# AI Opinion

# Data-confirmed first full integration of AI in medicine

# White Paper

# Contents

# Executive summary

AI Opinion is a neural network, which learns to detect most nosology[1] types on various medical images, such as x-ray scans, ultrasound, computed tomography and magnetic resonance screening.

The project will provide the opportunity to get the view of artificial intelligence on health state of a user. The neural network will learn 3 million images to become capable of making the precise opinion on health condition in several different directions.

AI Opinion will detect more than 3000 of nosologies in these areas:

- Blood cells;
- Ocular fundus;
- CT/MRI images of different body parts;
- Lungs ultrasound;
- Mammography;
- Urinary bladder ultrasonography;
- Female reproductive system and others.

Machine learning for each nosology requires approximately 1000 samples. The samples will be received from the databases of more than 300 partner medical institutions



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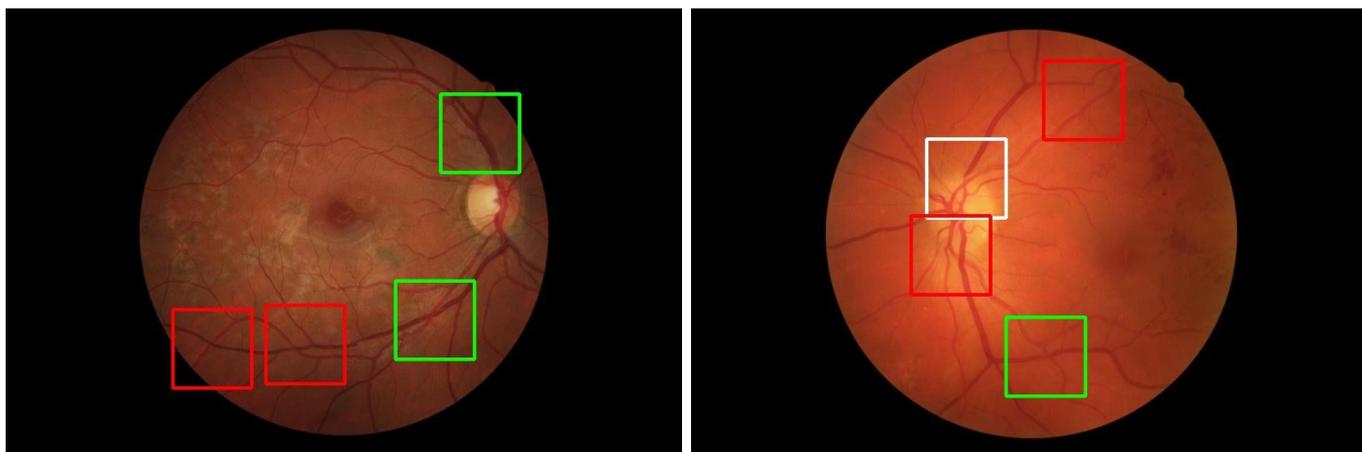
[1] Nosology is a classification scheme within medicine delineating classification of diseases.
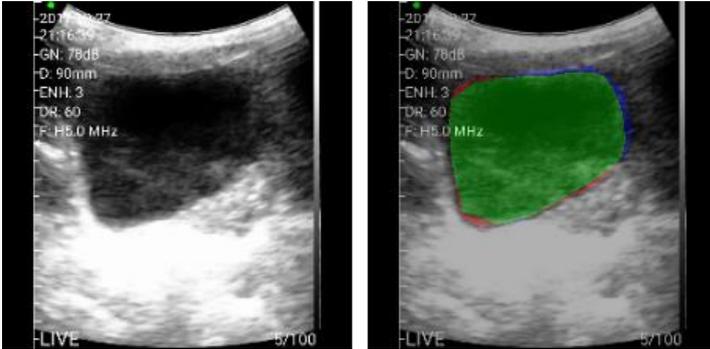
After the finish of machine learning process, AI Opinion team will create a mobile application, allowing the users to upload medical images and scans and sending them for a remote diagnostics. After a procession, the user gets an AI opinion on it, whether it has any abnormal cells and tissues. In case if there are any, AI Opinion will follow with an instruction of medical intervention necessity.

AI Opinion will also be available as an API platform for many others digital health applications, with all of the users being free to use any of them based on their health data. The main application designed by AI Opinion will provide patients with quick remote diagnostics for a cheap price of 1 token instead of paying hundreds of USD for regular diagnostics.
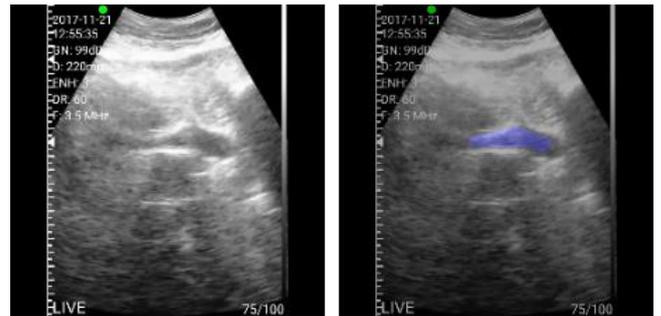


The health data of the users of AI Opinion will be securely stored within permission-based blockchain storage.

The amount of money required for the project implementation will be raised through the Initial Coin Offering (or ICO). We are planning to issue 1 billion AIOP tokens, which will be distributed at a price of 1 token to 0,04 USD (and equal sum to it in ETH and BTC). The pre-ICO stage will start on June 1st and will be followed by crowdsale, starting on July 1st .

**Solutions to modern day challenges**

**Accessibility of medical services**

**Now**

It is increasingly clear that insufficient investment in health, particularly in the developing world, has led to disparities in health outcomes globally. Many of the expert argue that a strong commitment to increasing public investment in health coverage and health systems is vital.

An estimated 400 million people worldwide lack access to at least one of seven essential health services, ranging from pregnancy care to clean water, according to a report released on Friday by the World Health Organization and World Bank.[2]

The report suggested universal health coverage is an achievable goal and showed that progress has been made toward it. The aim has been controversial, particularly in some advanced nations including the United States, where debate persists over the structure, funding and feasibility of a universal program.

**Soon**

**By making the AI Opinion, it is possible to provide diagnostics medical services to millions of people in developing countries by thus contributing to the global medical care access and reducing the gap.**

The estimated cost of medical diagnostics provided by AI Opinion will be around $5. In a world of more than 1 billion people living in extreme poverty (less than $1.25 per day) and 2.2 billion living on less than $2 per day (2011 data), this can be a significant step towards global healthcare access.

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[2] World Health Organization and World Bank joint report, 2015
http://www.who.int/mediacentre/news/releases/2015/uhc-report/en/

**Decision-making and diagnosis accuracy**

**Now**

Clinicians rely upon investigations and tests to make informed decisions about a patient's diagnosis and possible treatment plan. Traditionally, an investigation or test should only be requested and arranged if this is going to lead to a different possible diagnosis or alternative treatment plan. Unfortunately, even when the results of an investigation or test have returned, these are rarely shared widely with all of the health professionals involved in the patient's care and are normally isolated, or siloed, at the institution, which requested them originally.

The patient's quality of care suffers because of this. Other institutions are not aware of a patient's complete history and in turn, this could lead to incorrect decision-making, delays, and unnecessary costs for the patient or health institution. In the worst case, these medical errors can be fatal.

Research at the American Johns Hopkins Hospital by Makary et al, 2016 concluded that medical errors are the third leading cause of death in the United States and that "most errors represent systemic problems, including poorly coordinated care."

**Soon**

**The project's main goal is to introduce the perspective of artificial intelligence into decision-making in diagnostics.**

Artificial intelligence is playing an increasing role in the research of management science and operational research areas. It possesses significant advantages over the natural intelligence as it is more permanent, consistent, less expensive, has the ease of duplication and dissemination, can be documented and can perform certain tasks much faster and better than the human.

6

AI technologies have matured to the point in offering real practical benefits in many of their applications.

AI Opinion will learn more than 3000 nosologies in different medical areas. The project will be able to provide medical opinion with approximate accuracy of more than 97%. It is much higher than average accuracy in any medical institution.

**AI OPINION**

**Medical data security**

**Now**

At present, electronic health records (EHR) are stored on centralized databases in which medical data remains largely nonportable.

Centralization increases the security risk footprint, and requires trust in a single authority. Moreover, centralized databases cannot ensure security and data integrity, regardless of de-identification and controlled access requirements. Centralized health databases are legally a requirement and necessity in most countries worldwide and therefore require an added layer of technology to improve their portability and security.

Data security is paramount due to the increased sensitivity of medical data. This was highlighted in early 2017 when a cyber attack struck healthcare institutions around the globe. This highlighted to the public the vulnerability of our healthcare systems to potential threats and a sober warning regarding the inadequacies of the current infrastructure. Many have tried to overcome this issue, and it is high on the agenda of governments and a source of frustration for both doctors and patients. A significant component of the challenge focuses on data security.

**Soon**

In future, AI Opinion is aimed to change the current situation by establishing blockchain storages for health records.

**The control of personal health data will be given to user himself**

The user will be able to transfer the access to the medical data to any person or health institution.

**OPINION**

**Market**

AI is getting increasingly sophisticated at doing what humans do, but more efficiently, more quickly and at a lower cost. The potential for AI in healthcare is limitless. AI and robotics are increasingly a part of our healthcare.

According to CB Insights, healthcare is the hottest area of investment within AI. They identified over 100 companies that have raised an equity funding round since January 2013 12. Growth is already accelerating, as the number of healthcare-focused AI deals went up from less than 20 in 2012, to nearly 70 by mid-2016.[3] From insights and analytics, imaging and diagnostics, drug discovery to remote patient monitoring and virtual assistants, AI is poised to impact every aspect of healthcare

With immense power to unleash improvements in cost, quality and access, AI is exploding in popularity. Growth in the AI health market is expected to reach $6.6 billion by 2021—that's a CAGR of 40 percent.[4]

Considering the overall growth rate of AI in medicine and the possibilities of the project, AI Opinion aims to reach the market volume of 1 billion dollars by 2022.

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[3]CB Insights; "From Virtual Nurses To Drug Discovery: 106 Artificial Intelligence Startups In Healthcare;" posted February 3, 2017 at
 https://www.cbinsights.com/research/artificial-intelligence-startups-healthcare/
[4] Frost & Sullivan,
https://ww2.frost.com/news/press-releases/600-m-6-billion-artificial-intelligence-systems-poised-dramatic-market-expansion-healthcare

## Annual AI in healthcare market growth, bn



Legend: ■ AI in healthcare market volume  ■ Other medical Imaging and diagnosis  ■ AI Opinion Market Volume
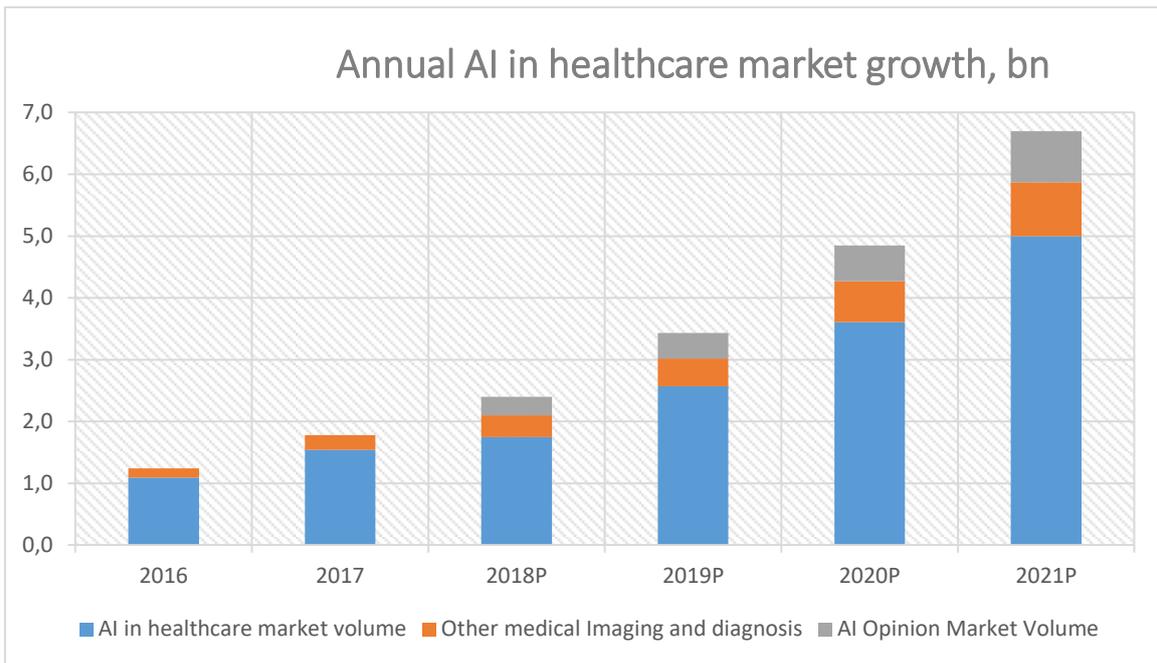
**Medical explanation**

There are many modern technologies, which completely change our vision of medicine. However, according to statistics, it is the artificial intelligence, according to experts, that will be the most breakthrough and significant technology that will forever change this sphere.



The most disruptive tech in medicine (rated by healthcare executives)

| Technology | Percentage |
|---|---|
| Artificial Intelligence | 31% |
| Internet of things | 27% |
| 3-D Printing | 17% |
| Robotics | 12% |
| Augmented reality | 8% |
| Blockchain | 3% |
| Virtual reality | 1% |
| Drones | 0% |
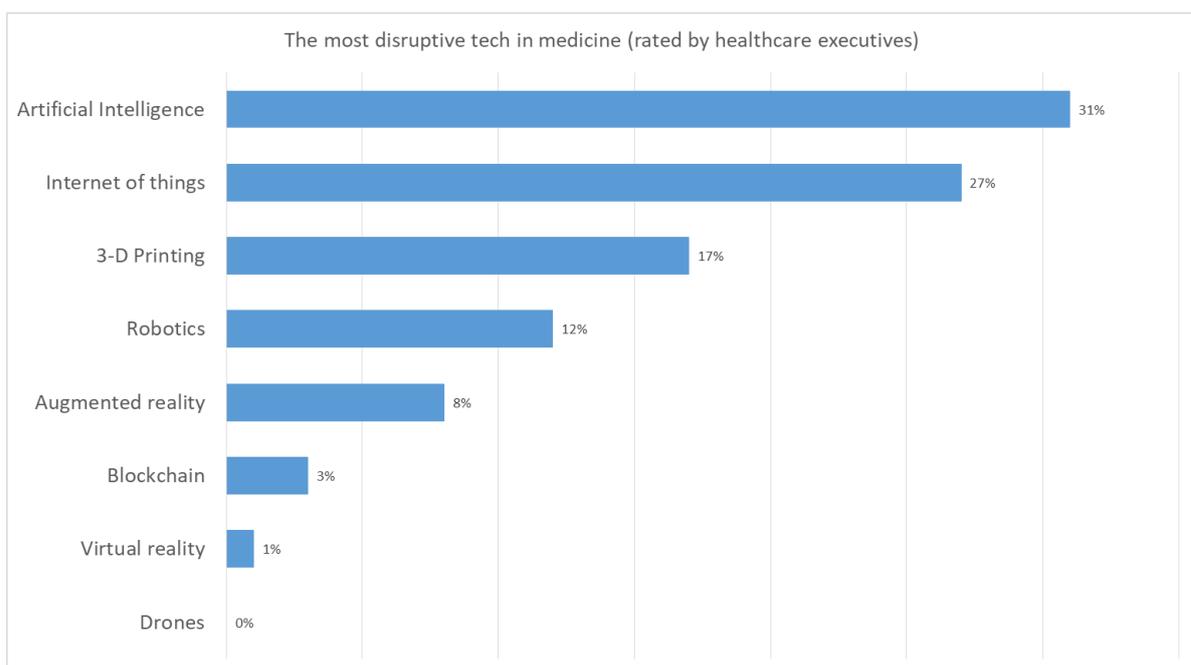
**Token Launch Summary**

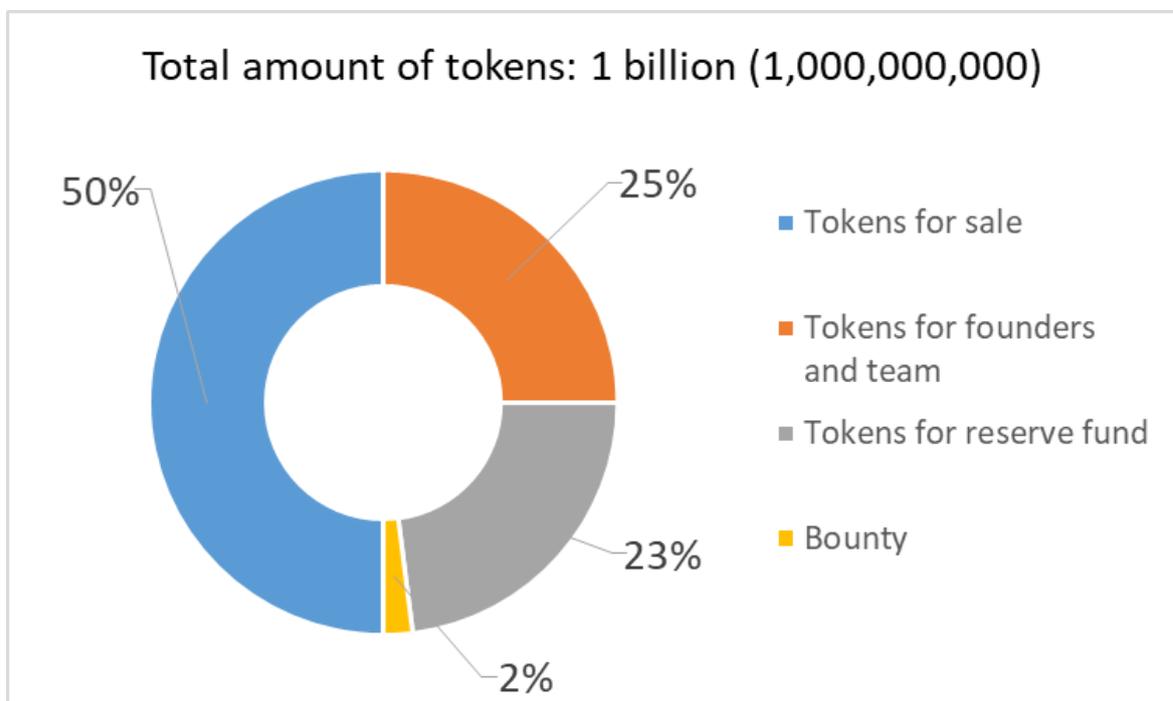Up to 1 billion tokens will be created as AIOP Token supply.

Exchange Rate - 1 AIOP = 0,4 USD

Accepted Purchasing Currencies – USD, ETH, BTC, EUR.

Hard Cap – $200,000,000 (200 Million USD).

**Token Distribution**

Total amount of tokens: 1 billion (1,000,000,000)

50%   25%

- Tokens for sale
- Tokens for founders and team
- Tokens for reserve fund
- Bounty

23%

2%

Total of 1 billion tokens will be spread as follows:

- 50% will be offered in the pre-sale and main sale.
- 25% will be retained by the company, team, founders and future employees.
- 23% will be retained for a reserve fund
- 2% will be retained for a bounty program.

**Strategic Backers**

We are working with existing strategic shareholders and venture capital

partners to ensure project success.

**Pre-Sale**

The Pre-Sale will remain open for one month.

Pre-Sale launch date and time – June 1st 2018.

Minimum Participation Amount – 0,1 ETH

Token contract address - TBD

Pre-Sale Cap – Soft cap for presale will be $50,000,000 ($50 million USD), 25% of the hard cap.

Token Pre-Sale Launch Completion - The Token Pre-Sale will end when either the Pre-Sale cap of $50,000,000 ($50 million USD) is reached or on June 30th 2018 (23:59 CET).

**Crowd Sale**

Launch date and time – July 1st 2018.

Minimum Participation Amount – 0,1 ETH

Token contract address - TBD
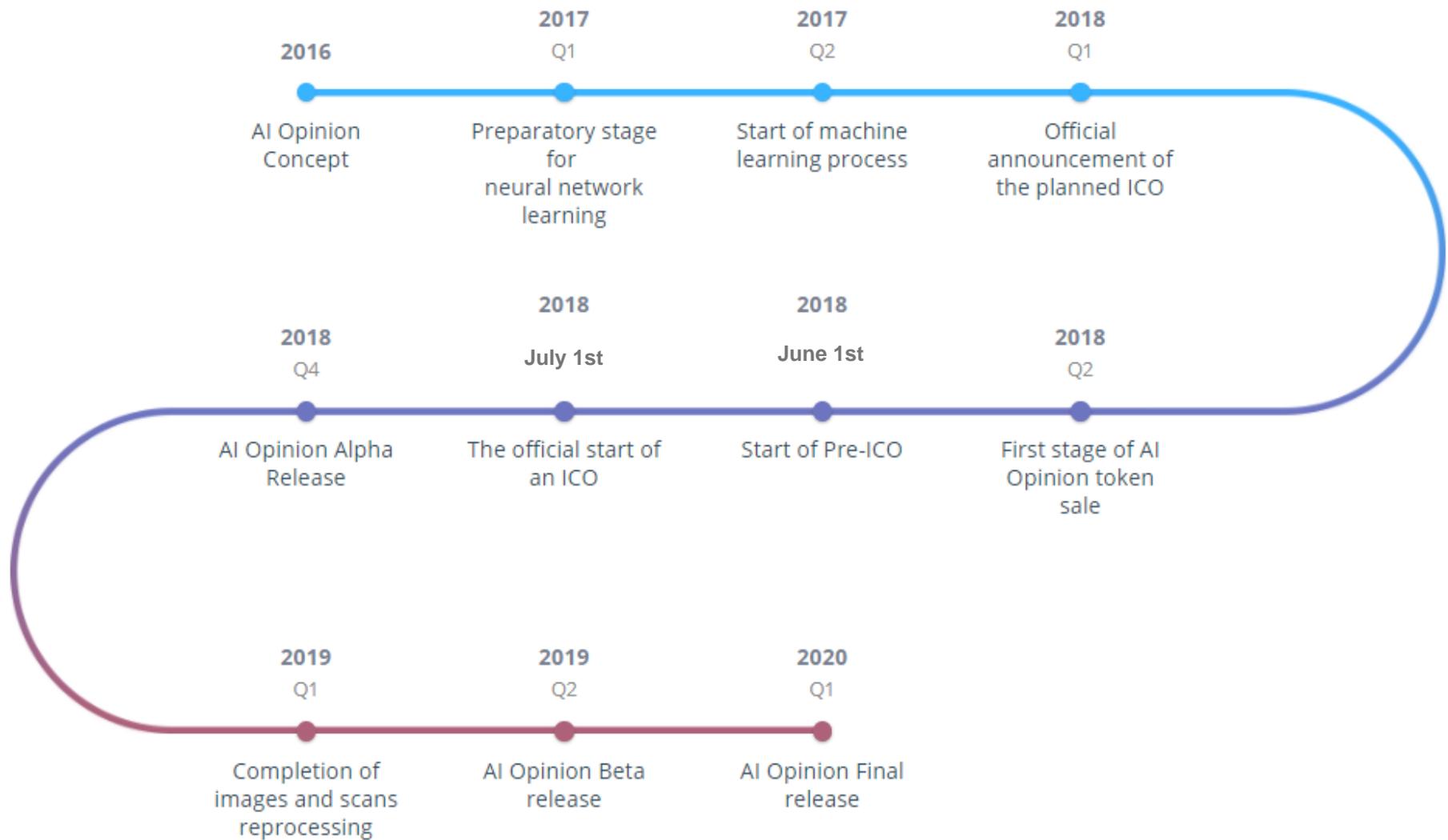
Crowd sale Launch Completion - The Token Sale launch will end when either the hard cap of $200,000,000 ($200 million USD) is reached or on July 31th 2018 (23:59 CET).

There is no soft cap as we will continue development of the platform regardless funds raised during ICO.

Additional tokens available - TBD

After the ICO the undistributed part of tokens for sale will be burnt.

## Roadmap



**2016** — AI Opinion Concept

**2017 Q1** — Preparatory stage for neural network learning

**2017 Q2** — Start of machine learning process

**2018 Q1** — Official announcement of the planned ICO

**2018 Q4** — AI Opinion Alpha Release

**2018 July 1st** — The official start of an ICO

**2018 June 1st** — Start of Pre-ICO

**2018 Q2** — First stage of AI Opinion token sale

**2019 Q1** — Completion of images and scans reprocessing

**2019 Q2** — AI Opinion Beta release

**2020 Q1** — AI Opinion Final release

**Potential use of AI Opinion API**

In the framework of AI Opinion project it is expected to develop and publish the API, which will allow any developers to freely use the source code in order to create health applications.

Public API will develop a big pattern of three main directions of healthcare apps:

- Applications for medical institutions
- Applications for patients
- Applications for internet of things
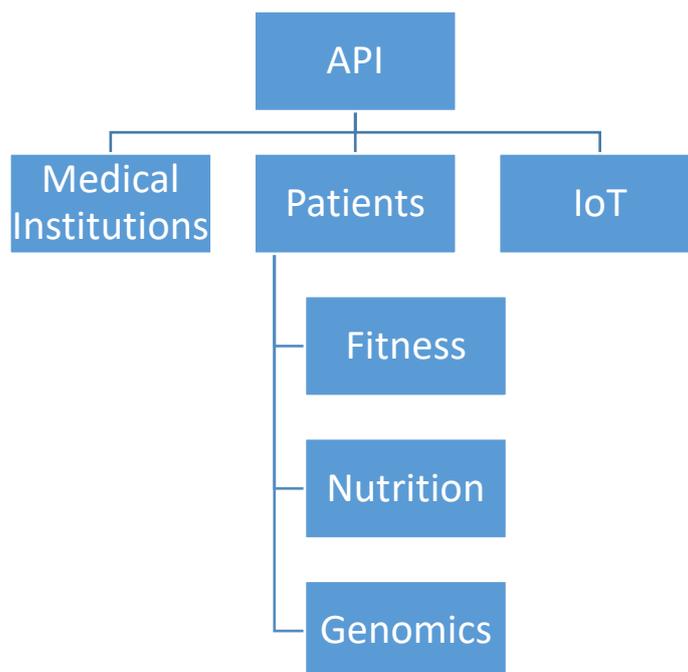


Applications for medical institutions will form a basis for possible further scientific advancements

There are several most potential areas of possible applications for patients, which include fitness, nutrition, genetic testing and analysis. They will be closely

connected to each other and provide lifestyle recommendations based on the health data of a user.

Applications for fitness will propose the fitness program based on disease history and current physical state and indicators of a user. This approach will significantly lower the possibility of harmful and unwanted exercises, thus reducing the risk of injuries and other possible incidents.

Applications for nutrition will recommend the diet plan for people who prefer healthy eating. The diet plan will refer to health data, recent physical activity and body condition. It will be possible to get a full nutrient breakdown of every food you eat, from calories and fats to vitamin and mineral content. Applications will also watch and consider food sensitivities and allergies. In combination with smart body scales, nutrition apps can be a great tool to control their body mass and fat percentage.

Applications for genomics and bioinformatics will allow users to undergo genome analysis procedure, making the overall picture of health status more complete. It will warn the user about possible genetic predispositions and diseases, food preferences and exercises.

The AI Opinion API can also be applied to create tools in other multiple areas. Combining all the data from possible applications, we can receive a full-scale view on user's health.

**AI Opinion Team**

**Christian Meierhoff, CEO**

Education: Fachschule für Wirtschaft

staatl. gepr. Betriebswirt; BWL / Marketing

Head of Business Development & Sales in one of the leading eCommerce companies

Field: Operations Management, Project Management, Process Management and Outsourcing:

- Cross Border eCommerce Fulfillment

- Billing; Payment; Risk Management, Debtor Management, Collection Management for eShop, Mobile Phone Providers, Social Network

**Sergey Rumyantsev, Medical Advisor**

Education: Doctor of Medicine (M.D.) in Kazan State Medical University,

Former Chairman, Department of Nuclear Medicine at King Fahad Medical City, Riyadh

Field: Nuclear Medicine

**Vyacheslav Kurenkov, Medical Advisor**

Education: Russian National Research Medical University after N.I. Pirogov (RSMU)

Director of leading Russian ophthalmological clinic

Field: ophthalmology

**Anna Mesheryakova, Head of CIS Office**

Education: MA: URIE

One of the leading marketing experts in the CIS region

Field: marketing

**Dmitry Borunov, Head of Investor Relations**

Education: MA in National Research University: Higher School of Economics;

BA in National Research University: Higher School of Economics – International Affairs,

Manager of ICO projects with international background and experience in consulting

## Advisors

### Mohammad Shaheed Khan, expert in blockchain community

Islamic banker, one of the most well-known experts in blockchain community

A thought leader in Islamic Finance, Fintech, digital transformation and Innovation

Among the 500 thought leaders making the Islamic Economy (Islamica500, 2018 edition)

Serial Intrapreneur - winner of Global Islamic Finance Award (Oct 15)

### Maxim Chereshnev, International Secretary – IDACB

International Secretary – IDACB (International decentralized association of cryptocurrency and blockchain)

IDACB was created due to our international activity but it is totally decentralized union of blockchain associations in the world - so that it unites more than 60 countries now and will grow up to 100 countries

### Luis Cascão Pereira, Biotech Innovator

Head of Recovery, Formulation, and Bioprocessing, DuPont. Investor and Advisor

Experienced people and project leader working in technology-intensive spaces. Proven track record of bringing bench scale research to commercialization in industrial biotechnology. Early investor and adviser to FinTech, crowdfunding, and Blockchain companies.

### Vladimir Dyakov, Start-up adviser

One of the leading Russian experts who has launched several successful blockchain projects

**K. Khalifa Yusef Seymens, Health & Precision Medicine Entrepreneur and MEA Health Investment Advisor**

Experienced Managing Partner with a demonstrated history of working in the health wellness and fitness industry. Strong business development professional skilled in Management, Business Management, Business Development, Venture Capital, and Private Equity.

**Prof Simon Choi, Top Global ICO Lawyer**

Fintech & Blockchain, Belt & Road Initiative

Legal Expert in connecting the World and China together.

**Eduardo Di Santi, Data Scientist**

Machine Learning, Data Science, Big Data, Artificial Intelligence, Computer Vision and DNLP Advisor

**Sathapon Patanakuha, ICO Advisor**

MD/Founder at SmartContract Thailand & BLOCK M.D.

Blockchain Advocate

**Daniel Mo Houshmand**

Purposefully minded with a strong mathematical intuition, passionate about conveying science and technology that improves society and reduces inequalities.

Creative and multidisciplinary team player looking to help, create and implement solutions for a company with a strong analytical mindset.

• M.Sc. in Applied Mathematics, Mechanics & Numerical Physics.

• B.Sc. in Civil Engineering - Structural Techniques

• Diploma (3Y) in Arts, Design & Modelling Techniques.

**Contact us**

| | |
|---|---|
| Website: | aiopinion.org |
| Facebook: | https://www.facebook.com/aiopinion.org/ |
| Twitter: | twitter.com/AI_Opinion |
| Telegram: | t.me/aiopinionico |
| GitHub: | github.com/AIOpinion |

**FAQ**

**What is an ICO?**

ICO stands for "Initial Coin Offering" and it is a means of raising capital through a crowdfunding campaign with the use of crypto-assets as investment. A digital asset, the coin or the token, is issued for a purpose and are sold to raise money for the said purpose.

After the ICO process is done, the coins are traded on crypto-exchanges and market supply and demand decides on their fair pricing.

**Is an ICO/ITO similar to an IPO?**

The IPO refers to the "Initial Public Offering", the very first sales of stock issued by a company to the public where a company sells at least part of their shares to the public to be traded on a stock exchange.

IPO's are mainly used (not exclusively) to publicly offer a company's equity in the form of shares, whereas ICO's can be utilized to offer multi-purpose products, which are not limited to shares. These new products are represented through tokens or the digital assets in general.

**What is the legal status of conducting ICO's?**

For every ICO the token has to be classified and a decision pertaining to its regulatory status has to be made. Several fields of law such as financial market law, anti-money laundering regulations, civil law (with respect to the prospectus) and tax law have to be considered. Whereas some tokens merely give the investor the right to access a platform or utilize a digital ecosystem, most tokens are financial products and are thus covered by regulatory law. Depending on each jurisdiction, the sale and offer of these tokens might require a license and/or a

prospectus. Furthermore, listing such a token on an exchange for the secondary market is also a regulated activity in most jurisdictions.

**How to buy tokens?**

To buy tokens, sign up and log in to your personal account. Then make a payment in ETH, BTC, USD or EUR to the AI Opinion wallet address specified in your personal account.

**How does it work?**

If you make the payment in cryptocurrency, the system assigns unique ETH and BTC addresses to each user. So, whenever payment is received into one of them, we are assured it's you. After the transaction, the relevant amount of AIOP tokens will be transferred to your personal account.

**What is the price for your tokens?**

The token price is $0.4. You can get tokens on special terms at the Presale stage with a 50% discount.

**Why are your tokens bound to US dollars?**

Cryptocurrencies are highly volatile, and their rate is hard to predict. At the same time, all of the investments into the project are made in fiat currencies. Our tokens are bound to USD to minimize investment and financial risks. In your personal account you can use a USD/EUR/BTC/ETH calculator.

**What is the minimum amount I can spend on your tokens?**

The minimum amount of purchase is equal to 0,1 ETH. Token price in BTC, USD and EUR or any other cryptocurrencies will be calculated at the time of purchase.

**When will I be able to purchase tokens?**

OPINION

Presale stage starts on June 01, 2018, but you may already leave a deposit, by paying in any currency to secure your purchase of tokens. To reduce any cryptocurrency volatility risks, your deposit will be automatically converted to USD. The conversion will be conducted at Coinmarketcap's exchange rate as of the exact date of the deposit.

**When should I buy your tokens?**

Public presale starts on June 01, 2018. Investors are offered significant benefits: a 50% discount of the token price. The presale stage is the most risky for both investors and the project, for this reason we are offering particularly favorable terms. The Crowd Sale is scheduled for July of 2018.

## Disclaimer

**PLEASE READ THIS DISCLAIMER SECTION CAREFULLY. IF YOU ARE IN ANY DOUBT AS TO THE ACTION YOU SHOULD TAKE, YOU SHOULD CONSULT YOUR LEGAL, FINANCIAL, TAX, OR OTHER PROFESSIONAL ADVISOR(S).**

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