement Part**. It can be kept inside the blockchain or withdrawn via exchange.

The possibility of a partial execution of the **Delivery Agreement Part** is defined in the conditions of the **Orders.Bid** and **Orders.Ask** transactions, which were used by **Orders.Match** and **Orders.Deal** procedures. They are part of the **SMS Market Protocol**.

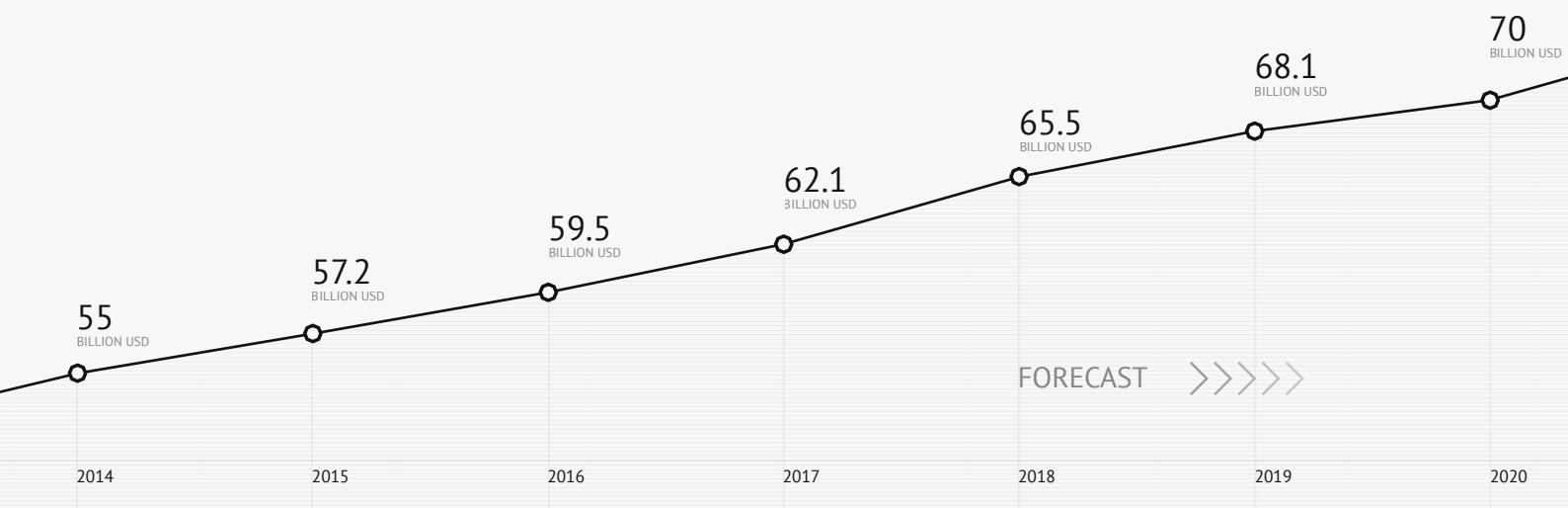
# 4 Financial Aspects

## 4.1 A2P SMS Market Size

The following statistics show the global A2P SMS market revenue from 2014 to 2017. In 2017, the revenue of the A2P SMS market is predicted to amount to 62.1 billion U.S. dollars.

The SMS A2P SMS market is expected to grow between 2017 and 2020, and reach 70 billion USD by 2020.<sup>12</sup>

Fig. 8 A2P SMS Market Size



### WHAT DETERMINES THE MARKET GROWTH

The market is primarily driven by strong growth in mobile subscribers around the world, particularly in emerging markets. North America and Europe are important regional markets for the global A2P SMS market. In the coming years, Latin America, the Middle East and Africa are also expected to witness significant growth in the A2P SMS market. A large number of senders and receivers depend on the A2P SMS market for banking, marketing activities, and making mobile payments.

<sup>12</sup> Zion research analysis  
URL:<https://globenewswire.com/news-release/2017/05/23/995205/0/en/Global-A2P-SMS-Market-Size-Will-Reach-USD-70-0-Billion-by-2020.html>

## 4.2 A2P SMS Prices for SIM-Based Traffic

### WHAT IS THE AVERAGE PRICE

Application to person (A2P) SMS market prices for SIM-originating traffic depend on several factors – primarily on the prices of direct connections within a country. The average price of a SIM-originating SMS route is between \$0.008 and \$0.02 per text message.<sup>13</sup>

### SOME EXCEPTIONS

There are some extreme cases in countries where SMS prices are very low, such as India, which has an average price per SMS of \$0.0012. In such countries, the SMSCHAIN will not be profitable for units or SMS aggregators. However, most countries do not fall within this category.

### THE MOST EXPENSIVE REGIONS ARE AS FOLLOWS

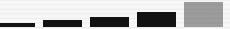
\$0.007-\$0.02	Europe
\$0.005-\$0.013	Russia and CIS
\$0.004-\$0.013	Asia
\$0.004-\$0.015	South and North America
\$0.004-\$0.013	Middle East and North Africa
\$0.004-\$0.01	Africa

## 4.3 How Much Can an Unit Earn?

### HOW MUCH CAN YOU SELL UNUSED SMS FOR?

The Units will be automatically rewarded for each successful SMS transaction processed at the rate equivalent to 0.004\$-0.015\$ per text message in SMSTO, depending on the market price. The Unit will have full control over the amount and type of messages transmitted via their device.

Below is an overview of how much a single Unit can earn on average based on the volume of text messages per device in USD equivalent of SMSTO:

LOW	AVERAGE	HIGH	MAXIMUM RECOMMENDED	MAXIMUM TECHNICAL CAPACITY
				
SMS/DAY 100	SMS/DAY 500	SMS/DAY 1 000	SMS/DAY 5 000	SMS/DAY 40 000
MONTHLY INCOME <b>\$15</b>	MONTHLY INCOME <b>\$75</b>	MONTHLY INCOME <b>\$150</b>	MONTHLY INCOME <b>\$750</b>	MONTHLY INCOME <b>\$6 000</b>

<sup>13</sup> Global A2P SMS Pricing Trends by Richard Dodds, 13 May, 2015. URL: <https://www.linkedin.com/pulse/global-a2p-sms-pricing-trends-richard-dodds/>

# 5 Security and Risks

## 5.1 SMS Traffic Content Security

### **PRE-APPROVED CONTENT, FULL CONTROL AND TRANSPARENCY**

SMS traffic content templates can be either pre-approved by all Miners individually or can be selected in categories, such as transactional notifications, one-time passwords, SMS marketing, etc. Each Miner will choose what type of messages to transmit through the app. This ensures transparency for Miners in terms of what kind of traffic is transmitted through their infrastructure or devices.

Settings related to the pre-approved text templates or categories of traffic, which will be transmitted, are to be stored in Nodes. Each Node will match the content sent by the SMS aggregator with the content that has been accepted by the Miners. This ensures that only the desired text messages are transmitted.

### **SPAM AND FRAUD PREVENTION**

This measure will prevent SMS spam and fraud, thereby eliminating unwanted text messages entirely. The owner of the SIM card – the Unit – will have full control over the process.

### **TEXT TEMPLATES**

Since 80%-90% of messages will be sent by no more than 20 top brands within the country, most of which are international services like Google, Facebook and Twitter, the scope of the template content should remain minimal.

## 5.2 Minimising Potential Risks

### **SIM CARD BLOCKAGE RISKS DUE TO SPAM**

The text message quality plays a key role in determining the risk of phone numbers being blocked. For example: A SIM card will most certainly be blocked if spam messages are sent from it.

### **SMS QUANTITY RELATED SIM CARD BLOCKAGE**

However, despite the full control of the message content transmitted through the application, there is still a risk of SIM blockage associated with large quantities of SMS traffic sent per day from a SIM card.

Certain mobile network operators may block SIM cards that transmit high volumes of SMS traffic. The situation differs significantly from country to country, and the risk threshold may vary from several hundred to tens of thousands of messages per day.

#### **HOW THE RISKS CAN BE MINIMIZED OR ELIMINATED**

Units choose how many text messages they would like to transmit. The users also have full control over the type of text messages sent from their devices.

#### **CHECK TERMS AND CONDITIONS OF YOUR PROVIDER**

Terms and conditions, as well as regulations, vary significantly from country to country, also depending on mobile network operators. In some countries, it is permitted to send A2P messages from SIM cards; in others, it might not be. You have to check the terms and conditions from your mobile network operator in order to determine whether your service provider can block your SIM card or not.

Please ensure that you comply with terms and conditions of your mobile network provider.

## **6 Roadmap & TGE**

### **6.1 Current state of technological development**

#### **SMS INFRASTRUCTURE**

In order to provide a quality service for business mobile messaging, we have created powerful and stable SMS software with a direct connection to GSM and CDMA mobile operators. We have reached this solution as a result of our experience that we have accumulated since our 2010 company launch.

Today, Intis Telecom is a EU-based telecommunication company with two offices in the UK and Lithuania. Over 500 companies around the world use our SMS solutions and we would love to see you among our happy customers and partners!

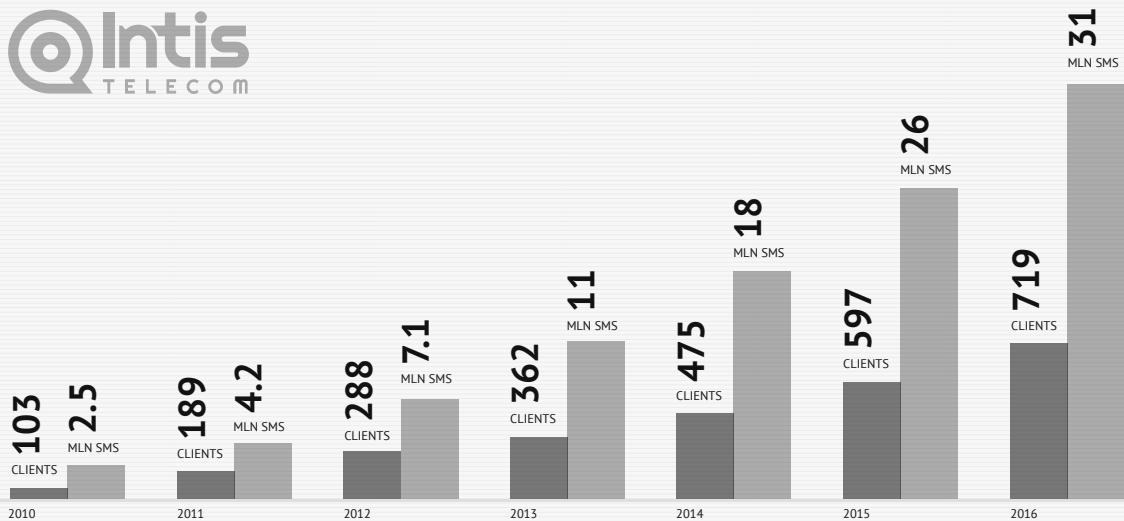


Fig. 10 Intis Telecom

## TESTING INFRASTRUCTURE

TelQ has developed one of the most advanced SMS Quality Assurance tools today, which allows verification of SMS routes in real-time. The system enables testing in over 120 countries and across 500 networks worldwide. The TelQ testing tool is widely used by leading international SMS service providers that require verification of SMS delivery in countries where they are not physically present.

## MOBILE PHONE APPLICATIONS

Currently SMSCHAIN has a fully functioning Android application with a similar functionality. This application rewards app users for received SMS test messages that are sent by various SMS telecom companies in order to verify proper delivery of text messages to numerous networks worldwide. The project has been very successful so far and our goal is to add the blockchain infrastructure and functionality of message termination.

SMSCHAIN also has a prototype of an application capable of terminating text messages. It needs to be developed further so it is fully compatible with blockchain infrastructure requirements.

## SUMMARY

SMSCHAIN has already created most of the necessary components for the project to be successful. Our main task is to put these items together and create a reliable underlying blockchain infrastructure. This infrastructure will allow us to efficiently scale up and fully decentralise the process of reliable text message delivery, as well as the process of mutual settlements between the members of the network.

## 6.2 Team

The team behind the project has over 10-years of experience in the Telecom SMS industry, namely working as an international SMS aggregator, as well as functioning as a consumer of SMS services purchased from leading mobile network operators.



### **Andrey Insarov, CEO**

Andrey has over 9-years of experience in Telecom industry in a position of CEO at a leading international SMS services provider, like Intis Telecom. He has a M.S. in Telecommunications Engineering.

**in** <https://www.linkedin.com/in/andreyinsarov/>



### **Oleg Makarov, COO**

Oleg has over 5-years of experience in Telecom industry while working for leading international SMS Aggregators, such as Fortytwo Telecom plus SMS startups, such as OK Route. He is currently CEO of a leading SMS test number platform and SMS services provider, TelQ.

**in** <https://www.linkedin.com/in/makarovoleg/>



### **Dr. Alexandr Marinenko, CTO**

Alexandr has over 18-years of experience in Telecom industry. He has a Ph.D in Military Telecom Electronics, earned in 2003. He is currently CTO of Intis Telecom.

**in** <https://www.linkedin.com/in/alex-marinenko/>



### **Dr. Valeriy Babushkin, CFO**

Valeriy has 16-years of experience in management positions within the financial sector.. He is co-founder of a fintech start-up, Dobrokassa. He has a Ph.D in Economics Theory.

**in** <https://www.linkedin.com/in/валерий-бабушкин-0466b739/>



### **Natalia Shkarlet, Project Manager**

Natalia has over 10-years of experience in Marketing and Internet Technologies while working for different local companies. She has a BBA in management.

**in** <https://www.linkedin.com/in/natalia-shkarlet-7426bb14/>



### **Tasha Sokolova, Project/Community Manager**

Tasha has over 8-years of experience in different fields of Digital Marketing within the IT industry. She has been an Independent Digital Marketing Advisor since 2015. She has a MSc in Digital Marketing and International Communication.

**in** <https://www.linkedin.com/in/tashasokolova/>



### **Nicolas Corzo, Project/Community Manager**

Nicolas has over 3-years of experience in the Telecom industry while working for the biggest SMS service provider in the world, Infobip.

**in** <https://www.linkedin.com/in/nicolascorzo/>



### Alexander Rukhlov, Head of Marketing

Alexander has over 10-years of experience in online advertising, digital marketing and Search Engine Optimisation. He is currently Head of Marketing at Intis Telecom.

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### Anatoliy Tretyakov, Full Stack Developer

Anatoliy has over 4-years of experience in frontend and backend development. He is currently a full stack developer at Intis Telecom.

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### Emil Shagiev, Graphic Designer

Emil has over 10-years of experience in graphic design.

[in https://www.linkedin.com/in/emil-shagiev-405289a0/](https://www.linkedin.com/in/emil-shagiev-405289a0/)

## 6.3 Advisors



### Oleg Seydak

CEO AT BLACKMOON FINANCIAL GROUP

Raised \$30,000,000 in 19 hours during Blackmoon's ICO. Co-founder of Flint Capital, a venture capital firm that pioneered alternative lending in Europe. Former Managing Director at FINAM Global venture fund.

[in https://www.linkedin.com/in/olegseydak/](https://www.linkedin.com/in/olegseydak/)



### Eugeny Ezhov

GENERAL PARTNER AT OMEGA INVESTMENT SOLUTION

General Partner at Omega Investment Solutions and Chief Commercial Officer at Vigrom Media.

[in https://www.linkedin.com/in/eugeney-ezhov/](https://www.linkedin.com/in/eugeney-ezhov/)

## 6.4 Token Generating Event

SMSCHAIN will issue 100,000,000 SMSTO Tokens in total. 70% of all tokens will be available for public sale in exchange for Ethereum. 10,000,000 SMSTO will be sold during the pre-ICO stage.

The other 60,000,000 SMSTO will be sold during the main token generating event in November.

25% of all Tokens will be kept by the SMSCHAIN team for development and growth purposes as well as to ensure the necessary liquidity of the network during the initial stages. Another 5% will be used for marketing, a referral program, and bounty campaigns.

### TGE (PRE-ICO) DETAILS

TGE (Pre-ICO) Starts on:	<b>2nd of October 2017</b>
Initial Price Offer:	<b>1000 SMSTO = 2 ETH</b>
Payments accepted in:	<b>Ethereum</b>
Lock-time for team tokens:	<b>200 days</b>
The minimum payment amount:	<b>50 ETH</b>
Pre-ICO maximum amount to rise:	<b>20000 ETH</b>

### PRE-ICO BONUSES

2nd of October - 11th of October:	<b>40%</b>
12th of October - 13th of October:	<b>20%</b>
13th of October - 27th of October:	<b>PRIVATE PRESALE</b>

### MAIN TGE BONUSES (STARTS ON THE 20TH OF NOVEMBER)

Bonuses will be based on the initial volumes of tokens sold. The first sold tokens will have the following bonuses:

1 - 19 999 999	<b>1000 SMSTO = 1.7 ETH (15% BONUS)</b>
20 000 000 - 39 999 999	<b>1000 SMSTO = 1.8 ETH (10% BONUS)</b>
40 000 000 - 60 000 000	<b>1000 SMSTO = 2 ETH (0% BONUS)</b>

The minimum amount to rise: **16 500 ETH**

Hard cap: **100 000 ETH**

SMSTO are ERC20 compliant and users will receive tokens automatically in their Ethereum wallet after purchase. If SMSTO is purchased during pre-ICO, users will receive the tokens as soon as ICO commences.

At the end of TGE, all unsold SMSTO will be burnt. If the minimum amount is not achieved, all contributors will be refunded.

Our system is built on blockchain technology and will be connected to several third party exchange gateways as well as its own internal decentralised exchange. This will allow users to exchange currencies and cryptocurrencies for SMSTO Tokens, store them, and perform different operations (transfers, withdrawals, sales and purchases), plus carry out reverse conversions.

## 6.5 Funds Allocation

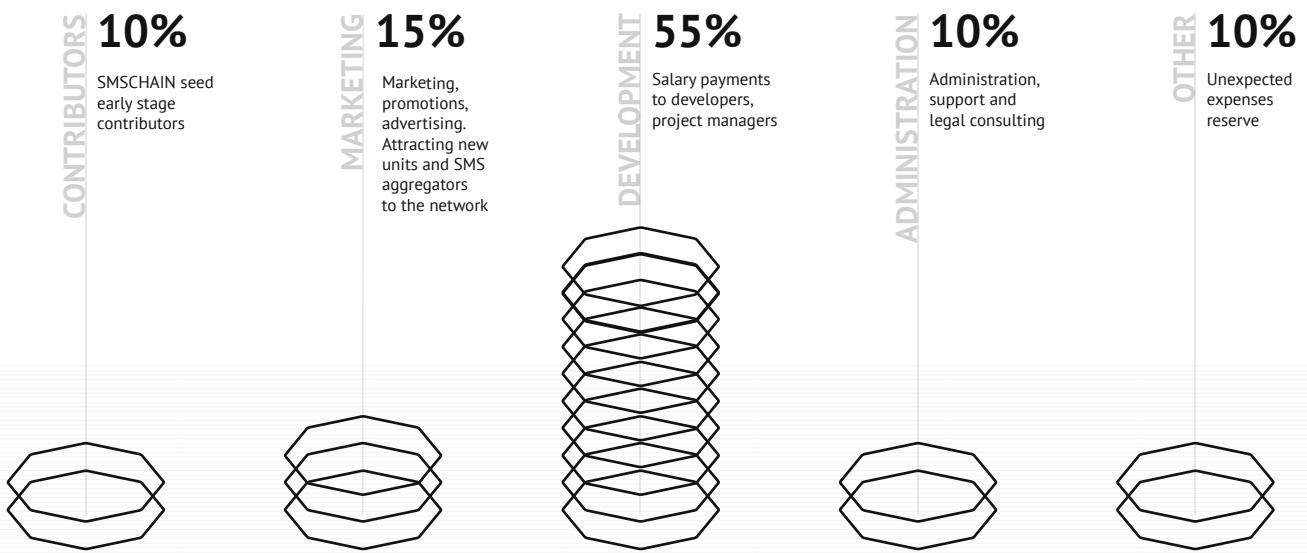
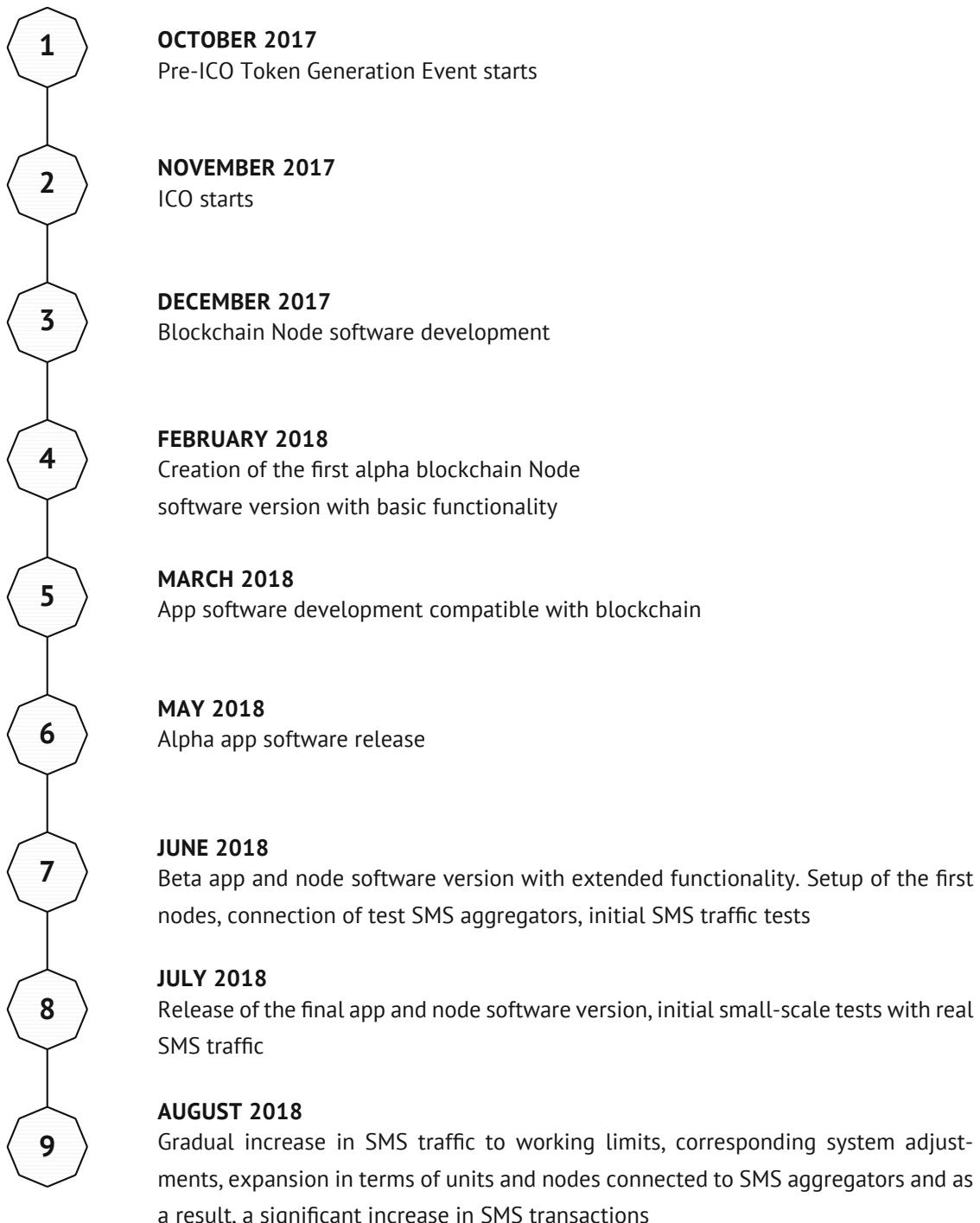


Fig 11. Funds distribution

### NECESSARY FUNDS REQUIRED

In order to develop every component of the system as planned, we need to raise at least \$5,000,000 for one geographical region. We will refund our contributors if we are unable to raise the minimum amount by the end of TGE.

## 6.6 Roadmap



# 7 Why & How to Buy

## 7.1 The Advantages of Owning an SMSTO Token

### FOR APP USERS (UNITS)

You are able to start selling your unused text messages for a reward and potentially earn up to \$6,000/month from your device automatically after setting up an account. If you do not have many unused SMS or would not like to sell too many messages, you can still easily make a few hundred USD per month.

### FOR NODES

If you would like to contribute to the infrastructure of SMSCHAIN and become a Node, you can earn commission rewards from all SMS transactions that are sent through you.

### FOR SMS AGGREGATORS

SMSTO will be the only internal currency for buying SMS traffic. SMSTO will be used by SMS Aggregators in order to purchase traffic from Units as well as to pay fees to Nodes for the transactions.

## 7.2 How to Buy the SMSTO Tokens

### REQUIREMENTS

You need to have an Ethereum wallet and access to your private keys in order to receive SMSTO once they are launched. You can buy SMSTO Tokens with Ethereum. SMSTO will be transferred to your Ethereum wallet immediately upon purchase. You have to be a non-Chinese citizen.

### INSTRUCTIONS

You can buy SMSTO only on our official website: [smschain.org](http://smschain.org). Please follow the instructions:

- 1 Go to [smschain.org](http://smschain.org)
- 2 Click on “buy tokens”
- 3 Accept our terms and conditions
- 4 Make payment to the provided ETH address

If you buy tokens during pre-ICO stage, you will receive them in your wallet as soon as the main TGE launches. If you purchase your tokens during the main TGE, you will automatically receive SMSTO in your ETH wallet assigned by our ERC-compliant smart contract.

### WHY SMSCHAIN

We're on a mission to do something different here and utilize blockchain technology for a profit from the SMS industry. With all of the technological capabilities at our fingertips today, it only makes sense that we push the boundaries of what is possible with cryptocurrency. Consider joining our program during the pre-ICO stages today.

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