



WhitePaper

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1. Introduction

Based on the current pace of technological progress, we assume that therapies that will slow the aging process will be created in the coming years. The importance of these therapies cannot be overemphasized, because they will lead to healthspan and thus lifespan extension.

On the other hand, there is a huge risk for every single one of us that such therapies will appear too late. It would be the greatest tragedy not to live to see the introduction of lifespan-extension therapy, and we are counting years here. Our goal is to speed up the process.

Everyone can contribute by uploading their biomedical data, as well as discussing and participating in clinical research and trials of new diagnostic methods, therapies, medical devices, and software solutions.

Open Longevity is a community of people united by a common goal—to find and develop therapies extending youth. Our project aims to develop Open Longevity by creating an identically named online platform. On the one hand, it will serve as a personal cabinet with the possibility of obtaining expert advice, forming a personal strategy to combat aging. On the other hand, it will make it possible to conduct clinical trials of aging therapies by the community itself, bypassing the intermediary represented by pharmaceutical corporations.

In order to truly reduce risks of own death a person should always be presented in a clinical trial aimed at life extension. The organization and participation in such research is the most rational life strategy.

The openness of the research results and the lack of patent protection give Open Longevity incredible speed, providing us with advantages over other projects focused on fighting against aging.

Expert system, being a commercial project, will support the work of the second, nonprofit area—clinical research.

Thus we create consulting service for life extension, which is already required and will only gain audience; we develop anti-aging therapies and introduce them into clinical practice; we create infrastructure where nonprofit projects are carried out due to commercial activity, both parts of the system, however, solve a common problem—search of medicine for old age.

2. Industry review

2.1 Where is the biology of aging now?

Aging is not a mandatory process for all living beings. There are several [organisms](#) that, for all intents and purposes, don't age: their risk of death doesn't increase over time. The most famous negligibly senescent mammals are the [naked mole rat](#) and Brandt's bat.

Scientists have been able to delay aging and extend lifespan in lab animals through various methods, from periodic fasting and drugs to gene therapy and engineering. [Robert Shmookler Reis](#) managed to extend the lifespan of a nematode worm tenfold; Blanka [Rogina](#) increased the lifespan of a fly twofold; and [Andrzej Bartke](#) extended the lifespan of mice twofold.

Observational studies of large groups of people have shown that diabetics taking routine metformin are living longer than people who are free of the disease and not taking the drug. This interesting side effect has not been fully tested in clinical research despite the fact that the FDA has approved such a study. The reason is underfunding.

Scientists have also significantly expanded our understanding of the mechanisms of human aging, which include genomic instability, telomere attrition, epigenetic alterations, loss of proteostasis, deregulated nutrient sensing, mitochondrial dysfunction, cellular senescence, stem-cell exhaustion, and altered intercellular communication.

A number of genes are associated with aging and longevity, such as *ATP5*, *EP300*, *COX5*, *NUDUFA*, *NUDUFB*, *FOXO*, *PTEN*, *IGF1R*, *PRKAA*, *PIK3CG*, *CASP9*, *AKT*, and *CYC1*. Changes in their expression lead to age-related diseases, including Alzheimer's and Parkinson's diseases and several types of cancer. Age-related diseases often have a common genetic and epigenetic nature. This suggests that there is a [general mechanism](#)—we call it aging.

2.2 The main institutions and research groups

- [The Buck Institute for Research on Aging](#)
- [Institute for Aging Research, Albert Einstein College of Medicine](#)
- [Paul F. Glenn Center for the Biology of Aging, Harvard Medical School](#)
- [Glenn Laboratory for the Science of Aging, Massachusetts Institute of Technology](#)
- [Yale Center for Research on Aging \(Y-Age\)](#)
- Research groups at the University of California, Berkley; Gladstone Institutes; UC–San Francisco; and UC–Davis
- [Institute of aging and Chronic Disease, University of Liverpool](#)
- [Institute of Healthy aging](#), University College London

- There are also 26 companies in [João Pedro de Magalhães's Who's Who in Gerontology](#).

2.3 Conference on life extension

Every year, several dozen scientific conferences and symposia on the biology of aging are held worldwide. According to our estimates, they are visited by at least 15,000 people a year. The number of conferences, and their scale, grows alongside the number of labs and scientists involved in life-extension research.

Gordon Research Conferences are a group of prestigious international scientific conferences covering frontier research in the biological, chemical, and physical sciences and their related technologies. Studies on the biochemical, genetic, and physiological mechanisms of aging and age-related changes in humans and animals are presented at the [Biology of Aging Conferences](#) every two years.

The twelfth annual [Harvard/Glenn Symposium on Aging](#) at Harvard Medical School and the second Scripps Florida [Symposium](#) on the Biology of Aging were worth attending this year. There's also the Bay Area Aging Meeting ([BAAM](#)), which is held every six months. These are just a few examples of important longevity-related events.

2.4 Databases

There are several [databases](#) containing such longevity-related information as data on 250 potential geroprotectors and thousands of human genes associated with longevity and aging, cellular senescence, and responses to various diets.

Many studies are difficult to repeat, as is often the case in biology, and some have been performed on very small groups. In any case, all these data require further study and a larger number of experiments.

A few dozen drugs have shown geroprotective effects on humans, but they, too, require further research. More importantly, additional research is required for their different combinations and personalized modes. The Russian blog [Nestarenie.ru](#) is worth noting in this case. It contains analysis and descriptions of thousands of scientific articles on correlations between various interventions and age-related diseases.

Additionally, the [UK Biobank](#) database has been tracking the health of 500 thousand elderly volunteers for more than ten years. Data on such things as blood and urine biomarkers, genomics, and many other things, observed dynamically, are of great interest for researchers of aging all over the world.

2.5 Antiaging Clinical Trials

Several clinical trials, i.e. research in humans, of anti-aging therapies are being held or recruiting volunteers already. Some trials are conducted in a traditional manner with the support of sponsors — respectively, the participation is free. But some trials not only testing

new therapies, but also a new approach to funding: volunteers are ready to pay for experimental treatment and diagnostics themselves. The trials listed below are [conducted](#) in the USA.

Studies of dasatinib/quercetin (senolytics therapy) and rapamycin (suppressor of the mTOR pathway and the autophagy inductor) recruit extra volunteers (10 and 20 more people respectively), the participation is free. The investigation of NAD⁺ injections (the sirtuin promoter/DNA reparation) also being carried out with the sponsor support, but all volunteers have already been recruited. However, additional NAD⁺ trials are planned for neurodegenerative diseases, such as Parkinson's disease and Alzheimer's disease.

The participation in GDF11 trial (growth and differentiation factor 11—protein, which has a pronounced geroprotective quality in relation to cardiovascular and nervous systems) will cost \$ 7,800 per year, 60 people are recruited. Thymus regeneration therapy is aimed at partial immune restoration and requires 50 volunteers able to pay \$ 28,000 for the therapy and full examination. Young blood plasma transfusion will cost \$ 50,000 per six procedures and examination of the corresponding health indicators, 100 participants are recruited.

Also, an even more expensive study of a stem cell-mobilized young plasma is planned, 60 volunteers are needed. And the cost of a mesenchymal stem cells study (therapy for autoimmune diseases) will depend on the diagnosis of the subject, 100 patients are recruited.

3. Current industry problems

The greatest problem in the industry of life extension is that there is no effective cure for aging on the market yet. Not enough laboratory research is being done, and clinical research is, at best, of a geriatric nature, that is, they are relevant to the treatment of old age, and not to the prevention of aging. Pharmacies are flooded with supplements with unproven effects, and those loud, false promises damage the industry.

The main problems that threaten to prevent an eventual cure can be classified as having to do with **science, infrastructure, awareness** or **politics**.

3.1 Scientific problems

Much is already known about medicine and the biology of aging. There has been success in extending the lives of lab animals, as well as significant progress in our understanding of human aging mechanisms. But the search for a cure against old age is extremely complex. Several issues complicate the related research.

First, biomarkers set. To conduct research on humans (i.e., clinical trials), we need a list of biological indicators to measure before and after the course of a treatment. And the result needs to be visible within a reasonable period of time, several months to a couple of years.

Scientific groups from all over the world offer methods of determining biological age and the speed of aging. [Horvath's Clock](#), the state of a cardiovascular system, patterns of locomotor activity, telomere length, [DNA methylation](#) patterns, and more are useful. All these [sets](#) of markers constitute a subject of complex scientific debate. The perfect panel of biomarkers is still to be established, and it is a separate topic for research. Nevertheless, even a non-ideal diagnosis of aging is required to be introduced into clinical practice.

Second, it is still unknown to what extent standard lab animals (mice, rats, nematode worms, flies, yeast, apes, etc.) are representative models of human aging. There is no clear translation of life extension achievements from the laboratory to the clinic. Often a whole class of therapies that can be useful to a human being is missed, because they do not work, for example, in mice.

Third, there are many drugs that extend the lifespan of laboratory animals. These drugs affect common age-related-pathology mechanisms (i.e., mechanisms of aging), and are called prospective **geroprotectors**. Many of them have already been in clinical use for years: they are prescribed by doctors and sold in pharmacies to treat people for diabetes, cardiovascular diseases, cognitive disorders, and many other ailments. Among the drugs are metformin, aspirin, rapamycin, and a number of vitamins.

What is the problem, then? **There are too many prospective geroprotectors—more than 250.** And the drugs have to be tested not only individually, but in combinations. Determining

the optimal combination is a complex task, requiring algorithmic solutions and computational power.

There are also problems worth mention, common for all biology and medicine: data processing, accurate delivery of therapeutic agents, improvement of laboratory research methods and interdisciplinary communication.

3.2 Infrastructure problems

First, clinical trials.

Is there good research on the effects of geroprotectors and their combinations on people? Have trials shown a reduction of mortality from all causes? After all, several drugs have been on the market long enough for us to know everything about their pharmacokinetics and side effects, leaving little to be done. But the answer is no, **no trials are being conducted**.

Scientists are also **aware of diets** that increase lifespan and delay the onset of several age-associated diseases. There is data on both animals and humans, the molecular paths are known, and many observational studies. Are there clinical trials of these diets? No, or insufficiently many.

Why is that? Most geroprotector drugs were discovered so long ago that one cannot obtain exclusive rights to their commercial use. **Pharmaceutical companies are not interested in the trials we require**, especially trials of diets.

Second, diagnosis of aging.

Today, the notion of "age norm" prevails in medicine. That is, a person is encouraged to reconcile himself to the existing state of affairs, since statistics are progressing badly with the age of the whole population. There are no preventative medicine departments in hospitals. The task of "not getting sick" was transferred to a rather diverse company of laymen.

Aging as such is ignored by the medical community. A person is declared healthy if he does not have an obvious pathology and does not face death within a year. Although the situation is inexorably deteriorating.

Third, involving new researchers.

It is hardly a secret that talented scientists do not often have adequate ability and resources in the fields of marketing and legal support. With a brilliant analytical mind does not always come talent as a speaker, blogger, sales manager, or grant writer.

Academic institutions do not always solve management problems, but often load scientists with them, distracting them from important lab work. And talented people, engaged in research activities, occupy second, third roles.

So how does someone who has been studying the biology of aging, soaking up all the relevant scientific papers and publications and devising his own projects, but who isn't an

effective self-promoter, implement those projects? There is no such mechanism, especially a public one.

3.3 Awareness problems

We all know something about biology and medicine—some of us took biology classes in school; some have snatched a bit of reading on the Internet. But the vast majority of us lack basic knowledge and understanding, which is a paradox, since these areas are the basis of our own health!

And most people have never heard of non aging animals, the genetics of aging and longevity, or the fact that we have managed to extend animals' lives by up to ten times!

The majority of ordinary physicians also knows nothing about biology and diagnosis of aging. Advanced training in these fields for medical practitioners is vital for all of us.

However, people are interested in their health, and in anti-aging cosmetic procedures. Plastic surgery, fitness, diets, vitamins and supplements, mysterious rejuvenating treatments, and expensive retreat clinics—all of these things captivate consumers' attention and resources, giving them false hope.

We want people to have access to reliable information and to know how to analyze it.

3.4 Political problems

We call political problems those that could be solved only by changing people's opinions or the official position of private and state structures. These problems often evolve from the previous class of issues—poor awareness.

Society does not recognize aging as a disease, perceiving it instead as something normal. *Normal* meaning that it has always been and always will be, so there is no reason to interfere. People often just don't know and don't bother to think about the fact that it is possible to treat aging. **Society doesn't request a cure against aging**, as it requests cures for cancer, infectious diseases, and many other ailments.

The right to live is the basic human right. And the preservation of life is, first of all, the fight against aging, the main cause of death. People are not yet united around the idea of a radical extension of their lives.

The biology of aging is gaining momentum, but few people allow themselves an open conversation on the fight against aging; a "fight against aging" somehow seems too radical, so it is rejected. Even at conferences where potential therapies are discussed, the scientific community is overly cautious in its statements.

Voters don't demand a cure, scientists are not accustomed to raising their voices, and politicians are silent (not to mention the fact that they are ordinary people themselves, the same people who have never heard about the biology of aging). **Allocating funds in state, as well as in non-state, budgets is very problematic in these condition.**

There is no institution in the world that wants to defeat aging at any price. Usually the grant issuing organization expects a small but guaranteed result. And most sponsors want to immediately see the movement toward earnings. Experiments are limited by the report deadline and, in general, by the vision of the grantor. It is hard to imagine someone allocating money using the phrase "to find out the cause of human aging."

4. What's Open Longevity?

4.1. The ideology of the project

Open Longevity is a project that initiates, organizes and guarantees the openness of clinical trials of anti-aging therapies.

Two important components of our project are online expert system, that interpret user's biomedical information in terms of aging biology, and new infrastructure for anti-aging clinical trials. They are closely connected: the obtained data of trials is taken into account of the expert system operation, and the funds raised from users are spent on anti-aging research.

At the first stage, having the developing of the platform and launching the first studies as our aim, we raise funds through the ICO. Our task is to build a self-sufficient system that provides paid services to individuals but at the same time solves important tasks for humanity on a non-commercial basis.

We do not plan to protect the therapies that we have tested with our patents - the results of the research will be made publicly available. We will direct the energy of the patients toward fighting against aging, and experience suggests that it is the policy of openness that attracts projects, funding, scientists and volunteers.

One of the common fears in the industry is that, having appeared on the market, the medicine for old age will become the exclusive prerogative of the elite. The openness of our project is a possible solution to this problem.

Moreover, publication of both final and intermediate results, as well as research protocols and all related materials, will give us the highest level of expertise.

All clinical trials will be carried out strictly in accordance with the existing norms. We will prepare brochures describing the design of the experiment, questionnaires, informed consent forms, permissions of ethical committees. We will involve laboratories, clinical institutions and CRO (Contract Research Organization), which traditionally carry out similar researches.

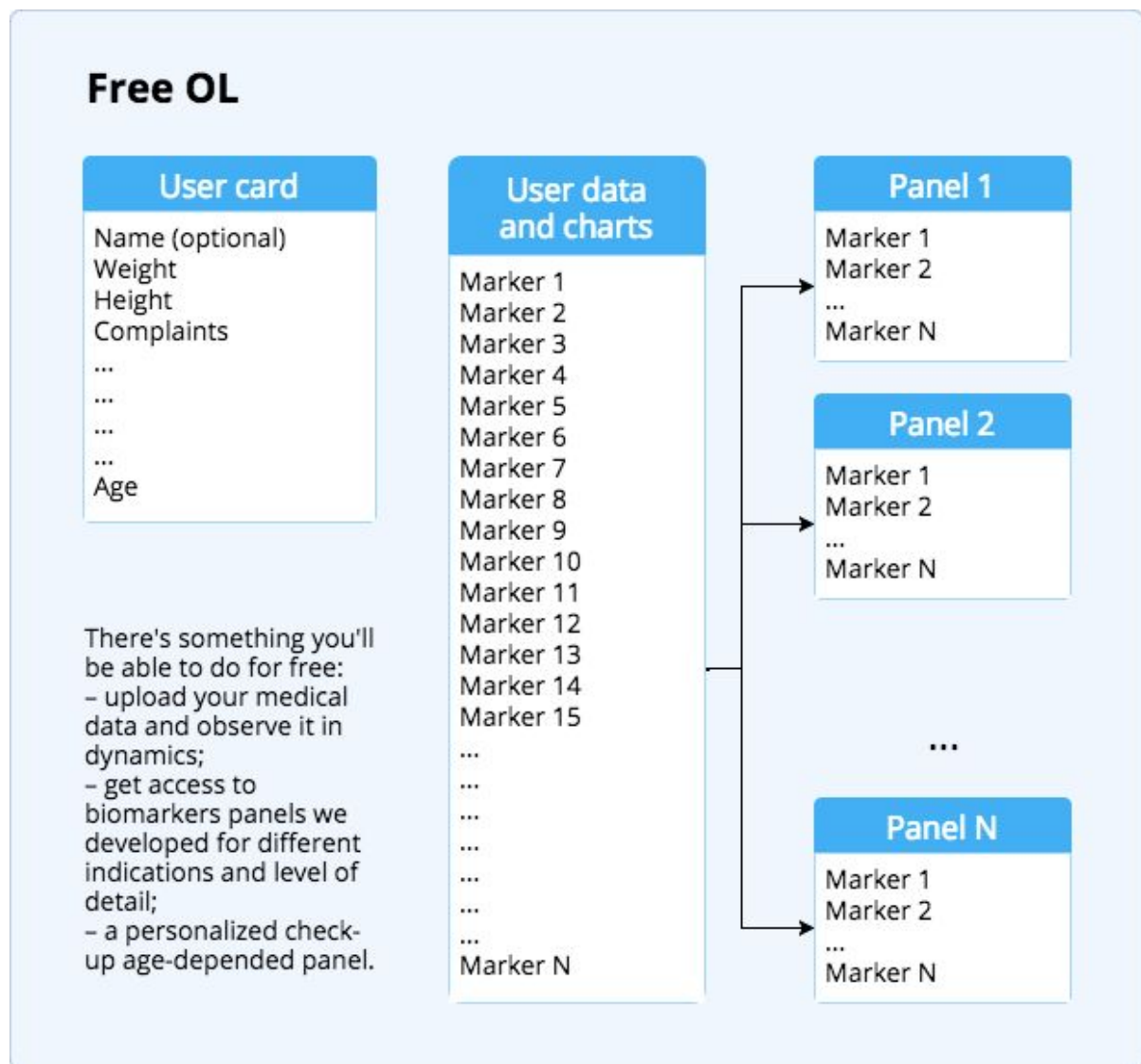
We will include the patients into a global movement on searching and testing potential aging therapies that, once proven effective, will immediately become part of their own lives.

4.2. Functionality of the Open Longevity platform

The Open Longevity platform will consist of four interconnected blocks: Free, Expert, Personal and Trial.

Free OL is a free part of Open Longevity. Filling in the primary simple medical history, the user (manually exporting from laboratories, automatically unloading from wearable gadgets) records his medical and biological data in any convenient way and observes them in dynamics.

To monitor the rate of aging in general and the development of an age-dependent disease, for example, Alzheimer's or depression, users will benefit from the diagnostic panels developed by us, that is, lists of analyses and tests. Both shortened panels and extended panels will be available - including more tests and more expensive examinations. Also a personalized panel for the backup will be accessible, taking into account the user's age.

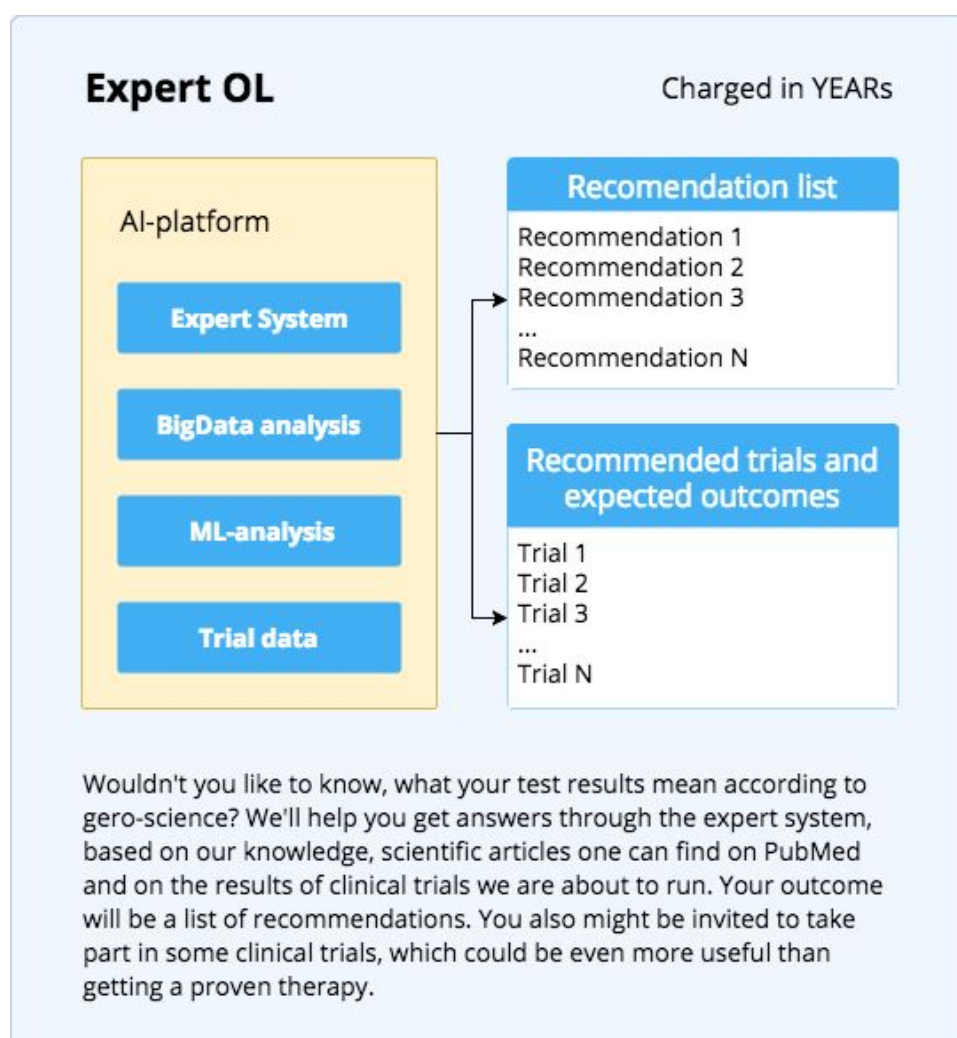


Every time when learning, the neural network draws conclusions more accurately, and from the Trial OL the platform will receive data from its own clinical trials. The user can independently have tests and check whether his or her indicators are normal in terms of conventional medicine.

Through a paid subscription (about \$ 1-10 per month) the expert part of the platform - Expert OL - analyzes the data provided by the user.

It should be noted that the complex of sciences that study aging, or gero-science, considers the concept of norm a little differently. In particular, we avoid the phrase "for your age this is normal." Our goal is to bring all the health indicators closer to the level of the young organism. Moreover, the reference values are regularly specified, new scientific publications are published. We follow the results of research and often give other or more rigorous interpretations of biomarker indicators.

The system will be based on expert-reviewed scientific publications and analytics of large data (depersonalized data of our users);



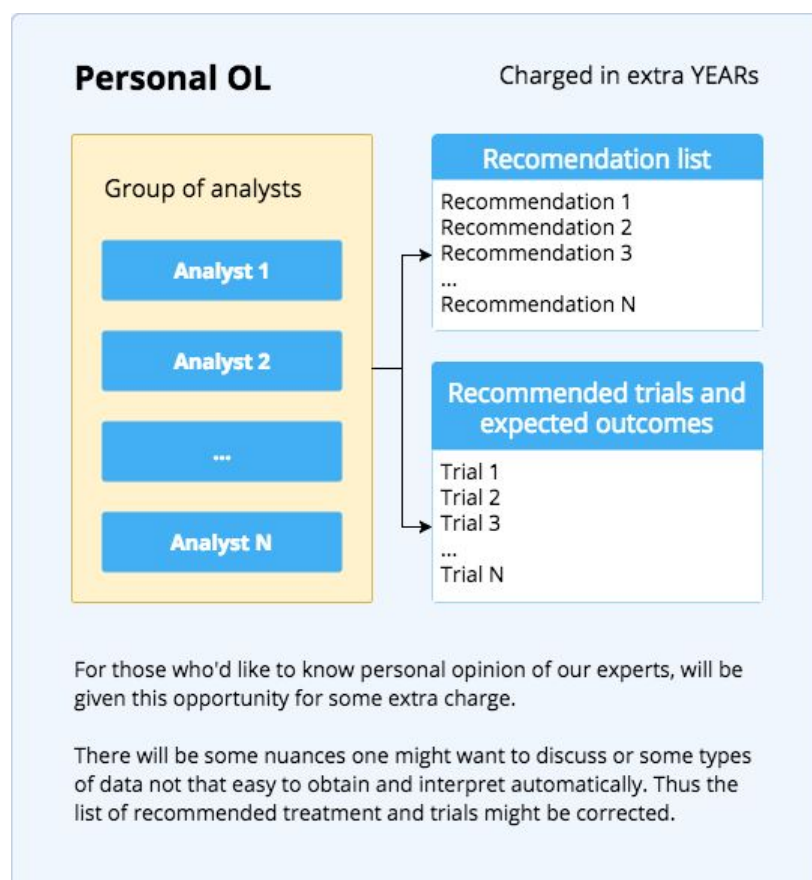
After the expert assessment, the user will receive a list of recommendations and comments, that is, a personal program to combat aging. If there are no counterindications the invitation to participate in one of the clinical trials of Open Longevity may be one of the recommendations.

As the platform gives recommendations in terms of combating aging, and we know that there is no medicine for old age, the proposed interventions will have more potential therapies than those that have already proved effective. Thus, people will participate in clinical research useful primarily for them.

Our goal is to turn every patient into a researcher. It doesn't matter whether you take medicines, BAA or just experiment with a diet—we encourage everyone to have the necessary tests and analyses before and after. For our part we will help run the correct diagnostics and offer a list of possible experiments.

Personal OL is an add-on to the expert system Expert OL where highly qualified specialists are engaged in the analytics, due to which users will be able to ask questions of interest, while our experts—to clarify user's medical history. As a result, some adjustments can be

made to the recommendation list.

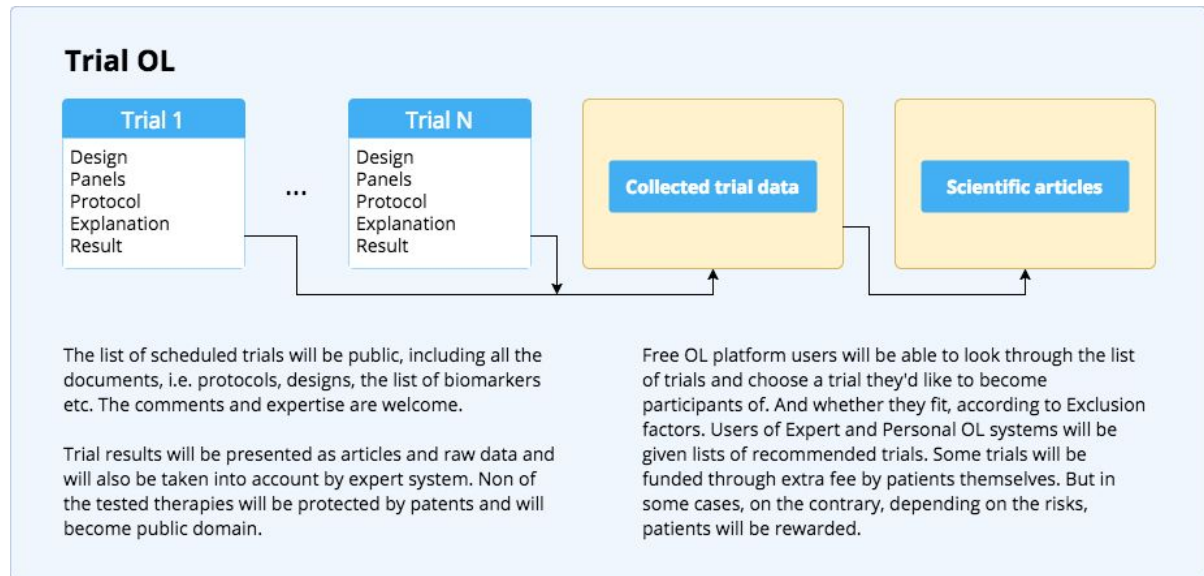


Consultations within Personal OL include additional fee. The cost of the services is set by the experts themselves, and the platform withdraws the commission - preliminary 25%, but the exact figure will be adjusted depending on the legal zone in which the project will be implemented.

Funds collected from users in the framework of Expert OL and Personal OL are an additional source of funding of clinical trials.

The Trial OL section contains information about all the clinical studies taking place within the platform: current, past and planned, launched by the OL team and offered by third-party scientists on a competitive basis. For details on the types of research, the research

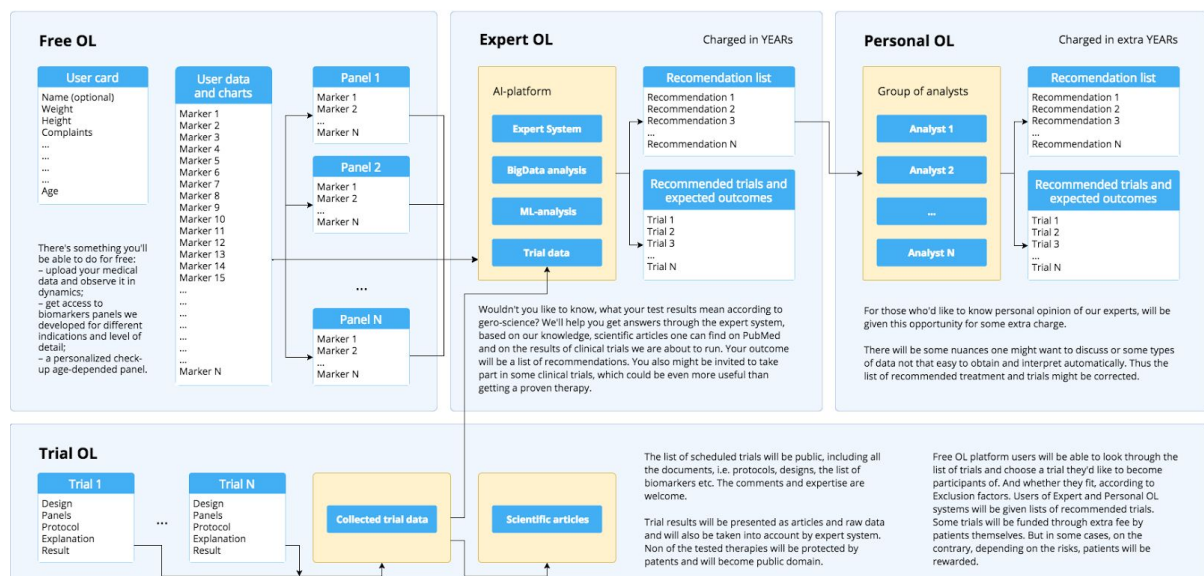
procedure and introduction of the project on new research for the contest, see section 4.3.



In the general scheme of the OL platform (below) you can track the data movement between the four sections. For example, user's data from Free OL, a common list or collected in a panel, are transferred to Expert OL where they are analyzed and given recommendations by the system. After that they can be transferred to a specialist in Personal OL for adjusting and consulting.

An independent system for conducting clinical researches Trial OL actually closely interacts with the entire platform. The data for the research are taken from Free OL as well, and the results of the research are transferred, as gained experience, to the expert system.

OL Platform functionality

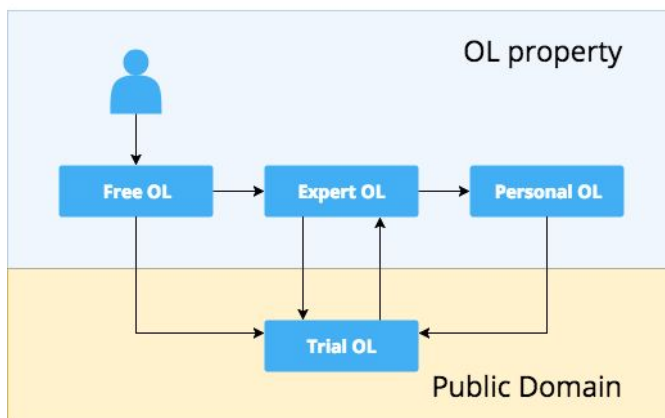


In the Data Management diagram the trajectory of data movement is again simplified. Also

one can observe, which part of the data will be public and which one will remain the property of the project.

All information on the OL platform is depersonalized, while the results of the Trial OL research and working documentation are public. We do not plan to protect patents.

Data Management



The data are stored on cloud or local disks connected to the Internet. During the work of the platform there will be a large open database for processing and expert review by enthusiasts and professionals wishing to give their own interpretation of our results. And we can be criticized in terms of the accuracy of the experiment design even at the stage of its development.

It is worth mentioning how our project contributes to the solution of the problems stated above:

1. **Scientific problems.** The very fact we push clinical trial industry will accelerate biomarkers panel development. The same with the representativeness of animal models. And our expert online platform will contribute to the computational solution of multiple combinations of geroprotectors on a certain stage of its development.
2. **Infrastructural problems.** Open Longevity is an organizational solution. We initiate and conduct clinical research and solve the problem of their financing; We promote the introduction of aging diagnostics in clinical practice. We also simplify the realization of ideas incorporated by scientists who have no commercial or academic support. Also, we would like to highlight that we want to reduce the role of pharmaceutical companies - a bridge between scientists and volunteers testing medicine - to the role of a free mobile application on creation and selection of clinical research.
3. **Awareness problems.** Are there many vegetarians who do not constantly talk about their diet you know? We expect our participants to become ambassadors of life extension. We will provide them with information. In particular, in the framework of our [Open Longevity schools](#). There's a video with English subtitles about our school [here](#).
4. **Political problems.** We will partly take over some government functions. Luckily cryptoeconomics allows it. We will protect the basic human political right – the right to life. At some point, it will be absolutely impossible to ignore a huge patients organization.

4.2.1. Why the types of biological data mentioned above are relevant to the diagnosis of aging?

The increase of intima-media thickness (IMT) of the carotid artery by only 0.1 mm increases the risk of heart attack by 15%, the risk of stroke by 18%, and also increases the risk of death from cardiovascular disease and death from all causes.

The level of IL-6 in plasma in the one-third highest values increases the risk of developing colon cancer up to 2.48 times, while lowering levels of IL-6 only by 1pg/ml reduces the risk of developing liver cancer by 12%. **High levels of IL-6 and high levels of C-reactive protein** greatly increase the risk of sudden death from heart disease. And their jointly high levels can predict a stroke with high probability. We can give more of these [examples](#).

Thus, through the analysis of many studies markers proven to reflect some of our aging rate and to predict risks of death from various diseases of aging have been selected.

We can examine these markers individually and determine the impact target for slowing down the development of signs of aging. These markers are also needed to evaluate the effectiveness of tested therapies. For example, we can evaluate the effectiveness of the cardiovascular system aging therapy or we can note the changes in probability of most common cancers emerging.

Thus, we can diagnose aging process and try to slow it down. [Read more](#).

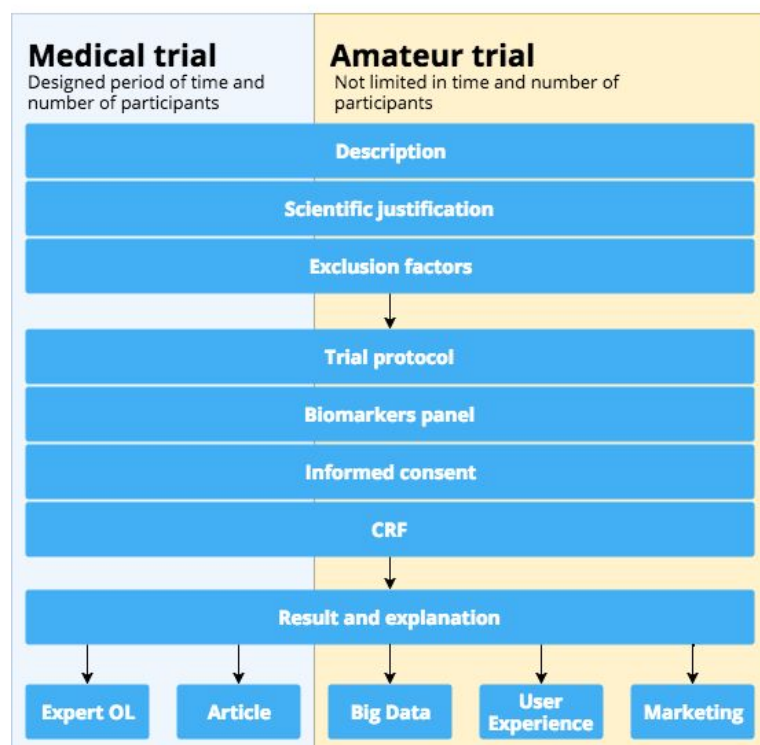
4.3. Clinical Studies Open Longevity

Clinical research is a complex, multi-stage process. We will explain to the future participants the essence of each study, risks, requirements and expected result as clearly as possible. Of course, more detailed documentation for physicians and laboratory staff will also be developed.

First of all, the user reads the description of the study. On request - a scientific justification. And also understands the criteria of inclusion / exclusion and counterindications. If the user decides to start the study and meets the requirements, he or she moves to the next stage.

The research protocol describes the methodology: what, how and when we measure, what we accept,

Trial structure



what other conditions we follow. Markers are checked before and after intervention, sometimes the midpoints are analyzed. CRF (clinical report form) of the research participant is formed and filled in. The informed consent is signed.

Each study will be carried out in two formats: medical and user.

In the first case the whole procedure does not differ from traditional studies: all analyzes are processed by a single laboratory, patients communicate with a doctor, the forms are filled by professionals, the number of participants and the duration of the research are strictly regulated. As a result, we receive qualitative data from which we draw conclusions and take them into account during the work of the expert system. Of course, according to the results of the research an article for scientific journal is prepared.

Custom research is conducted on similar protocols but they are completely independent: patients have tests in convenient laboratories, receive instructions and upload the results online. There are no limits concerning time and number of participants. It will be possible to join the research at any time, considering the criteria for entering into the experiment and technical feasibility of participation in the given territory, including interaction with the medical institution.

Compliance (i.e. patient compliance with the research protocol) and the quality of the data will be below expectations but the value in this case is exactly the number of participants, plus everything that happens exclusively by patients. The accumulated data will be processed more in the form of observational research. Users gain important experience, while our project - promotion. Hashtags to photos in Instagram will acquire one more utilitarian function.

4.3.1 Studies proposed by third-party teams on a competitive basis

Our goal is to create competition for life extension projects, thereby causing an explosive growth in clinical trials of aging therapies.

To introduce the project for voting and further research in case of win, a number of conditions should be fulfilled:

- We are focused on clinical research, thus we expect the projects of such kind.
- The competitor should justify why the proposed intervention will make a significant contribution to the increase of life expectancy.
- The competitor should develop and describe the design of the experiment, its scientific justification, the expected results, the estimated budget and time limit.
- The results and research process should be open and accessible to humanity - the research will have to be carried out by means of the Trial OL platform.
- A certain sum is paid for the introduction of the project for voting in YEAR.

Paid nomination of projects for the contest- the threshold of entry required for minimal filtration of scam projects. We expect the growth of the token rate, that's why we will not fix the price: it will be adjusted according to the currency rate and updated regularly by the Open Longevity team.

Members of Open Longevity will be aware of the rules but we will not limit the nomination of projects that do not comply with the first two paragraphs. The Open Longevity team will give expert assessment to the contest projects, invite other specialists and all participants of the platform for discussion. We follow the policy of open discussion and expect from the Open Longevity community's help in filtering projects and taking a responsible approach to the voting process.

Voting is implemented through a smart contract: the owners of YEAR tokens vote for the proposed projects, while the user's voice is proportionate to the number of YEAR tokens available in the total issue. If the project gets more than 50% plus 1 vote from the total number of voted tokens, then the voting is considered valid. Seven days are elapsed/given for voting from the moment the request is placed to a smart contract.

The team reserves the right of veto for additional filtering of fraudulent or incorrect projects from the point of view of Open Longevity ideology.

Funds are allocated from the Research Foundation OL. Tokens are fully transferred automatically to the author of the project, who prepares the documentation and conducts the research. At the same time he has the right to do everything himself or to invite the OL team to work. We do not oblige to carry out our research but all data will have to pass through the Trial OL system, which will ensure the openness of the process. A scientific publication will be the result of any research (authorship acknowledged).

At a certain stage the Trial OL system will become an automated solution for the preparation of all necessary documents for clinical trials, including protocol and budget. Thus, we will significantly simplify the nomination of projects for the contest, placing all participants in equal conditions, at least in terms of preparing budget. And what is most important, we will simplify the launch of the research in particular.

4.4 First scheduled trials

We will immediately publish both midway and final trial results, all documentation, protocols and questionnaires, experiment designs of current and future research. Openness is our competitive advantage. It's hard to overestimate the idea of open trial protocols. Implementing this approach, we will receive the highest level of expertise in the world.

The first trials we plan to spend funds collected during ICO:

1. Longevity Diet-1 (LD-1). A variant of a fasting mimicking diet.
2. Alzheimer's disease and vitamin B₁₂
3. Atherosclerosis: Sartans+Statins

4.4.1 Longevity Diet-1 (LD-1)

Hunger has been a terrible disaster in the history of mankind. Hunger in nature is often detrimental, as it is not metered and is not allowing to obtain good nutrition.

However, short cycles of fasting with subsequent recovery feeding considerably extends lives of rodents and many other model animals. **The basic fasting mechanism of life extension** in animals is a temporary **decrease in the level of insulin-like growth factor of type 1 (IGF-1)** to reprogram stem cells with subsequent restoration of IGF-1 for turning reprogrammed stem cells for growth and renewal of tissues.

Not only fasting, but even reduced-calories extended lives of rhesus macaques, but not as much as lives of rodents. Why? In primates and humans, unlike rodents, low-calorie diet does not decrease the level of IGF-1 – it can only be decreased by hunger or reduced amount of animal protein in diet.

Interesting facts:

- Balanced low calorie diet for 2-4 years in Copenhagen and in Norway was associated with reduced human mortality by 20-34%.
- Cutting calories by 25-30% or fasting has shown reduced mortality in randomized controlled trials in young and elderly.
- One of the main mechanisms for achieving longevity and protection from cancer during fasting is the reduction of IGF-1 level. So people with Laron-type dwarfism, which is characterized by low level of IGF-1, do not get cancer. Mouse-dwarves with a similar syndrome, live 20-30% longer than average mice and develop cancer at much older age.
- Ashkenazi Jewish centenarians are known to have defect of the IGF-1 receptor.

So fasting can powerfully extend lifespan of many model animals. But fasting is not convenient. We can't take a 5-days vacation monthly. Plus while starving it's extremely difficult to work, there is a lack of energy.

A variant of fasting mimicking diet, Longevity Diet-1 (LD-1), is probably the safest and most effective way to temporarily reduce IGF-1 level without starving. And thus extend human lifespan and postpone a number of dangerous age-related diseases.

Studies have shown that fasting mimicking diet extended lifespan of long-living mice; mice improved motor coordination, memory, neurogenesis; it reversed (achieved remission) symptoms of multiple sclerosis in 20% of the cases; recovered pancreas cells in a model of type 2 diabetes; it reversed type 1 diabetes in the model of induced by streptozotocin type 1 diabetes.

These were all in mice, but fasting mimicking diet **also improved many markers of aging in clinical trials (human studies)**.

[Read more...](#)

4.4.2 Alzheimer's disease and vitamin B₁₂

Vitamin B12 deficiency is associated with an increased risk of brain disorders with aging, including Alzheimer's disease. But as shown by meta-analyses and randomized controlled research on people aged 70 years and older, compensation deficiency of vitamin B₁₂ does not improve cognitive functions.

As it turned out, it's not the level of vitamin B₁₂ in blood that matters but its content in the frontal cortex. Even at its normal level in blood, the concentration of vitamin B₁₂, especially its active form methylcobalamin, decreases in the frontal cortex after 60 years old 10 times and stays in deficit—even down to zero.

The thing is, transport (carriers and carrier mediators) activity reduces with age, so B₁₂ cannot reach frontal cortex of the brain through the blood-brain barrier. The reduction of these conveyors begins to occur visibly already at the age of 40 and reaches critically low levels at around 60. Starting at 40 the brain begins to accumulate beta-amyloid and after 65 Alzheimer's disease starts to be diagnosed.

What are these carriers and carrier mediators? These are glutathione and megalin, which is partly involved in the amyloid brain liberation. Thus, increasing glutathione and megalin levels, as well as controlling the levels of vitamin B₁₂ in the blood, it is likely to provide a sufficient level of B₁₂ in the brain of older people and prevent a large percentage of cases of Alzheimer's disease.

[Read more...](#)

4.4.3 Atherosclerosis: Sartans+Statins

We want to test the effects of Sartans+Statins combinations in small therapeutic doses on the condition of vessel. Positive results will indicate a reduced risk of CVD in the near future and postponed pathologies development, which will become a direct opportunity to increase individual life expectancy.

A recently published [article](#) on biomarkers of aging has confirmed the right choice of indicators to measure. Researchers have shown that IL-6, C-reactive protein and cystatin C, which we have also chosen, grow with age. Adding intima-media thickness (IMT) to this list, we get the optimal biomarkers panel for this research.

Read more about Alexander Fedintsev research project on Sartans+Statins on the project [website](#).

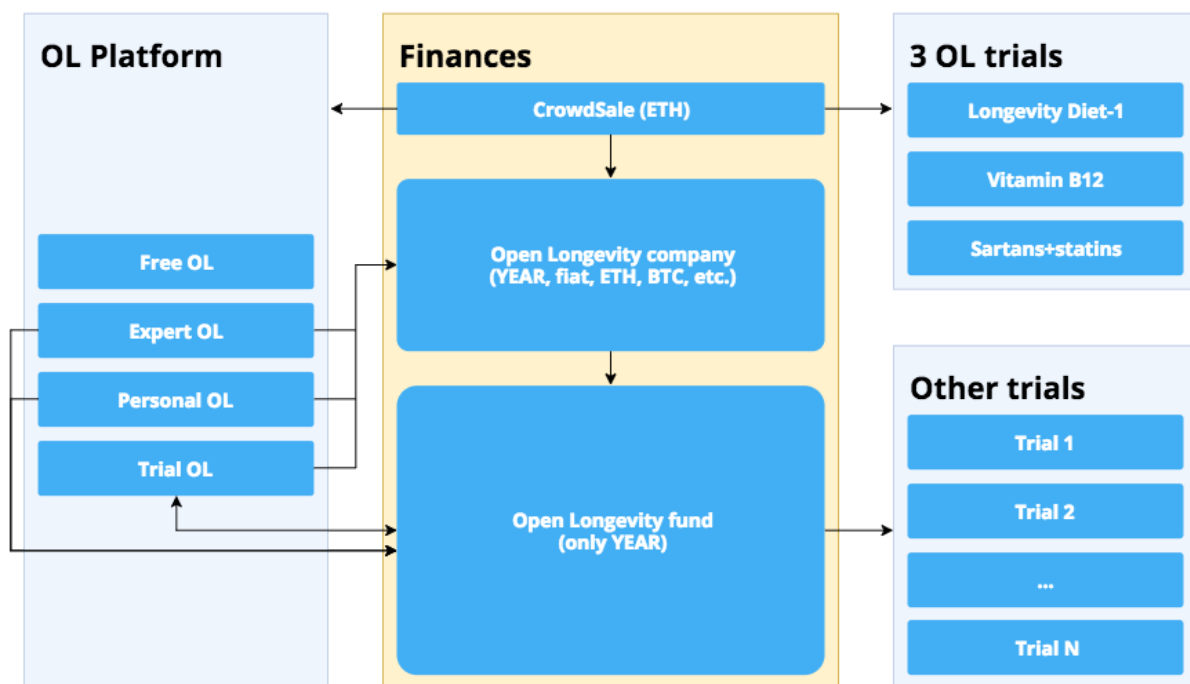
4.5. Business model Open Longevity

As part of the platform—Expert OL, Personal OL and partially Trial OL—provides paid services, it will become self-sustainable, when it reaches a critical number of users. Deliberately low price of Expert OL will attract a large number of subscribers, which will speed up the training of the platform and make its work more efficient.

Paying for the services of the platform with YEAR tokens will guarantee a 50% discount in comparison with payment by another currency, stimulating the demand for our tokens.

We divide the receipt of funds into two types of currencies—YEAR tokens and other currencies (fiat or crypto)—and into two types of gathering: 90% of YEARS will always go to the Open Longevity Fund, and the remaining 10% of YEARS and other currencies will be credited to the accounts of Open Longevity Company.

Financial flows



4.5.1. Open Longevity Company

Company currencies: YEAR tokens, crypto currency, fiat money.

Replenishment of accounts of the Open Longevity Company occurs through payment for services in any currency. If the payment is made in cryptocurrency (other than YEAR tokens) or in fiat money, the entire amount (minus the Personal OL specialists' fee) will be transferred to the corresponding OL Company account. If the payment is made in the YEAR tokens, then only 10% of the amount will be transferred.

Company funds can be spent on the platform technical support (for example, rent server capacities) or on the entire ecosystem support (for example, office rent, employee salaries).

The Board of Directors is entitled to transfer surplus funds from the accounts of the Company to the Open Longevity Fund's accounts (no more than once in six months). Including, through the purchase of tokens on exchanges, which will also affect the market price of the token.

4.5.2. Open Longevity Fund

Fund currency: YEAR tokens.

The first replenishment of the Fund occurs via the additional emission of tokens, described in [paragraph 6.3](#).

There are YEAR tokens only in the Fund. Replenishment occurs when users pay for services of the OL ecosystem with YEAR tokens: 10% of tokens are sent to the account of the OL Company and the rest 90% is sent to the OL Fund account. Funds can be spent only on conducting clinical trials or other projects in the field of longevity. Open Longevity team will be offering its projects for voting on general grounds. The expenditure of these funds is only to be made through voting via smart-contract, thus the process is absolutely transparent and automated. It is described in detail in [paragraph 4.3.1](#).

5. Roadmap

5.1. Expenditure of funds collected in the Pre-ICO phase

The lower limit is not established, all funds collected as a result of the Pre-ICO will be transferred to the project team for the fulfillment of the tasks set in the collection of funds for the Pre-ICO.

Upper limit of fund raising: \$ 1 000 000

The funds will be spent on:

- Marketing and promotion of the project, preparation for the ICO;
- The formation of the initial Open Longevity ecosystem, within which YEAR tokens will be traded;
- Translation white paper in Chinese, German, French, Spanish, Italian.

5.2. The expenditure of funds collected during the ICO phase

The lower limit of fund raising is: **\$ 7,500,000**

The upper limit of fund raising is: **\$ 99,750,000**

Depending on the amount of funds collected at the ICO stage, the following objectives will be achieved:

Goal 1, amount: \$ 7,500,000.00

Tasks:

- Development of Free OL
- Preparation of documents for the Longevity Diet clinical trial study 1

Goal 2, amount: \$ 11,250,000 (total amount of \$ 18,750,000)

Tasks:

- Developing of Trial OL
- Integration with laboratory research services
- Preparation of documents for the clinical trial Statins+Sartans

Goal 3, amount: \$ 24,625,000 (total amount of \$ 43,375,0000)

Tasks:

- Development of Expert OL—expert system + research results
- Develop a mobile app for iOS
- Develop a mobile app for Android
- Preparation of documents for clinical trial B₁₂
- Launch of the first Longevity Diet clinical trial study

Goal 4, amount: \$ 14,375,000 (total amount of \$ 57,750,000)

Tasks:

- Development of Expert OL—BigData analytics
- Development of Expert OL—ML-analytics

- Integration with medical records management services
- Raw-data interpretation of the Longevity Diet clinical trial
- Writing an article based on the results of the Longevity Diet clinical trial

Goal 5, amount: \$ 16,875,000 (total amount of \$ 74,625,000)

Tasks:

- Integration with services to collect data on user activity (wearable devices)
- Translation the platform into Chinese*
- Translation the platform into Spanish
- Running a second clinical trial study of Statins+Sartans **

Goal 6, amount: \$ 18,750,000 (total amount of \$ 93,375,000)

Tasks:

- Development of Personal OL
- Launch of the third study of clinical trial B₁₂
- Interpretation of Raw-data of Statin + Sartans
- Writing an article on the results of the clinical trial Statins + Sartans
- Translation the platform into Hindy
- Translation the platform into Portuguese

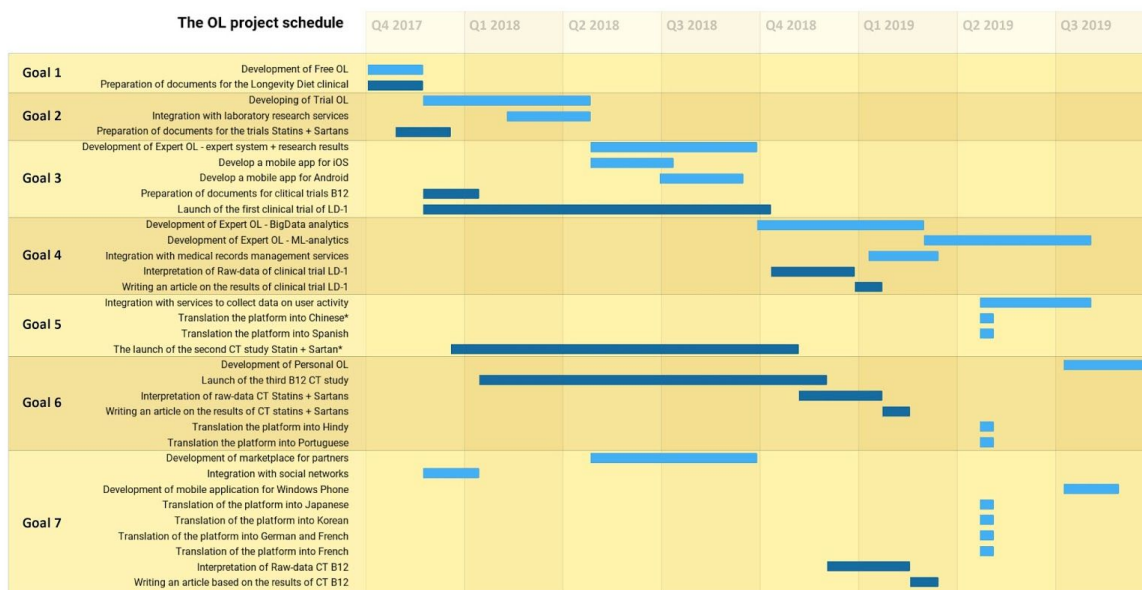
Goal 7, amount: \$ 6,375,000 (total amount of \$ 99,750,000)

Tasks:

- Development of marketplace for partners
- Integration with social networks
- Development of mobile application for WindowsPhone
- Translation of the platform into Japanese
- Translation of the platform into Korean
- Translation of the platform into German
- Translation of the platform into French
- Interpretation of Raw-data of clinical trial B₁₂
- Writing an article based on the results of the B₁₂ clinical trial

5.3. Project schedule

It will take 24 months to realize all the tasks set. Below we present the calendar plans for accomplishing the tasks (according to their duration) with goals.



[Bigger picture](#)

* The duration of the research "Sartans + statins" and "B12" is specified after passing the stages of preparation of documents.

** The platform is initially developed in two languages: Russian and English

6. Buyer's guide. Investment

To finance the development of the Open Longevity system, a fund-raising phase, known as crowdsale, will be held. During crowdsale, people can purchase YEAR tokens at a fixed rate. YEAR tokens provide the holder with the right to use the Open Longevity service at a discount (in comparison with payments in national and crypto currency), to receive goods and services of friendly services and platforms that form the Open Longevity ecosystem, and to participate in voting on the use of the funds of the Research Foundation.

YEAR tokens are developed using the Ethereum ecosystem, in particular, using the Token ERC20 standard. The ERC20 specification will be expanded to allow voting. The upper fundraising level is 99 750 000 \$. The tokens are issued twice, at the time of the PRE-ICO launch and at the time of the launch of the ICO. The following describes the process of selling tokens during crowdsale.

6.1 Pre-ICO

Open Longevity Smart Contract carries out the emission of YEAR tokens, and during the Pre-ICO the amount of YEARS will be issued to reach \$ 1,000,000.

The purchase of tokens during the Pre-ICO will consist of two phases:

- *Private Placement*
- *Public Crowdsale*

The rate of the ETH to dollar is to be set at the launch moment of Pre-ICO, and is being fixed for the entire collection time.

The purchase is carried out by transferring the ETH to the address of the smart contract, and the sender of the transaction becomes the owner of the purchased tokens.

Private placement phase

Lasts for 3 days starting the launch of the Pre-ICO.

The start date will be announced in advance, in our channels:

- t.me/OpenLongevity_en
- t.me/OpenLongevity_ru
- t.me/OpenLongevity_chat_en
- t.me/OpenLongevity_chat_ru
- And at Facebook accounts of team members.

To be registered for a Private Placement, providing the following information is a **must**:

- Full name
- Email address
- ETH wallet address
- The amount of tokens to be purchased

The purchase of YEAR tokens in **the first 3 days can only** be performed from addresses registered in the Private Placement database.

During this phase, a special price for tokens is set: \$ 100 = 1,750 YEAR.

At a one-time purchase of tokens for \$ 100,000 or more during the Private Placement phase, a special price of 2,000 YEAR = \$ 100 operates.

Attention!

It will be **impossible** for unregistered addresses to purchase tokens at the stage of Private placement.

It will also be **impossible** to purchase YEAR tokens from the stock addresses.

Public Crowdsale phase

Lasts for 15 days, starts immediately after the completion of the Private Placement phase, on the 4th day of Pre-ICO. **Anyone will be able to purchase YEAR tokens, including unregistered participants.**

During this phase, a special price for tokens is set: \$ 100 = 1,300 YEAR.

At a one-time purchase of tokens worth \$ 100,000 or more during the Public Crowdsale stage, a special price of 1,500 YEAR = \$ 100 operates.

It should be noted that there is a probability of tokens being sold out in the first days of "closed sales". In order to avoid inconvenience when, by the time of Public Crowdsale, the entire pool of tokens will be purchased, **we recommend registration to receive all the advantages of Private Placement.**

Attention!

Be careful and remember that you should not pay from incompatible with ERC20 contracts wallets or from an account at a crypto exchange - this can lead to loss of control over the tokens you have purchased. We recommend using the following purses:

- MyEtherWallet (online-wallet)
- MetaMask (Extension for Chrome and Firefox)
- Mist (Desktop)
- Parity (Desktop)
- imToken (iPhone)
- imToken (Android)

6.2 ICO

Smart contract Open Longevity carries out the issue of YEAR tokens, the number of which during the ICO will be issued until reaching \$ 99,750,000. Tokens are sold at a fixed price of 1,000 YEAR = \$ 100.

The course of the ether to the US dollar is set at the time of the launch of the ICO, and is fixed for the duration of the fund-raising.

The purchase is carried out by transferring the ether to the address of the smart contract, and the sender of the transaction becomes the owner of the purchased tokens.

The duration of the ICO is 30 days from launch. The minimum amount needed to run the Open Longevity project is \$ 7,500,000

For early investors, there is a system of discounts:

- 1 500 YEAR = \$ 100 when buying the first day of ICO;
- 1 250 YEAR = \$ 100 when purchasing during the first week of the ICO.

With a one-time investment of \$ 100,000 or more, a special price of \$ 1,500 = \$ 100 is set for the entire period of the ICO.

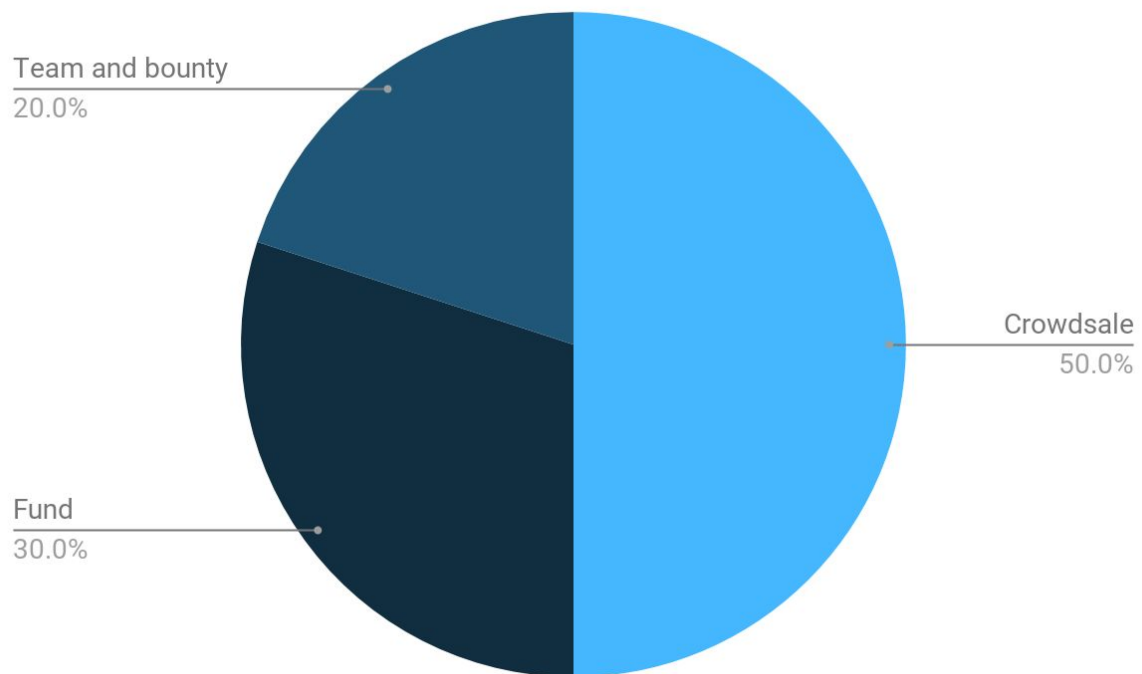
The funds raised during ICO will be used to implement the tasks described in Chapter 5 of this document.

If the necessary minimum funds for launching the Open Longevity project are not collected during the ICO, then all collected funds are returned to investors, minus commissions for transactions and gas costs.

6.3 Distribution of tokens after additional issue

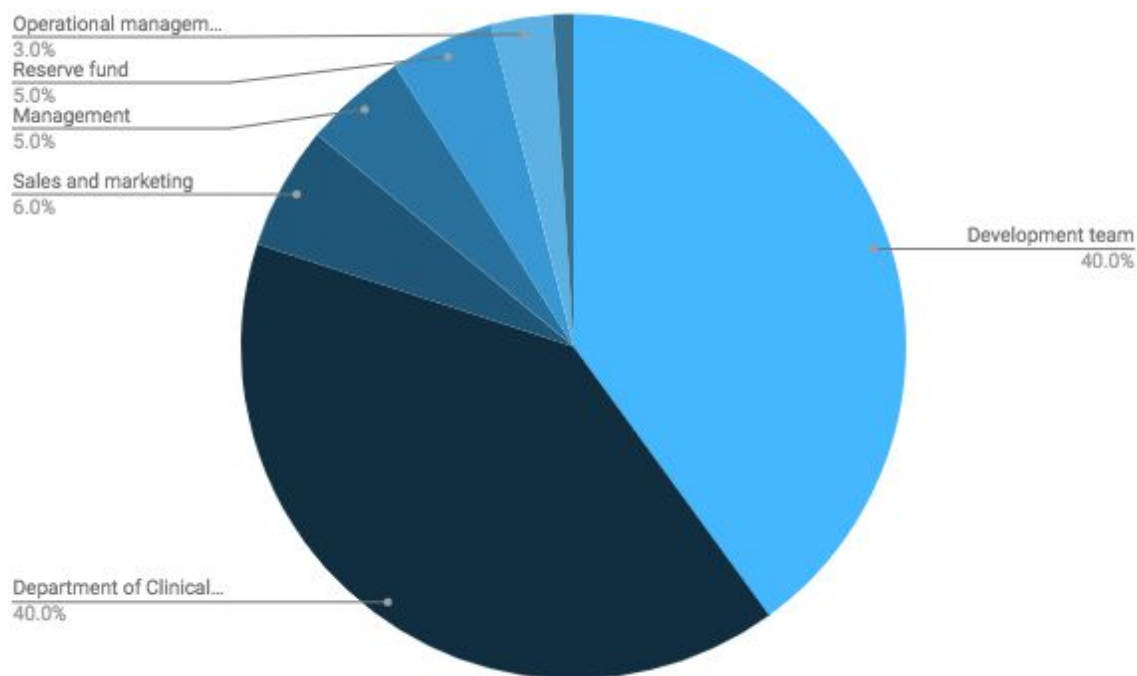
After the end of the ICO, a one-off additional emission is made in the amount of 100% of the purchased tokens. It is described in a smart contract—**there will be no further additional emissions of tokens.**

The released tokens are distributed among investors, team members, advisors, bounty members and OL Fund.



6.4 Distribution of funds collected during the ICO phase

Funds received during the ICO are designed to create an Open Longevity infrastructure and conduct the first three planned clinical trials. After the completion of ICO, the funds are immediately transferred to the Open Longevity team on a multi sign wallet with the signatures of the CEO and CTO of the project.



Funds are spent as follows:

Development team	40.00%
Department of Clinical Trials	40.00%
Sales and marketing	6.00%
Management	5.00%
Reserve fund	5.00%
Operational management	3.00%
Legal department	1.00%

To promote the ideology of Open Longevity, work is planned in the following areas: the organization and conduct of offline schools of longevity, lecturing, visits by the project team for thematic events, conferences, and other PR projects.

6.5 Donations

Donations can be of two kinds, depending on interests of interested persons. If you want to support the development of the platform, the money is transferred to the Investment Fund OL. In the event that a person wants to support research, the Research Foundation is replenished.

6.6. Securing the liquidity of the YEAR tokens

To ensure the liquidity of the YEAR tokens, immediately after the successful completion of the crowdsale, by the project team, every effort will be made to place the YEAR tokens on the free-trade exchanges.

The initial liquidity of YEAR tokens will be ensured through projects, products and services that are friendly to Open Longevity, in particular, the possibility of free exchange of YEAR tokens to:

1. Services of cardiologists on cloud service Cardio Cloud;
2. Devices for assessing the cardiovascular system at home - ECG Dongle and ECG Dongle Full;
3. Participation in events and schools conducted by the Open Longevity team.

In the future, we will exert all our efforts to expand the Open Longevity ecosystem, including various suppliers of goods and services, laboratories, and services that are aimed at achieving the goals and objectives of the Open Longevity project, namely active longevity.

7. Existing solutions and our differences

The desire to prolong youth, beauty and life in general is as old as time. The history of science, and more often - pseudoscience, knows many examples. All attempts to escape from old age up to the present day have been broken by insufficient understanding of the biology of aging and many other factors.

The systematic development of medicine itself led to the prolongation of a healthy period of human life. As we know, medicine, biology and other sciences responsible for quality of life and longevity do not stand still/constantly develop.

The search for aging therapies today has reached a fundamentally new level of evidence, and therefore efficiency. Open Longevity is by far not the only project among the huge growing trend. There are even several trends: use of blockchain technologies to store medical and biological data, openness and transparency; democratization and simplification of clinical research and public health; application of AI, machine learning and other methods of automation to the interpretation of data; telemedicine and, of course, interest in the fundamental causes of deterioration in health, i.e., aging.

Here are examples of companies implementing one or more of the ideas described above. And we would like to mention their differences from our project.

Calico, a sister project of Google, was created with the sole purpose of finding a cure for old age. It has the budget, comparable to the budget of the entire NIA (National Institute of Aging), computing power and access to the world's prominent scientists - great many people have high hopes for Calico. Though the company has been in existence for four years, yet, it does not reveal its results. The problem may be that in the pursuit of a patent for a potentially lucrative medicine the company has cut itself from the whole world, being limited only to its staff, and does not receive the necessary level of expertise.

By the way, you can see [here](#) the distribution of the NIA budget. The focus of the organization is yet not the search for preventive measures, but geriatrics, i.e. the help to the elderly, the terminal phase of aging. It is worth noting separately the [ITP intervention testing program](#), where 3-5 interventions per year are tested in mice for prolonging life (drugs, diets and other therapies or combinations of therapies). These are good options for interventions, but these are just mice, and 3-5 interventions are quite a small number.

The Chen-Zuckerberg Foundation is going to [spend](#) a quite a big amount of money on fighting all diseases. A new transparent infrastructure for scientific research is being created. Since it is not acceptable to talk about the fight against aging, there is practically no information in the description of the project concerning the fact that studying general mechanisms of age-related diseases could give the key to those very "all diseases". But it is impossible to imagine that Mark Zuckerberg is not aware of the achievements of biology - Silicon Valley is closely watching biotech now.

In 2016 it became known that [Estonia](#) and [Dubai](#) are planning at the state level to arrange all medical records according to blockchain technology. Estonia has long switched to convenient electronic maps, and by 2020 Dubai will transform not only medicine, but the entire document circulation in accordance with the technology. Implementation of this approach is a dream for anyone who has ever tried to move from one clinic to another.

American companies [Gem](#), [Blockchain Health Co](#), [Patientory](#) and [PokitDok](#), Australian Brontech and Israel's [MedRec](#) are examples of blockchain projects on the automation of electronic medical records and the integration of data from various healthcare institutions. Many companies plan to earn money by selling data to insurance companies and organizers of clinical trials.

The idea of algorithmizing the interpretation of medical data is not new. Back in the early 1970s, the [MYCIN](#) system, which diagnosed a type of bacterial infection more precisely than a person, was developed at Stanford University. It could also prescribe the required amount of antibiotic depending on the weight of the patient. Among modern expert systems we point out the service [Self Decode](#), which helps to interpret the data of genetic tests and [MedWhat](#) - a medical bot with medical artificial intelligence.

[MGHLTC](#) Laboratory of Computer Technologies of the Massachusetts Hospital develops a lot of digital solutions: software for conducting clinical trials, training programs for doctors, alerting systems for patients, including their expert system through [DXplain](#) - service is more for doctors than for patients, and helps to understand the causes of these or other diseases, offering options for further diagnosis.

Communication with real doctors also becomes more technological and accessible. Telemedicine projects still face regulatory problems, but very soon all standards will be determined, and we, as users, will consider such services an integral part of everyday life. Examples include English [Babylon Health](#), Russian [Yandex.Health](#), [Telemed.Help](#), American [PWN Health](#). The startup [Bowehead](#) combines several trends at once: a telemedical service with its own diagnostic equipment, storage of data according to the blockchain technology and collection of funds through the ICO.

The peculiarity of Open Longevity is the clinical studies of aging therapies, and we understand that they need to be carried out in a new way. Moreover, modern technologies make it possible to improve the procedure of any research, which we already observe today. In early 2017 **The Clinical Transformation Transformation Initiative**, which brings together the pharma, academia and regulators, including the FDA, released [recommendations](#) on the introduction of mobile technology into clinical research. The benefits of technology were also assessed in terms of patient-centeredness which is another important trend.

So, the main idea is new technologies and focus on patients. This year several biotech companies creating solutions for CI have received investments: Artificial Intelligence [Mendal.ai](#) selects suitable research for oncological patients to participate in; [VitalTrax](#) creates an application and social network for Wing patients for a similar purpose, and in

conjunction with it and Wing Enterprise is an application for physicians conducting research. [Mytrus](#) and [Science 37](#) will help to conduct research remotely, and [Clinical Research IO](#) - to avoid paperwork and the costs of digitizing and checking completed forms by providing convenient electronic forms.

Social networks for [doctors](#) and patients also play an important role in shaping a new health vision. [PatientsLikeMe](#), [Carenity](#) and [UMotif](#) involve thousands of patients, collecting data, and then selling or transferring them to researchers.

What is the difference between Open Longevity and the above projects?

First, we are one of the few organizations that openly declare their desire and intention to seek therapy that slows down aging. We are looking for a cure for old age - this is our goal.

Secondly, we combine all the elements mentioned above and believe that this combination makes our project self-sufficient.

Third, unlike most of the initiatives listed above, we fundamentally discard the commercial benefits of clinical trials. We admit that it is expensive but it's worth it.

8. Conclusion

The implementation of the Open Longevity project was made possible through the development of blockchain technology and the general trend of openness, transparency, and automation; Because of development of analytical algorithms for Big data, including for the early diagnosis of a wide range of diseases; Due to the appearance in the mass market of affordable, inexpensive, personal diagnostic devices; And also through the movement of the common front of science in understanding and slowing aging and the growing public demand for services in this field.

A global shift in the emphasis on disease prevention is inevitable. The search for therapy that slows down aging at the level of individual systems and for the body as a whole is an integral part of the preventive medicine of the future, or rather the personal science of the future. We want to involve as many people as possible in this process because we believe in the energy of patients and see its potential.

The search for and development of therapies that prolong youth requires a huge amount of research work, both in the field of basic science and at the stage of clinical research. But the efforts made and the money spent are worth every minute and cent - the quality and lifespan of billions of people are at stake.

As the Open Longevity team, we do not hide our personal interest in the fact that the solution we propose - an expert online platform and a data-rich clinical research platform - would be implemented. We want to live longer, we want to live forever.

Ultimately, we are committed to changing our own genetic code to achieve physical immortality.

It is impossible not to note the global benefit of our project for the development of the blockchain community. The Open Longevity system, providing services to wide sections of the world's population, will attract millions of new users to the crypto-economy, increasing its volume and strengthening its positions, which in turn will contribute to democratization and openness of society as a whole.

9. Groundwork

Open Longevity's patients' organization has existed for more than a year already, uniting several hundred like-minded people from Russia and other countries. We managed to gather profiles of **hundreds of volunteers** in June and July of 2016, even with a very sketchy research plan description.

Team members personally and the project as a whole have a **loyal audience**. It was formed through social media and blogs, offline lectures, and nine years of work through the public nonprofit [Science for Life Extension Foundation](#):

- The Foundation was created in Moscow in August 2008 to support and develop scientific research aimed at the development of methods for radical life extension.
- Since then the Foundation has published four books, including the quite successful [Futurology](#) by M. Batin and A. Turchin, as well as a large [number](#) of brochures, leaflets, and other materials for scientific conferences.
- We love roadmaps, so we have designed and published a [few dozen](#) dealing with such topics as futurology and transhumanism, as well as academic-level scientific maps with such titles as "Regenerative Medicine and the Mechanisms of Aging and Longevity," prepared with the MIPT Center for Innovation and the Komi Institute of Biology.
- Two international Genetics of Aging and Longevity conferences have been held, one in 2012 in Moscow and in 2014 in [Sochi](#).
- Just last year we gave hundreds of antiaging [lectures](#), not including [Open Longevity](#) courses, each of which comprises a few dozen classes, lectures, seminars, and tests. We [discuss](#) the biology of aging and involve students in various projects and collaborations. At school we also **conduct pilot studies**, serving meals matching the content of our lectures and encouraging students to run blood tests before and after diet intervention. There have already been two schools with trials and several workshops.

Another important member of our team, [NESTARENIE](#)—which means *not aging* in Russian—is **the most popular Russian antiaging blog about**, with an average of 4,000 unique visitors and 10,000–50,000 views per day.

It is not only a blog but an expert system [prototype](#), which is based on an enormous amount of **analysis of scientific articles**. We plan to improve the prototype in the near future.

Another project our team has — a cloud service called [CardioCloud](#) and a range of ECG dongle devices, the least expensive ones in the world in terms of electrocardiogram registration and stress-level measurement. In addition, there is a developed and tested personal online medical record system, structured to store more than 100 health parameters. As of May 2017 the project covered 63 countries and had more than 7,000 users. An automatically updated project world map is available [here](#).

10. Terms and conditions

This document can only be used for information purposes and should not be considered as a public offer to sell shares or securities using the Open Longevity platform or any other related company.

The YEAR tokens of the Open Longevity project do not give the right to control the company, they are not securities. Dividends are not awarded for tokens.

Owning YEAR tokens of the Open Longevity project does not give their owner ownership or property rights in the company. Given that the community's opinion and feedback can be taken into account, Open Longevity's YEAR tokens do not give their owners the right to participate in decision-making regarding the development of the Open Longevity platform. YEAR tokens can be used as means of payment for OL platform services, for participation in OL clinical trials and to purchase products in the marketplace of the project.

The income or benefit is not guaranteed

All examples of income or benefits calculations used in this document are provided for demonstration purposes or for showing industry averages and do not imply a guarantee that these results will be obtained in accordance with the marketing plan.

Regulatory uncertainty

Blockchain technologies can be subject to supervision or control by various regulators around the world. YEAR tokens may fall under one or more checks or influence, including but not limited to confines of use or possession of digital tokens, such as YEARs, which may slow or limit the functionality of the system or the process of purchasing YEAR tokens in the future.

YEAR tokens are not an investment

YEAR tokens are not an official or legally registered investment of any kind. Unforeseen circumstances can make significant adjustments to the objectives outlined in this document. Despite the fact that we intend to achieve all the goals described in this document, all people and parties involved in buying YEAR tokens do so at their own risk.

Inappropriate use

Despite the fact that YEAR tokens should not be treated as an investment, they can grow in value over time. They can also fall in price if they are not actively used in the Open Longevity ecosystem.

Loss of funds risk

Funds received during the ICO procedure are not insured. In case of loss or loss in price, there is no private or public insurance representative to whom you can apply.

Risk of malfunction

It is possible that for various reasons, including but not limited to failures in business organization or marketing strategies, the Open Longevity ecosystem and all subsequent marketing activities associated with the funds raised at the ICO may not be successful.

The risk of using new technologies

Crypto-tokens, such as YEAR, are a fairly new and untested technology. In addition to the risks mentioned in this document, there are still additional risks that the Open Longevity team is not able to foresee. These risks can arise in other forms, not listed here.

Integration

This Agreement establishes full agreement of the parties with recognition of the importance of the topic set forth herein. All previous agreements, discussions, presentations, guarantees and conditions are collected in this document. There are no warranties, conditions or agreements, express or implied, between the parties, other than those expressly provided in this Agreement. This Agreement can be amended only by writing properly by the parties.

Disclaimer of Warranties

You agree that using or not using YEAR tokens is entirely your risk and no liability lies with the Open Longevity organization. As of the date of issue, YEAR tokens will be sent without warranty of any kind, either explicit or implicit, including all implied warranties of the commercial price for a particular purpose without infringing anyone's intellectual rights. Since some jurisdictions do not allow the exclusion of implicit guarantees, the higher exclusion of implied warranties may not apply to you personally.

11. Team members

Mikhail Batin, CEO

President and founder of Science for Life Extension Foundation, entrepreneur, politician, president and co-founder of the [United Consultants FDP](#) company. Michael is a successful producer in Longevity area, has held several international conferences, launched startups and reached significant results in promotion of transhumanism ideas in Russia as well as in English-speaking countries.

Ilya Svirin, CTO

PhD in Tech Science, technology entrepreneur, founder of the Nordavind group of companies, technology developer of digital video surveillance systems, personal equipment and health services, including the world famous Cardio Flash Drive ECG Dongle and Cardio Cloud service. The author of numerous scientific publications on issues of information security and theoretical foundations of programming.

Anastasia Egorova, ED

Vice-president of Science for Life Extension Foundation with background in biophysics (MIPT). A successful designer and architect in the past, also a certified specialist in the field of copywriting and art direction in advertising.

Ivan Pisarev, CMO

A transhumanist, visionary, marketer, 15 years in IT product sales, head of international direction of the Nordavind group of companies.

Sergey Kobelev, CIO

The founder of the company "Useful people", engaged in the development and support of sites. 13 years of experience in the development of Internet projects, mobile applications and automation systems.

Sergey Rostovikov, senior-developer

System programming, development of highly reliable client-server applications, development and implementation of cryptographic algorithms.

Alexey Rytikov, system architect

Designing architecture of complex software systems, implementation of applications and services based on web technologies.

Andrey Ilyukhin, junior-developer

Development and testing of smart contracts. Applied programming.

Lyubov Kuznetsova,

Developing test cases, testing, test automation.

Dmitry Veremeenko, science analyst

A valueology specialist, autodidact and an analyst of aging therapies recognized among the official scientific community.

Denis Varvanets, science analyst

Researcher of anti-aging and functional medicine, biohacking. Specialist in strategic planning.

Alexander Fedintsev, science adviser

Bioinformatician and biostatistician, research analyst; developer of [methods](#) for determining the biological age based on the indices of vascular health; author of several scientific publications and is a leading co-author of A. Moskalev's "[Potential geroprotectors](#)" book.

11.1 Advisors

Nikolay Sidorov, advisor

Vice-President of the [PolyLab](#) company – biotechnology in the pharmaceutical industry. In the past, Vice-Governor of Primorsky Krai and the Deputy chief of Political Department of the Presidential Administration of Russian Federation.

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3. [Paul F. Glenn Center for the Biology of Aging, Harvard University](#)
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4. [Developing criteria for evaluation of geroprotectors as a key stage toward translation to the clinic \(Aging Cell\)](#)
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7. [Sartans+Statins Project \(Open Longevity\)](#)
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9. [Правильное лечебное голодание продлевает жизнь \(Nestarenie.ru\)](#)
10. [Витамин b12 и продление жизни человека \(Nestarenie.ru\)](#)
11. [Диагностика старения 1.0 \(Обзор маркеров старения Open Longevity на Geektimes\)](#)

