

Anryze

Distributed Network

Speech Recognition Platform with
Distributed Computing Network

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1. Introduction

Anryze Distributed Network is a peer-to-peer distributed computing network for speech recognition and neural network education would allow users to transcribe audio files without reliance on a third party provider like Google or Amazon. The removal of central controls would mitigate most traditional data failures and provide the highest accuracy of a speech transcription due to neural networks education through distributed system.

Over the past 50 years people tried to make computers understand human language in order to make them more responsive to our needs and helpful, and to create a bigger amount of useful features. Starting from Bell Labs and IBM experiments, the greatest value in speech recognition was introduced by Google with the innovative Speech API. But all these solutions were built on the principles from 50 years ago and soonly will reach their limits. Thus, now it is time to embrace the brand new solutions and take computer speech recognition on the next level.

Why speech recognition matters? As soon as we educate computers to understand natural human language, it will become a revolution in a different areas of work. Developing, educating, and creating new neural network models is vital nowadays, because of the possibility to make computer actually think like a human being. The accurate speech recognition is the very first step to it. After all, this is how we communicate. Our mission is to create the best Speech Recognition System: highly educated, thinking like us, understanding all our words and intention, and while doing that, we want to get as many people as we can to participate. Afterwards, we will be proud to say that this is the collaborative act aimed on the education of the Computer that became possible not only due to the efforts of the small group of scientists but also with the contribution of usual people.

2. Speech Recognition

Basic Concept

Speech is a complex phenomenon. People rarely understand how it is produced and perceived. The naive perception is often that speech is built with words, and each word consists of phones. The reality is unfortunately very different. Speech is a dynamic process without clearly distinguished parts. It's always useful to get a sound editor and look into the recording of the speech and listen to it.

Description of speech is at some degree probabilistic. That means that there are no certain boundaries between units, or between words. Speech to text translation is never 100% correct. That idea is rather unusual for software developers, who usually work with deterministic systems. Therefore, it creates a lot of issues specific only to speech technology.

Recognition process

The common way how Anyze recognizes speech is the following: we take the waveform, split it on utterances by silences then try to recognize what is being said in each utterance. To do that we want to take all possible combinations of words and try to match them with the audio. We choose the best matching combination. There are few important things in this match.

First of all, it is a concept of **features**. Since a number of parameters is large, we are trying to optimize it. Numbers are calculated from speech usually by dividing speech on frames, then, for each frame of length typically 10 milliseconds we extract 39 numbers that represent the speech. That's called **feature vector**. The way to generate numbers is a subject of active investigation, but in simple case it is a derivative from spectrum.

Second, it is a concept of the **model**. Model describes some mathematical object that gathers common attributes of the spoken word. In practice, for audio model of senone is gaussian mixture of its three states; to put it simple, it is a most proba-

ble feature vector. From concept of the model the following issues are raised: how good does model fits practice, can model be made better of its internal model problems, to what extent the model is adaptive to the changed conditions.

Third, it is a matching process itself. Since it would take a long time to compare all feature vectors with all models, the search is often optimized by many tricks. At any point, we maintain best matching variants and extend them with time, producing best matching variants for the next frame

Models

According to the speech structure, three models Anyze used in speech recognition to do the match:

An **acoustic model** contains acoustic properties for each senone. There are context-independent models that contain properties (most probable feature vectors for each phone) and context-dependent ones (built from senones with context).

A **phonetic dictionary** contains a mapping from words to phones. This mapping is not very effective. For example, only two to three pronunciation variants are noted in it, but it's practical enough most of the time. The dictionary is not the only variant of mapper from words to phones. It could be done with some complex function learned with a machine learning algorithm.

A **language model** is used to restrict word search. It defines which word could follow previously recognized words (remember that matching is a sequential process) and helps to significantly restrict the matching process by stripping words that are not probable. Most common language models used are n-gram language models-these contain statistics of word sequences-and finite state language models-these define speech sequences by finite state automation, sometimes with weights. To reach a good accuracy rate, your language model must be very successful in search space restriction. This means it should be very good at predicting the next word. A language model usually restricts the vocabulary considered to the words it contains. That's an issue for name recognition. To deal with this, a language model can contain smaller chunks like subwords or even phones. Please note that

search space restriction, in this case, is usually worse and corresponding recognition accuracies are lower than with a word-based language model.

Those three entities are combined together in an engine to recognize speech.

What Anryze optimized

When speech recognition is being developed, the most complex issue is to make search precise (considering as many variants to match as possible) and to make it fast enough to not run for tremendously long periods of time. There are also issues with making the model match the speech since models aren't perfect.

Mostly the system is tested on the test database that is meant to represent the target task correctly.

The following characteristics are used:

**** Word error rate.**** Let we have original text and recognition text of length of N words. From them the I words were inserted D words were deleted and S words were substituted Word error rate is.

$$\text{WER} = \frac{I + D + S}{N}$$

WER is usually measured in percent.

Accuracy. It is almost the same thing as word error rate, but it doesn't count insertions.

$$\text{Accuracy} = \frac{N - D - S}{N}$$

Accuracy is actually a worse measure for most tasks, since insertions are also important in final results. But for some tasks, accuracy is a reasonable measure of the decoder performance.

Speed. Suppose the audio file was 2 hours and the decoding took 3 hours. Then speed is counted as 1.5xRT.

Comparison Test with Google and IBM

Methodology of testing the recognition system. Speech recognition systems used for testing:

- MS Azure
- Google Speech
- IBM Watson
- Anryze STT V.b0.53

For testing the following characteristics were applied:

- 3 male voices
- 2 female voices
- Seperate speech
(there is a pause after every word)
- Conjoint speech
- Generals topics
- Special word usage (there are international names, scientific and technological etc.)

Tests description:

1. 1 speaker, conjoint speech, general topic
2. 1 speaker, separate speech, general topic
3. 1 speaker continuous speech, special words
4. 1 speaker, separate speech, special words
5. 2 speakers, conjoint speech, general topic
6. 2 speakers, separate speech, general topic
7. 2 speakers, conjoint speech, general topic
8. 2 speakers, separate speech, special words

Prior to testing, we have prepared 10 different text sets for each characteristic (separate speech, monologue, dialogue, special words etc.)

Testing process

Each speaker have read out particular texts according to test type. Recordings were made in record studio in order to get clean sound. After recording sound files were converted into appropriate formats for each recognition system on tests. With the API results were obtained.

Technologies description

While developing Anyze STT we have applied following technologies and solutions. Here are some of them:

- Wavelet transform - allows to improve recognition by reducing loss of data.
- Recognition using fractal code descriptor - reconstructing the signal while any sampling frequency.
- Multi-Objective Learning for Deep Neural Network Based Speech Enhancement - responsible for constructing extended speech signals.
- Invariant Representations - increases the stability of acoustic variability.
- Highway Connections in Convolutional Recurrent Deep Neural Networks is an extension of the CLDNN model by integrating connections that provides a direct stream of information from the cells of the lower layers to the cells of the upper layers.
- Recognition with the use of distributed capacity - allows to reduce equipment costs and obtain resistance to changing loads.
- Acoustic models based on long short-term memory - is a recurrent neural network architecture that has been designed to address the vanishing and exploding gradient problems of conventional RNNs

Results

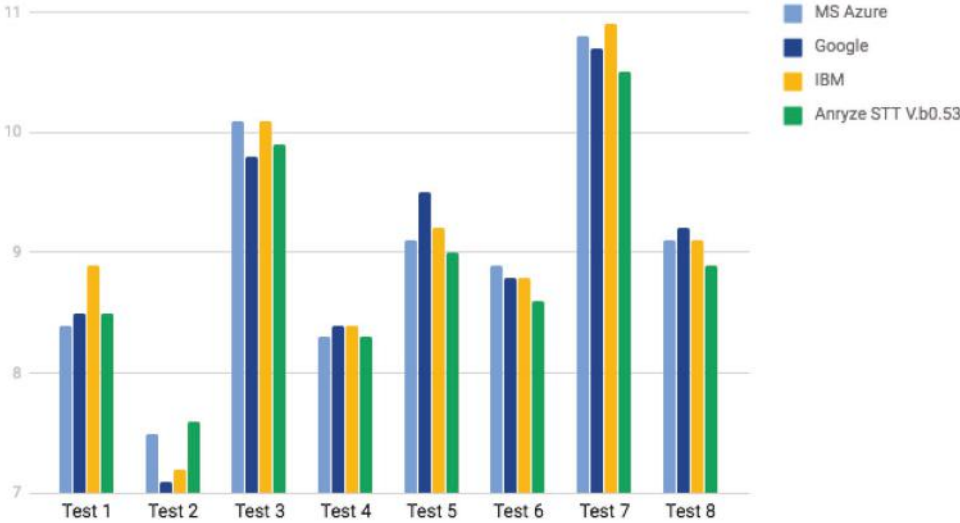


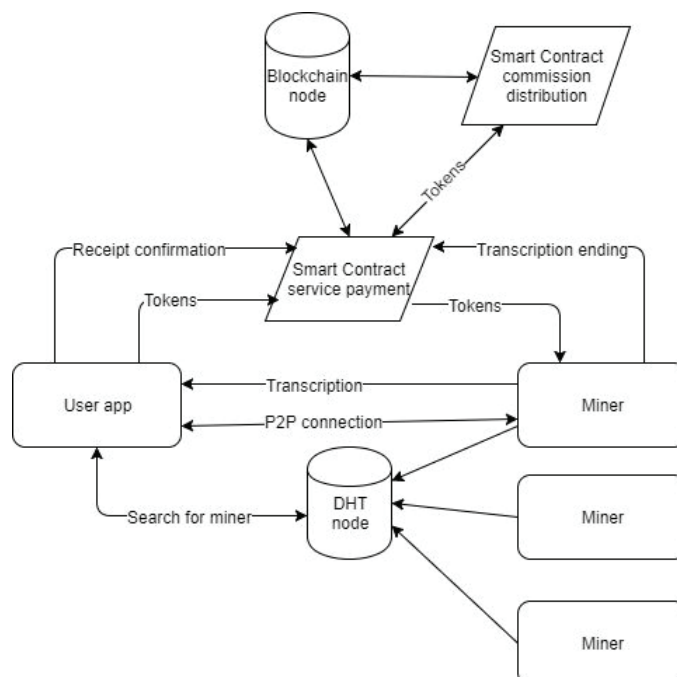
Chart 2.1. Percentage of mistake while recognizing

3. Decentralized Computing Network

Anryze is a decentralized worldwide fog computer for AI (speech recognition) purpose. Anryze computing power exchange is the free market. We expect Anryze to be the smartest and cheapest decentralized computing system of the speech recognition due to self-learning intelligent agents.

The decentralized network consists of three components - computing powers (virtual machines of miners with a recognition program), a nodes with a distributed table (DHT) and a Waves blockchain for payment.

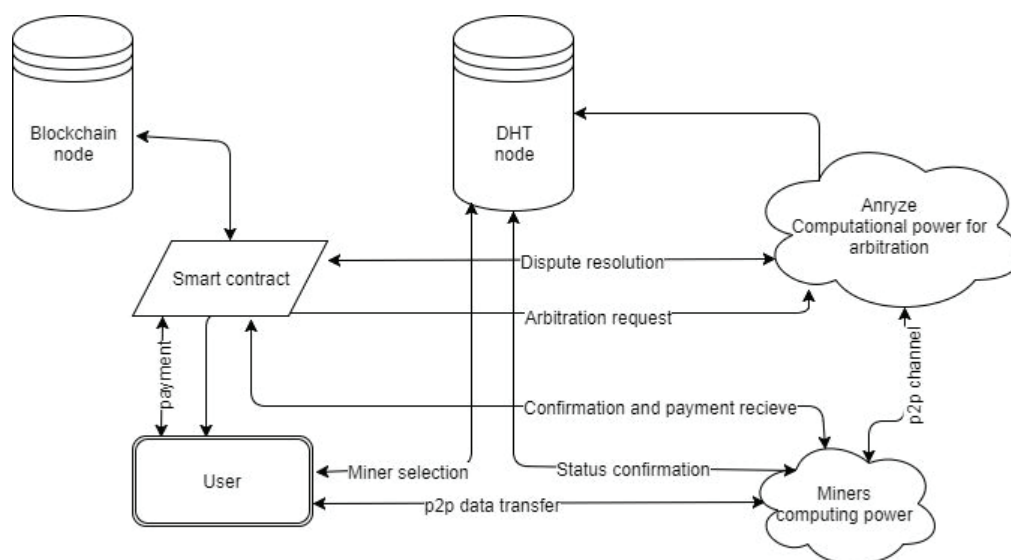
The system consists of users and miners. Users are those who want to rent computing power for transcription and pay for that. Miners, on the other side, lease their power and get paid for it. User app detects suitable miner automatically through DHT and sends a request using the p2p link. After setting up the connection, user app forms the smart contract between User and Miner. When all confirmations received, payment goes to the miner and the second Smart Contract responsible for the commission of the system gets it. This contract accumulates transaction of the 24h period and then calculates the amount of the reward for each wallet based on the proportion of tokens held. These calculations are expensive and can not be used for each simple transaction in the system.



Scheme 3.1

While user uploads the file to the plugin, he receives the cost of transcription based on the duration of the audio and current price.

In order to find the miner, the program would connect to DHT node or be that node and detects the suitable option (based on apparent capacities criteria). After that, it will send requests via p2p connection to the miner and receive confirmation of the readiness.



Scheme 3.2

There are also separate from miners computational power (the Anryze team) to resolve disputes. Team Anryze is interested in honest operation of the system and its development, so it makes no sense to be biased resolving dispute.

Smart contract:

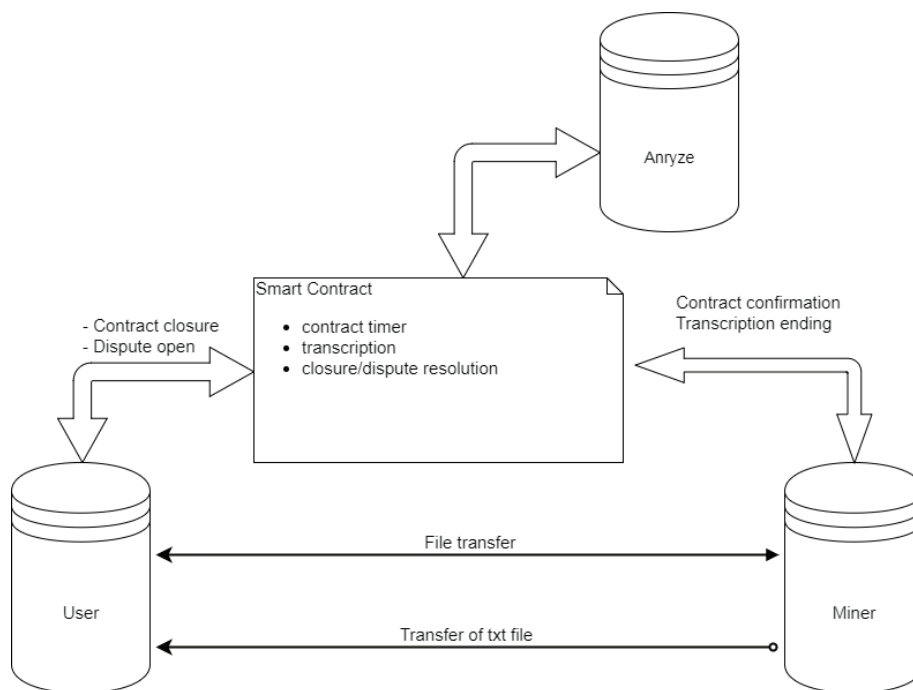
1. The user program enters information about the size and duration of the audio recording, the hash of the audio file and the total price and price per minute, the time for which it wants to receive the file. Contributes a deposit of 110% of the price of recognition.
2. Brings into the contract the wallet of the Miner and waits for his signature.
3. The Miner checks the contract and if he agrees, signs it.
4. It swings the file through the p2p channel and starts to recognize
5. Returns a text file to the User and leaves a record in the contract

6. The User looks at the file and if he agrees, closes the contract and receives a deposit of 10% back:

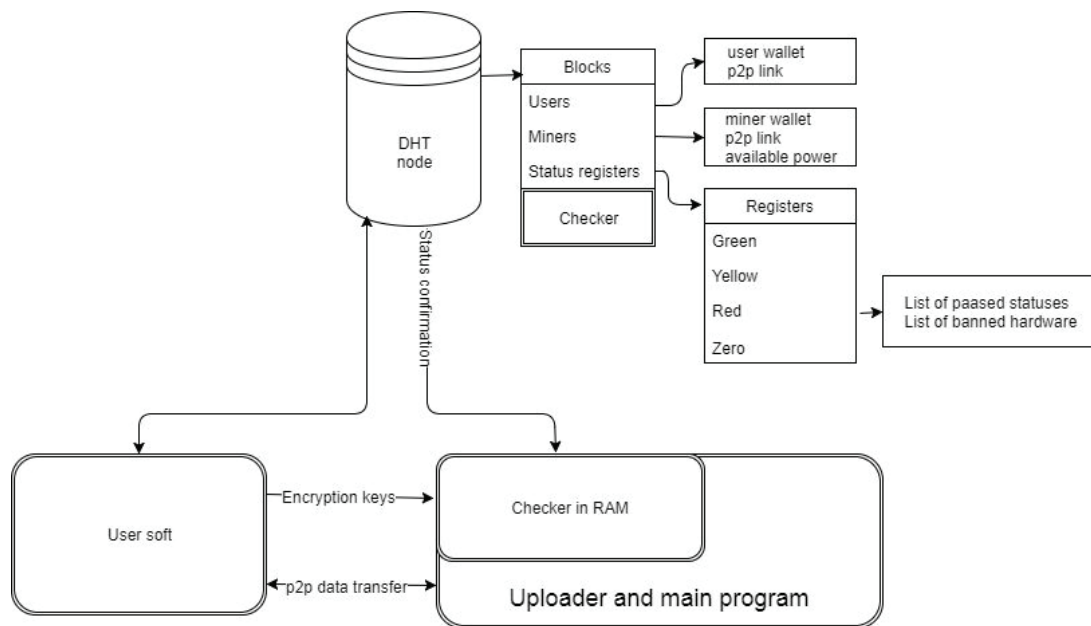
If he does not agree, then he opens the dispute and sends the key of the contract to the server Anyze along with the audio file hash. Anyze requests the audio file itself from the miner and the final file. Check and make a decision:

- either the miner cheats, then the data of his serial hardware numbers goes to the Ban registry
- Either the User cheats and loses a 10% deposit in a favor of Anyze.

To successfully resolve the dispute, Anyze must download from Miner a text file, an audio file and check with its hash in the contract. Then, two files are recognized and reconciled. The correct recognition option is returned to the user, regardless of whether he was right or was trying to cheat.



Scheme 3.3



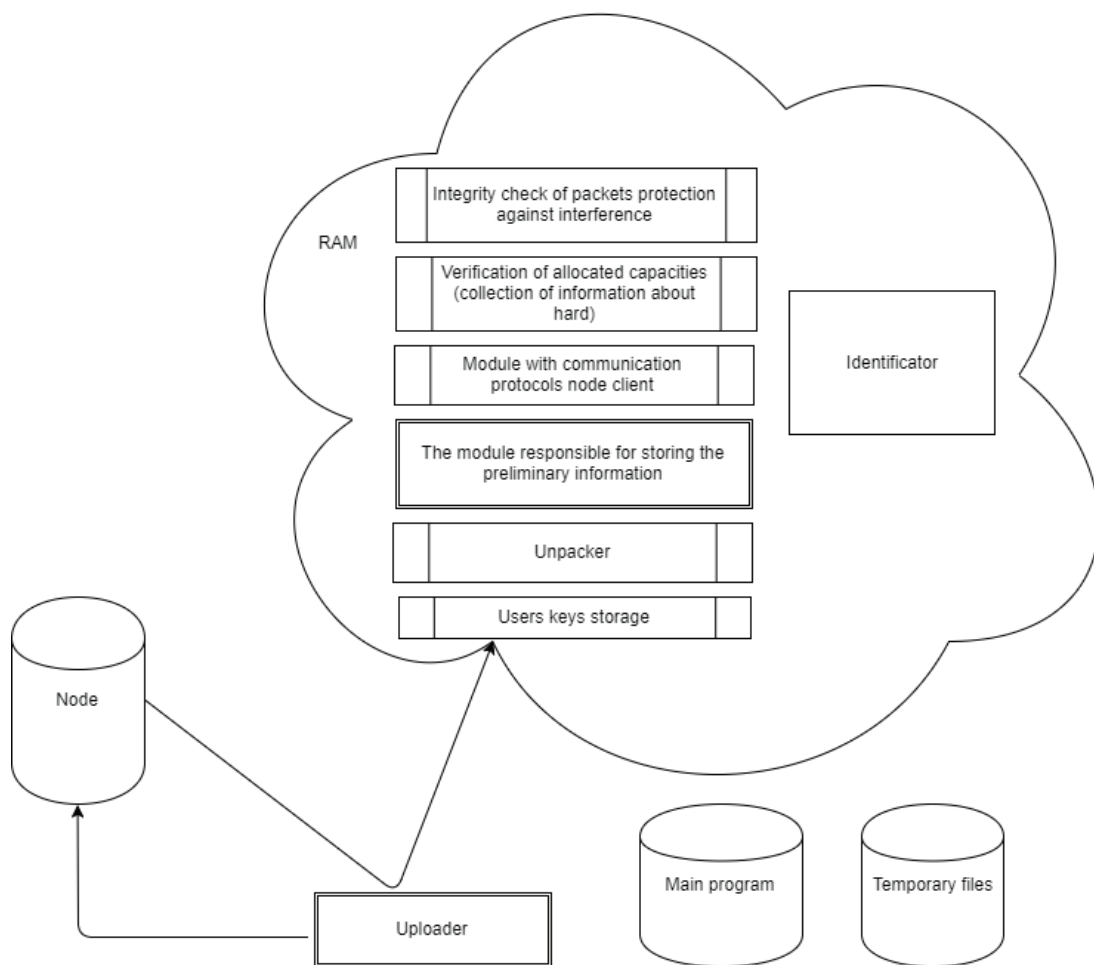
Scheme 3.4

Nodes includes DHT with a registry of miners, users and the Checker program registry.

The recognition program and the Uploader are downloaded from the Anryze server. Then when Miner wants to get started, he downloads Checker from the Node (with a unique identification key) using the Uploader which loads the program directly into RAM. Checker checks the program for integrity, and sends to DHT a signal about the program’s readiness / about its hacking. At the time of receiving a Checker with a unique identifier, its public identifier is placed in the Null register, waiting for the signal to transfer the identifier to the Green register (the register of programs ready to work).

Checker performs frequent iterations to check the integrity of the program. In the absence of a signal from Checker, its public identifier goes to the Yellow register (in this register, the program of the miner can finish the job if it is still at the moment, after which it must download a new Checker). The identifier of the old checker goes to the Red register (the register of “dead” keys that can no longer be used).

Also in the Red Register, there are data of serial numbers of hardware, seen in fraud (list of banned serial numbers). The Checker program also checks for “banned hardware and if it detects this or detects interference in the main program, it sends a signal about the transfer of status to the Red Register.



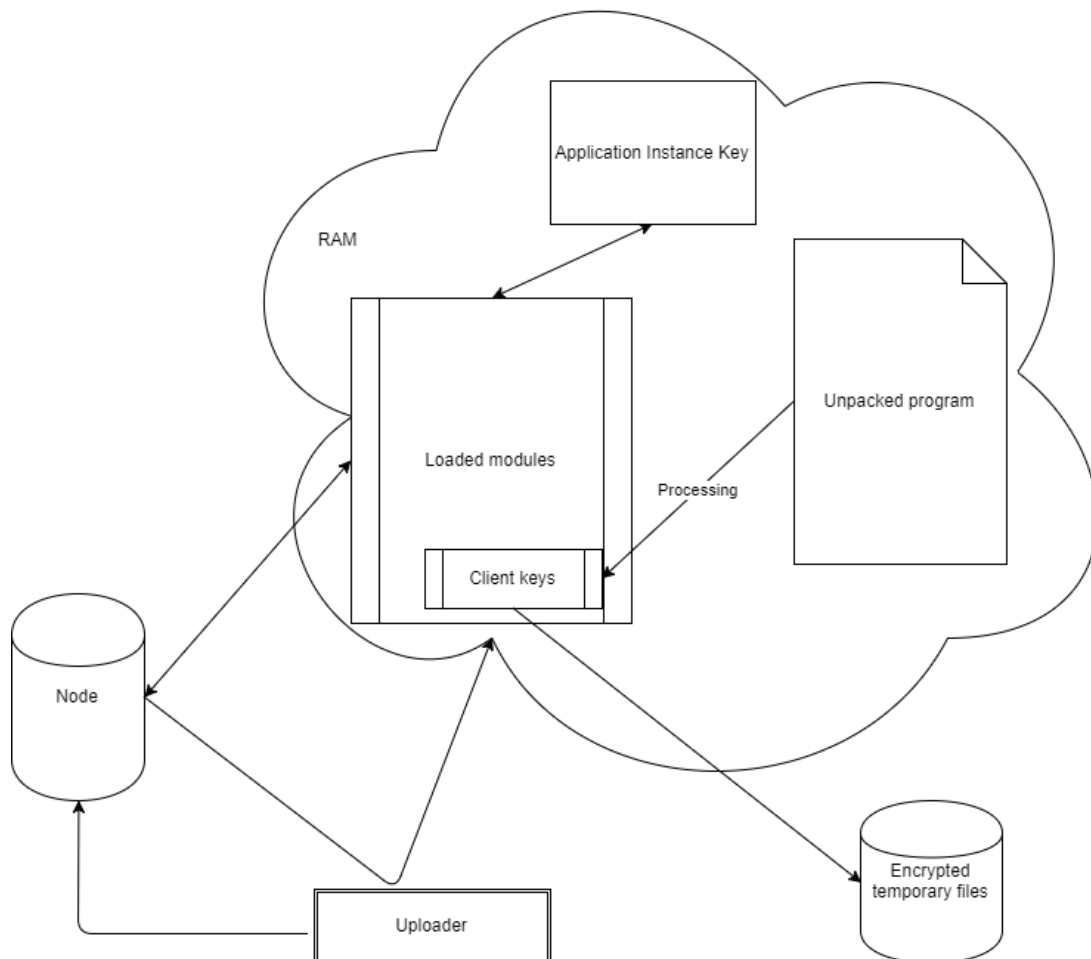
Scheme 3.5

The program of the miner consists of the Uploader and the main program. Checker which checks the hashes of the Uploader and the main program, after which it loads the communication module (with the client), the power control, and the keystore for communication with the user (all these parts are stored in RAM).

If the hash sums do not match the program, then Checker stops working and you need to install the program and Uploader again, then download Checker with the new ID.

- After unpacking the program and unloading it into the memory, the client's waiting begins
- When concluding the smart contract, the client transfers a part of the public key to the miner which is placed in the special store and is designed to work with client data

- Upon completion of processing, the data is packed and sent to the repository
- After the contract is closed, the data is deleted
- Program checker constantly monitors free power and the invariance of hashes of the running main program
- Otherwise, all current data is deleted.



Scheme 3.6

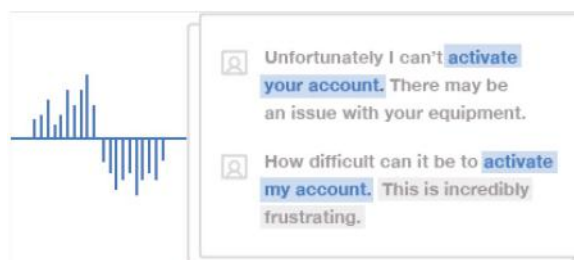
1. Running uploader.
2. In memory it is launched Checker downloaded from a node.
3. Checker alternately checks the hash of the loader, program and data set.
4. In the case of a successful check, the checker sends its hash and status to the trusted node and continues to load the remaining parts of the program.

4. Product

The Product consists of 2 parts - Miner's part and User's input plugin.

User's input plugin is a cross platform program and API solution that consists of several blocks: p2p connection, audio analyzer and balance checker, miner selector and integrity checker.

The programs of the miner and the client are black boxes. That is, they do not allow manipulations with the data that would ensure the integrity and security of the data. In order to start recognizing audio files, it's enough to put a client application.



```
saturn@webservice
[ saturn@webservice ~ ]$ python ur.py
BEGIN TEST SKRIPT
CHECK File
CHECK File - OK
File Length - 2:34 min
Connection Start
Upload File begin
Upload status 100%
The reply is in process
The reply is in process
The reply is in process
The reply is in process
The reply is in process
The reply is in process
Recognition ok
good afternoon thank you for calling cough medicine for service in English press 1 but
I said he should have been your place unit. Please listen to the following is/are menu options changed if you have
an electric outage gas leak an emergency or hazardous condition please press 1 if you are calling to verify a field
employees credentials to for anything else press 3
please say or enter either your 15 digit account number one digit at a time ignoring any feedback or forever hold your
social security number or tax ID number you can also say I don't have it or open a new account
I don't have it
main menu for list of billing and payment related options including help managing your bill say billing and payments
if you're moving and need to eat or close an account open one at a new location say surface changes to report a meter
reading or learn house a meter reading or if you need to report an electric outage gas leak emergency or other
hazardous condition say emergency you can also say it's something else or that again say repeat that
it's something else
you update your contact number say update number to hear energy-saving recommendations and incentives say Energy
Efficiency to request a statement of your billing and payment history say statement to access another account to
another account you can also say main menu or say it's something else
it's something else let me connect you with a representative who can help with your request
to ensure the best possible service your call may be monitored and recorded for quality assurance purposes
thank you for calling Con Edison this is mr. O'Reilly speaking how may I assist you I hope you will help me um about a
month ago I moved it moved in to the apartment and I know I'm trying to set up the new account number but I have some
issues so with it online setting up and I hope you can help me to set up the account correct
it started
somewhere in the middle of February
did you need the exact date right
the finder taking
my name is Antonio Samantha Anton
this is my first name Anton last name is ger asym en Cayo Espanto
thank you writing a secondary name to
secondary name
correct which I have a second person's name
yeah yeah that would be a first name Mike
second 8 years old
is that hot
telephone number please
hold on a second play hello are you there
Connection LOST
FINISH SKRIPT
[ saturn@webservice ~ ]$
```

Apart from actually recognizing the voice, the recognition module itself contains also an emotional analysis of phrases and also the allocation of certain phrases and expressions (for example, curses) and the punctuation overlay.

5. Market

The problem is that most communications between people happen over the voice and even if somebody records the voice - you need to spend the same amount of time to understand what they were talking about. So a lot of data is just recorded and stored.

Speech recognition brings a huge value for people and businesses because text is easy to analyze.

The global voice recognition market size was valued at USD 51.09 billion in 2015 and is expected to grow at 11% yearly (Chart 5.1).

The adoption of voice-enabled applications for mobile devices and other smart voice-enabled consumer products is increasing the scale of the consumer/mobile category, challenging the traditional voice technology engine of growth, namely contact centers. Legal compliance issues will continue to ensure the healthcare sector's dependence on voice recognition solutions that can help the industry meet electronic medical record (EMR) standards while providing efficient healthcare.

In the enterprise and healthcare sectors, voice recognition technologies are allowing physicians, soldiers, and other users to accomplish more by reducing the time consumed by written communications. The military sector, the industry's largest investor, uses the technology to increase operational efficiency and for precision driving. North America remains the leading market in that sector, nonetheless, Asia-Pacific countries are rapidly increasing their market shares.

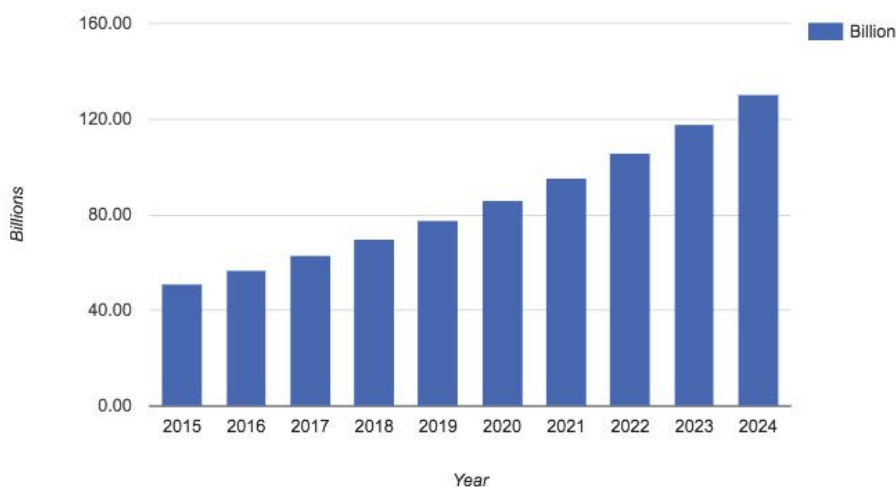


Chart 5.1. Speech Recognition Market Worldwide

First Clients

First Clients will be brought to the platform by Anryze. Most of them are US companies in such industries as financial compliance, banking, and sales. Here is the list of the companies we are already working with.

Mast Mobile – provides the mobile sales productivity platform that embeds CRM into your sales team’s day-to-day activities, automatically loading all their client communications into the database. Reps can focus on selling, not data entry, and the company gets value from its investment in CRM. It solves the biggest challenge for CRM systems (manual data entry) which is increasing as team move to mobile devices.

<https://www.mastmobile.com/>

Weeden & Co – broker firm founded in 1922 in New York. It provides brokers service for institutional and private investors on US markets (as NYSE, Nasdaq, etc.) with more than 300 broker agents who talk to clients daily.

<http://www.weedenco.com/>

Bino – mystery shopping platform that allows restaurants, cafes, bars, shops and stores to measure customer experience with help of mystery shopper visits. Most of the visits happen with voice recording. Bino works on Eastern European and US markets.

<http://getbino.com/>

CohereComm – vendor of telecom systems and software for financial institutions as broker firms, financial advisers, banks, and compliance outsourcing companies. CoheComm works with 385 broker firms that generate more than 500k minutes of voice recordings daily.

<https://www.coherecomm.com/>

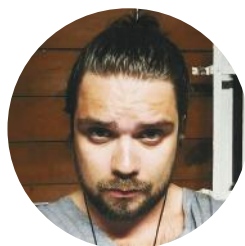
TelecomConsulting was founded in 2006 and represents a full range of services for telecom operators. Company designs communication objects of any complexity, including: networks, communication nodes, radio access systems and much more. We help with obtaining licenses, registration of radio frequencies, and any other legal issues in the field of telecommunications.

Testimonials

"We have been using Anryze service for 5 months so far and it literally changed the way we treat clients. Before that, we weren't able to transcribe all our conversations into the text form and have fast access to particular information that have been spoken because of the high price of existing solutions for high volumes of speech recognition and less accuracy in transcribing special terms. Now we have a history of all conversations with clients and are ready to help out in any question or solve any compliance request".

-- Eugene Vakhteev, CEO at **TelecomConsulting**--

6. Team



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Partners

We are proud to be supported by our advisers, partners, and investors.

Starta Accelerator

NYC based accelerator with focus on Eastern European tech companies.

<http://www.startaaccelerator.com/>

Waves Platform

Waves is an open blockchain platform designed for ease of use and mass adoption. <https://wavesplatform.com/>

Phenom Team

Crypto investment fund.

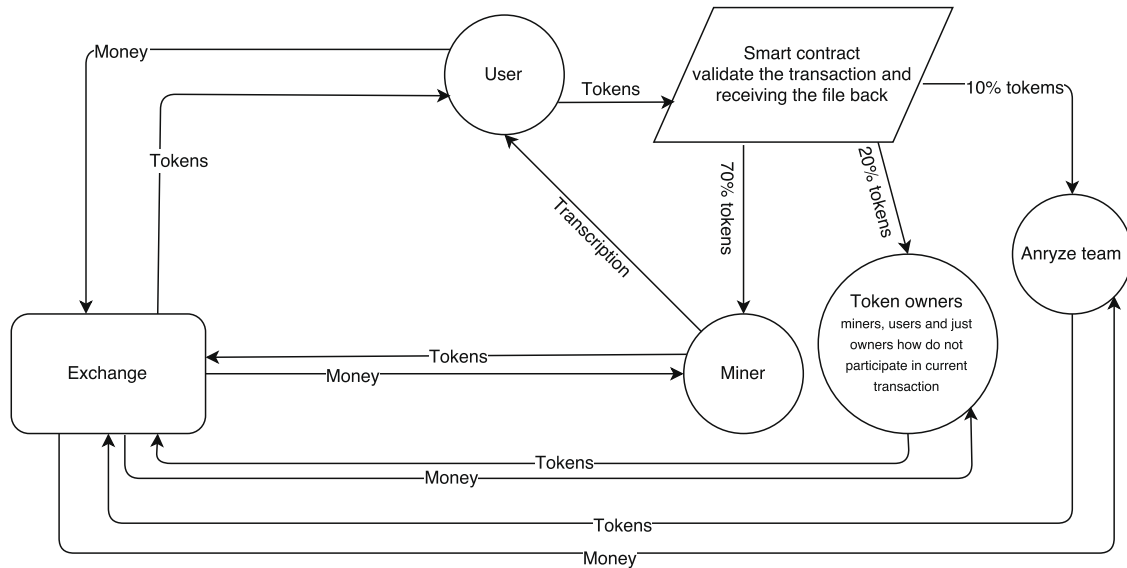
<http://phenom.team>

Forklog

An information resource dedicated to Bitcoin, Blockchain and decentralized technologies. <http://forklog.com>

7. Monetization

1. Anyze Distributed computing power based on blockchain charges users for transcribing a certain time of the audio file. Therefore, users pay for service, miners (computing capacities) get tokens, and token holders with Anyze get commission (Scheme 7.1)



Scheme 7.1

Miners get 70% of tokens in exchange for computing power, other part goes equally to Anyze team and token holders 10% and 20% (Diagram 7.1)

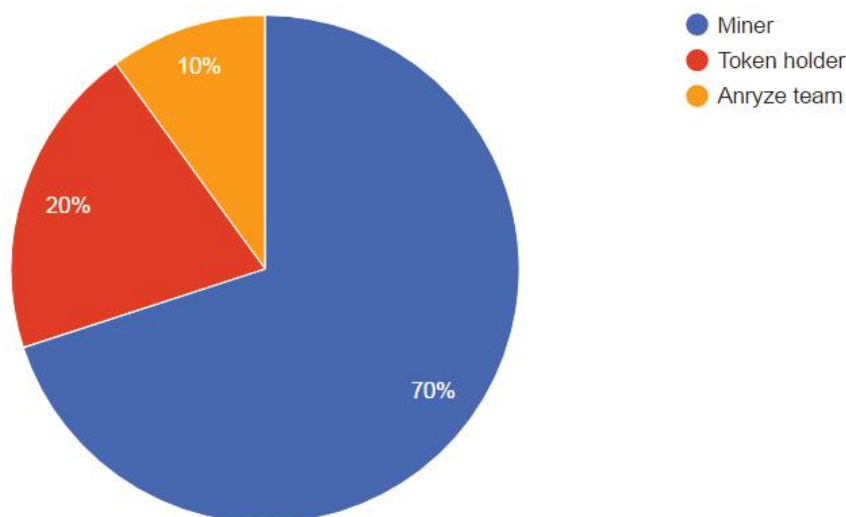


Diagram 7.1

In our concept token holders are both miners and users as they have a wallet. For example, there is a transaction for 150 RYZ tokens, token holder, who do not participate in this action, has 35 000 RYZ on his wallet. His share from all tokens is $35000/353300000 = 0.0000099$. From each transaction token owners get 20%, which in the example is $150*0.2 = 30$ RYZ tokens. So from such transaction our holder receives $30*0.0000099 = 0.002973$ RYZ. But this is only one transaction, during the first quarter we expect turnover at the level of 29 million RYZ, so holder in the example will receive $2900000*0.2*0.0000099 = 574.78$ RYZ. This is a potential 1.6% increase in balance for the first quarter.

Anryze gets tokens from transcription to develop our network, introduce voice verification and other AI services. While token owners get them as compensation for their contributions.

2. Each minute of the processed audio is equated to a token. We use the market price model, so the current cost of a minute will depend on transcription demand and mining supply in a system and also on token demand and supply on the crypto exchange. Initially, the rate will be 2:1 (two minutes for one token) and 1:0,02 (one token for \$0,02). As the quantity of tokens is limited and in the nearest future it would not be able to meet transcription demand, so the price of the token will rise the same as the number of the minutes per token. Such model will provide greater demand and reward contributors of the project. Tokens can be bought during the Token Sale or after the Token Sale through crypto exchange.

Basic market price model:

$$D_n = \alpha * D_{n-1} * \exp\left(\frac{B_n - P_{n-1} * \min(D_{n-1}; S_{n-1})}{B_n + P_{n-1} * \min(D_{n-1}; S_{n-1})}\right)$$

$$S_n = \beta * \left(\frac{P_{n-1}}{P_{n-2}}\right) * \exp\left(\frac{D_{n-1} - S_{n-1}}{D_{n-1} + S_{n-1}}\right)$$

$$P_n = \gamma * P_{n-1} * \exp\left(\frac{D_n - S_n}{D_n + S_n}\right)$$

Where:

D_n – demand in n-period; S_n – supply in n-period; P_n – price in n-period;

α, β, γ – coefficient of adaptation / base increase;

B_n – budget in the n-period;

The charts below show the forecast of the cost of tokens and minutes (the x-axis indicates the volumes of transcribed audio in **millions** of minutes)

The real price of transcription (minute per USD) will be volatile but thanks to the market mechanism, a high price increases supply and reduces demand, which leads to lower prices, and vice versa. The fundamental price volatility corridor will lie within \$0.005 - \$0.02. The bottom line is minimal reward for miner to rent computing power, while upper bound is minimal price of the competitors (Chart 7.1)

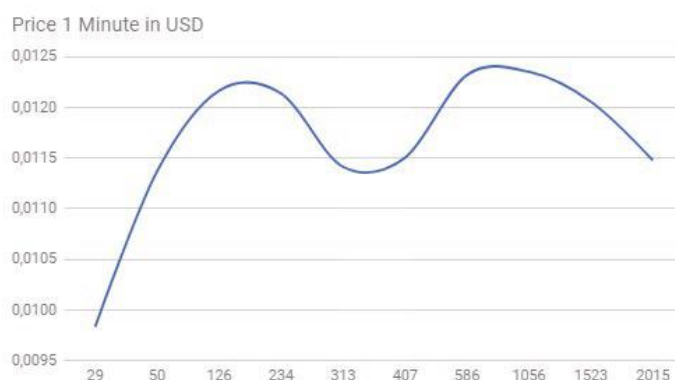


Chart 7.1

While the amount of tokens is limited, transcription volumes will rise which due to market will increase demand for tokens and their price. Increase in token price will benefit contributors and holders (Chart 7.2).

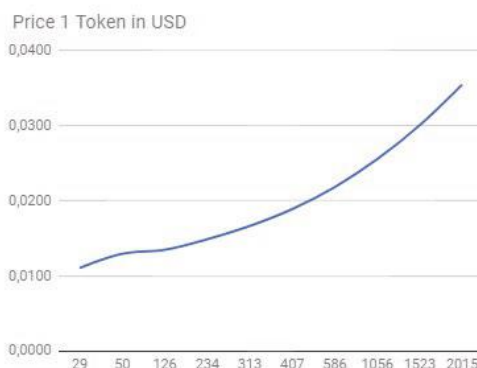


Chart 7.2

High prices for tokens will not affect transcription costs, therefore user can transcribe more minutes per 1 token. Price for one minute in token will decrease (Chart 7.3).



Chart 7.3

Table 7.1 Anryze financial plan Forecasts of prices of the token and minute

2018		1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19
Money-Minute market								
Demand	minutes	29 008 000	67 631 976	144 513 069	234 317 477	313 404 535	413 827 435	672 567 483
Supply	minutes	30 000 000	50 488 004	126 199 320	235 367 674	354 567 633	407 377 224	586 180 710
Transcribed	minutes	29 008 000	50 488 004	126 199 320	234 317 477	313 404 535	407 377 224	586 180 710
Price for minute	\$	0,0098	0,0114	0,0122	0,0121	0,0114	0,0115	0,0123
Money-Token market		338 300 000	338 300 000	338 300 000	338 300 000	353 300 000	353 300 000	353 300 000
Miners tokens		9 035 771	15 550 157	39 899 997	66 914 639	75 244 712	86 863 395	115 965 614
Demand	\$	285 244	574 012	1 535 217	2 844 110	3 576 712	4 685 831	7 221 487
Supply	\$	233 501	418 723	1 412 952	2 329 177	2 856 998	3 633 382	5 408 341
Tokens turnover		12 908 245	22 214 510	56 999 995	95 592 341	107 492 446	124 090 564	165 665 163
Price for token	\$	0,0221	0,0258	0,0269	0,0298	0,0333	0,0378	0,0436
Token-Minute market								
Demand		12 908 245	22 214 510	56 999 995	95 592 341	107 492 446	124 090 564	165 665 163
Supply		30 000 000	50 488 004	126 199 320	235 367 674	354 567 633	407 377 224	586 180 710
		29	50	126	234	313	407	586
Price for minute		0,4450	0,4400	0,4517	0,4080	0,3430	0,3046	0,2826

8. Token Sale

Anryze is planning to raise between \$1.6 - \$6 million USD by selling tokens. This money will help to accelerate market penetration and product development.

Anryze is an official service provider and crowdfunding initiator.

A special token (RYZ) will be created on the Waves Platform for crowdfunding.

Min. cap: 103.6 million RYZ (1.6 million USD)

Max. cap: 331.7 million RYZ (6 million USD)

The initial rate will be 1 USD = 50 RYZ.

The expected amount of tokens to be offered is 331.7 million RYZ* (an additional 6,6 million RYZ will be issued for the bounty program, and 15 million RYZ will be issued to the option pool for rewarding current and future employees. Total amount of tokens will be **353 300 000 RYZ tokens**.

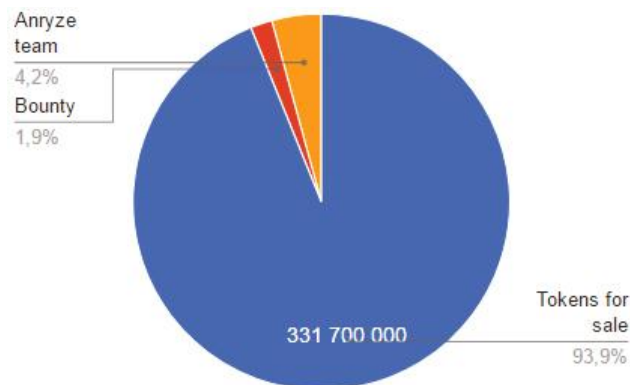


Diagram 8.1 Tokens Distribution

The tokens will be sold at a discount to early buyers at the rate sliding from 75 RYZ tokens per \$1 to 50 RYZ tokens per \$1. Exchange rates are shown in the table below:

Table 8.1 Exchange rates

331,7 million tokens to sell out		
Amount of USD invested	Amount of tokens per 1 USD	Tokens sold
1 - 240 000	75	18 000 000
240 000 - 500 000	70	18 200 000
500 000 - 1 000 000	65	32 500 000
1 000 000 - 1 600 000	60	36 000 000
1 600 000 - 3 000 000	55	77 000 000
3 000 000 - 6 000 000	50	150 000 000

Tokens will be sold through several currencies in the equivalent of Ethereum (BTC, ETH, ETC, LTC, WAVES).

The creation of new tokens will stop after an equivalent of \$6 million USD is raised or after the Token Sale expiration date.

No new tokens will be created after the Token Sale.

All RYZ tokens represent inside currency for service payment.

In the case of fund raising less than the planned all money will be refunded back.

9. Escrow

All money raised will be deposited to an escrow account. Management will be able to access this money only if a minimum of \$1.6 million USD or more is raised.

In the case of fund raising less than the planned we will refund all money back to contributors. In any case, our team will continue to develop the product and introduce it to the market.

10. Compensation to token owners and miners gains

RYZ will be traded on the crypto exchange.

Blockchain will be transferring 20% tokens from each transcription of the audio to the RYZ token owners in the proportion to the amount of token held. It will start doing this at the same time blockchain of decentralized transcription capacities starts working. Amount of compensation and miners revenue are shown in a spreadsheet below as an example and are based on expectations of transcription volumes:

Table 10.1 Compensation to token owners.

2018		1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19	4Q19
Token owners gains									
for 1000\$	\$	19	39	101	207	296	437	726	1 533
Investment balance	\$	1 105	1 292	1 348	1 489	1 666	1 890	2 182	2 556
Total balance	\$	1 143	1 370	1 549	1 903	2 258	2 765	3 635	5 622

Table 10.2 Forecast of miners revenue and income.

2018		1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19	4Q19
Miners gains									
Minutes transcribed		29 008 000	50 488 004	126 199 320	234 317 477	313 404 535	407 377 224	586 180 710	1 056 137 677
Revenue in tokens		9 033 702	15 545 619	39 873 130	66 854 231	75 162 752	86 756 089	115 811 030	178 613 337
Revenue in USD	\$	199 671	401 808	1 074 652	1 990 877	2 503 698	3 280 082	5 055 041	9 131 471
Cost of mining	\$	14 504	25 244	63 100	117 159	156 702	203 689	293 090	528 069
Income	\$	185 167	376 564	1 011 552	1 873 718	2 346 996	3 076 393	4 761 951	8 603 402

11. Current project's status

Presently, Anryze Speech Recognition is working in US market and is integrated to several clients from sales and compliance industries. Most of them are situated in New York, where Anryze has an office. Clients are connected to our own servers without a distributed network.

Our solution is helping companies to get more valuable data from their voice communications, analyze them and make data-driven decisions for business. Solution also helps to reduce costs for manual work of people, who listen to audio to check the quality of conversations.

Integration with new B2B users will be completed in a few months. Also, technical and legal work for entering the US market is in progress. All money raised from the ICO will be used for a fully functional application development and the expansion into new markets.

Anryze website: <https://anryze.com>

The project team is responsible for making the results open to the public and for using all available resources to inform about the project.

- We will publish a report about current development results and issues at least twice a month, as well as a monthly financial report about capital expenditures.
- The Report will contain current project needs and issues.
- All major breakthroughs will be communicated with interested mass media and spread at the major community forums like BitcoinTalk and CryptoCoin Talk.

12. Preliminary financial plan

Preliminary plan is based on ICO = \$4M assumption.

Anryze expected revenue and capital expenditures for 2 years include expenses for development of the platform, and operating expenses.

Revenue is calculated due to expectation of the transcription volumes. Main point of the expenses is salaries for development team and sales managers. Abbreviations: COGS - cost of goods sold; OPEX - operational expenses (salaries of sales team and C-level are counted in this article); EBITDA - earnings before interest, taxes, depreciation and amortization; CAPEX - capital expenditures (expenses for the product, mainly development team salaries and soft purchases); EBIT - earnings before interest and taxes.

Personnel headcount and wage rates are shown in the spreadsheet, as they are main expenditures both in OPEX and CAPEX.

Funds distribution chart based on expenditures for 12 quarters.

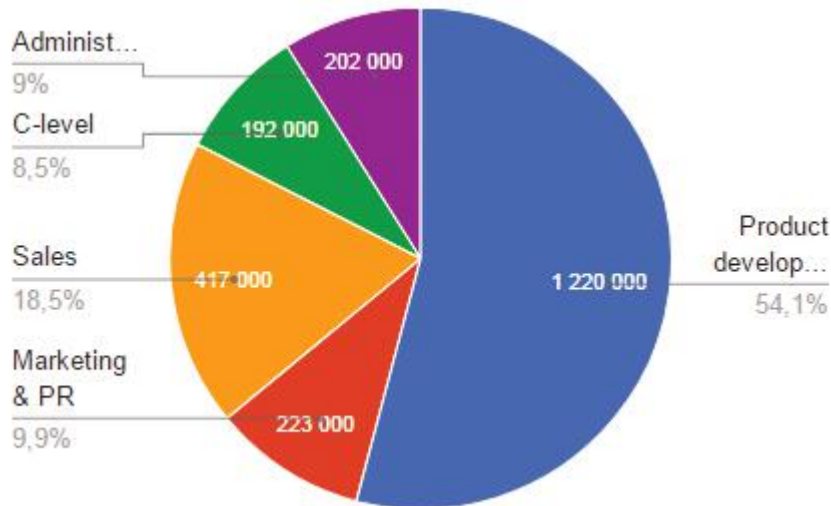


Diagram 12.1

Table 12.1

	1Q	2Q	3Q	4Q	5Q	6Q	7Q	8Q
Revenue, total, USD	0	0	28 524	57 401	153 522	199 088	250 370	328 008
COGS	0	0	9 766	15 978	29 554	46 959	64 535	82 902
Traffic & Maintenance	0	0	8 910	14 256	24 948	40 986	57 024	73 062
Processing	0	0	856	1 722	4 606	5 973	7 511	9 840
OPEX	109 805	136 674	145 037	153 392	161 979	172 282	184 647	199 484
Marketing & PR	24 845	29 814	35 777	42 932	51 519	61 822	74 187	89 024
Legal & advisers	3 600	4 800	4 800	6 000	6 000	6 000	6 000	6 000
Administrative expenses	15 960	20 460	20 460	20 460	20 460	20 460	20 460	20 460
Salaries OPEX	65 400	81 600	84 000	84 000	84 000	84 000	84 000	84 000
EBITDA	-109 805	-117 915	-103 614	-29 424	-9 850	13 552	60 459	201 755
CAPEX	155 500	155 500	166 500	166 500	166 500	166 500	148 500	148 500
Salaries CAPEX	83 500	83 500	112 500	112 500	112 500	112 500	112 500	112 500
Hard&Soft purchase	72 000	72 000	54 000	54 000	54 000	54 000	36 000	36 000
EBIT	-265 305	-273 415	-270 114	-195 924	-176 350	-152 948	-88 041	53 255
Taxes	-90 204	-183 165	-275 004	-341 618	-401 577	-453 579	-483 513	-465 406
Expenditures Total	265 305	301 940	327 515	349 446	375 437	403 317	416 049	452 249
NET PROFIT	-265 305	-301 940	-298 990	-292 045	-221 916	-204 230	-165 679	-124 241
Salary & Benefits, total	137 400	138 600	156 000	156 000	156 000	156 000	156 000	156 000
Personnel Headcount	21	23	31	31	31	31	31	31
C-level Salaries, a month	3	3	3	3	3	3	3	3
CEO (NYC)	9000	9000	9000	9000	9000	9000	9000	9000
CMO	9000	9000	9000	9000	9000	9000	9000	9000
CTO	6000	6000	6000	6000	6000	6000	6000	6000
Sales & BD	2	3	3	3	3	3	3	3
VP of Sales	24000	24000	24000	24000	24000	24000	24000	24000
Sales Representative	15000	15000	15000	15000	15000	15000	15000	15000
Sales Representative	0	15000	15000	15000	15000	15000	15000	15000
Product development	14	14	20	20	20	20	20	20
Senior Fulstack Developer	6000	6000	6000	6000	6000	6000	6000	6000
Senior Fulstack Developer	0	0	6000	6000	6000	6000	6000	6000
Backend Developer	4500	4500	4500	4500	4500	4500	4500	4500
Backend Developer	4500	4500	4500	4500	4500	4500	4500	4500
Backend Developer	4500	4500	4500	4500	4500	4500	4500	4500
Backend Developer	4500	4500	4500	4500	4500	4500	4500	4500
Backend Developer	4500	4500	4500	4500	4500	4500	4500	4500
Frontend Developer	3000	3000	3000	3000	3000	3000	3000	3000

	1Q	2Q	3Q	4Q	5Q	6Q	7Q	8Q
Voice Analyst	9000	9000	9000	9000	9000	9000	9000	9000
Voice Analyst	0	0	9000	9000	9000	9000	9000	9000
Data Analyst	0	0	9000	9000	9000	9000	9000	9000
Data Analyst	9000	9000	9000	9000	9000	9000	9000	9000
Product manager	3000	3000	3000	3000	3000	3000	3000	3000
Designer	3000	3000	3000	3000	3000	3000	3000	3000
Fulstack Developer	6000	6000	6000	6000	6000	6000	6000	6000
Fulstack Developer	6000	6000	6000	6000	6000	6000	6000	6000
Fulstack Developer	0	0	6000	6000	6000	6000	6000	6000
Backend Developer	0	0	4500	4500	4500	4500	4500	4500
Backend Developer	0	0	4500	4500	4500	4500	4500	4500
Frontend Developer	4500	4500	4500	4500	4500	4500	4500	4500
Other staff	2	3	5	5	5	5	5	5
Support	2400	3600	6000	6000	6000	6000	6000	6000