



# Longevity Club

***Strictly Confidential***

[www.dkv.global](http://www.dkv.global)

# Table of Contents

<b>Introduction</b>	<b>3</b>	Remote Diagnostics	56
<b>About Longevity Club</b>	<b>11</b>	Longevity Check-Ups	58
<b>Key Elements of the Longevity Club</b>	<b>12</b>	Personalised Longevity Plan	63
<b>Timeline</b>	<b>15</b>	Virtual Reality Longevity Quest	64
<b>Longevity Cards</b>	<b>17</b>	<b>Longevity Cabinet</b>	<b>68</b>
Longevity Banking Card	20	<b>Mobile Longevity Cabinet</b>	<b>76</b>
Longevity Membership Card	25	<b>Health Data Wallet</b>	<b>81</b>
<b>Advanced InsurTech Platform</b>	<b>29</b>	<b>MarTech System</b>	<b>84</b>
<b>Longevity Marketplace</b>	<b>32</b>	Special Marketing Infrastructure for Corporate Clients	86
Longevity AI-Assistant	37	AI-driven Optimisation of Supply Chain for Corporate Clients	88
Longevity Marketplace Revenue Model	41	Integration with Longevity.International	89
<b>Digital Avatar</b>	<b>42</b>	Integration with Swiss Longevity Valley	90
Digital Avatar Processing	46	Gamification Elements for Retail Clients	91
Comparison of Ageing Clocks	48	Longevity Reward System for Retail Clients	92
<b>Longevity Virtual Clinic</b>	<b>51</b>	<b>Data Security and Privacy</b>	<b>95</b>
Longevity Virtual Clinic Services	53	<b>Contacts</b>	<b>104</b>

# Longevity Industry – Multi-Trillion Dollar Opportunity

The Global Longevity Market is Estimated at \$27 trillion in 2022

**50,000+ companies**  
(incl. 495 listed companies)

**1,000+  
R&D hubs**

**9,000+  
investors**

**1,000+ financial  
institutions**

**100+ governments**

**160  
subsectors**

The **Longevity market** is not only limited to anti-ageing applications of life sciences. It also includes some new sectors of the financial industry, as well as government projects (national Longevity development plans); hence, its overall size potentially exceeds \$25 trillion. As the majority of full-blown Longevity startups are quickly becoming mature companies, large institutional investors are making increasingly more investments into the industry and a full-fledged **Longevity infrastructure** is emerging.

There are at least 495 publicly traded corporations that can be considered part of the Longevity industry.

**Longevity Biomedicine, FinTech, and AgeTech** industries include 50,000+ companies, 9,000+ investors, 14 sectors, and 114 subsectors.

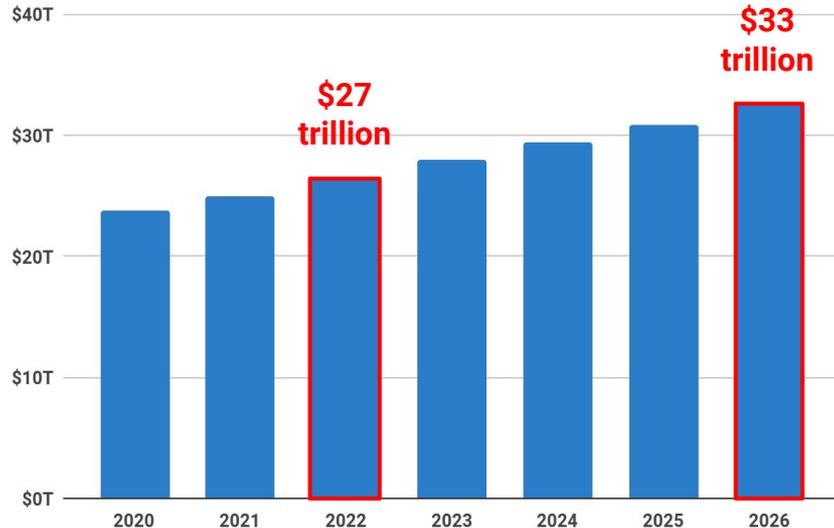
**The Longevity Financial Industry** includes 1,000+ corporations, 15 sectors, and 50 subsectors.

**The Longevity Governance Landscape** includes national healthcare budgets and development plans of at least 100 governments.

**Note:** Since there is no generally accepted methodology for their estimation, the numbers presented in the scheme are approximate.

# The Longevity Economy on a Global Scale

The Longevity Economy: Scale Projections, Trillion USD



The Longevity Economy's Scale Projections contains global healthcare spending affecting Longevity, the combined capitalisation of publicly listed Longevity companies, the capitalisation of Longevity-related insurance and reinsurance companies, banks and pension funds and privately held Longevity companies.

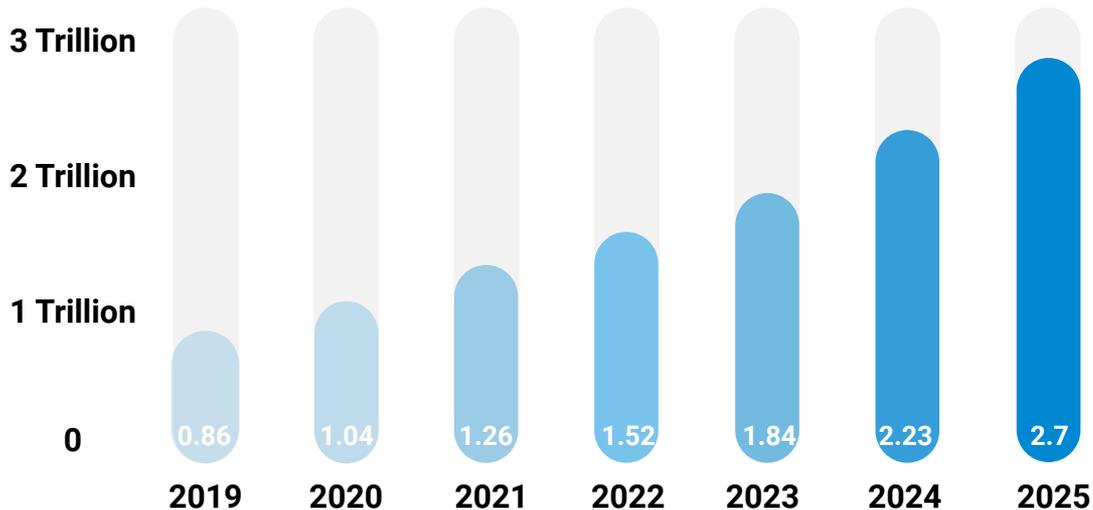
Not only does ageing pose one of the most acute problems of our time - it also presents one of the most promising opportunities. **Financial institutions**, such as investment banks, pension funds, and insurance companies can either sink or swim when hit by the oncoming Silver Tsunami. Whether they will succeed in riding the wave or end up drowning under it will depend not only on their willingness to deploy new business models adapted to population Ageing and emerging industries of AgeTech, WealthTech, and Longevity Finance, but also on the quality of **Longevity analytics** that they use to develop such business models.

We define the Longevity Industry as a combination of Ageing, **advanced preventive precision biomedicine, AgeTech, relevant parts of national healthcare budgets**, and **the global financial industry** related to such sub-industries.

# AgeTech Industry Market Capitalisation

Estimated at \$25 trillion in 2021, the global longevity economy is growing steadily and expected to be worth \$33 trillion by 2026. By the most conservative estimates, it accounts for 20% of the global GDP. **While the global Longevity Economy is projected to reach \$33 trillion by 2026, the Age-Tech segment alone is projected to reach \$2.7 trillion by 2025.** This, in turn, implies an annual growth rate of 21% in the global Age-Tech market, which is attributable to the development of the elderly care sector enhanced by IT, FinTech, and other digital technologies.

World AgeTech Industry Size Projections, current US \$



**Longevity** is a complex industry, the high degree of multidimensionality and ruggedness of which creates very tangible challenges for its realistic and relevant industry assessment, benchmarking and forecasting.

**The Longevity industry** is expected to **become one of the leading industries in the near future** and to outnumber other sectors in both size and market capitalisation.

# Concept of Ageing

Ageing is a global phenomenon that began some 3.5 billion years ago with the genesis of life. The accumulation of the many changes caused by ageing in cells and tissues alter its function and can finally lead to death. Genetic abnormalities, environmental factors, illnesses – all of these contribute to ageing. Deep Knowledge Group has identified **9 hallmarks of ageing**.

Under optimal living conditions, the degree of accumulation of ageing changes limits average life expectancy at birth to about 85 years and maximum life span to around 122 years. Over the past 2,000 years, incremental improvements in living circumstances, such as diet, housing, and medical care, have brought humanity a lot closer to these optimal conditions, and hence life expectancy has increased from around just 30 years in ancient Rome to nearly 80 years in most developed countries today.

**In the modern world, Healthy Ageing and well-being are widespread public and governmental objectives.** The focus of research on ageing has been sharpened by recognition of the major demographic shift towards higher proportions of older adults in the population in many countries around the world, as well as the recognition that much of the cost of health and social care in economically developed countries has been concentrated in the last decade or two.



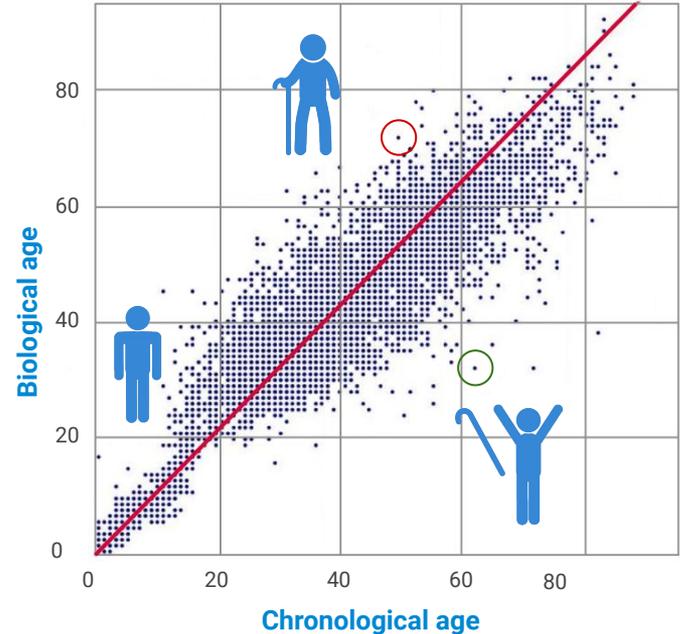
# Types of Age

**Chronological age** is calculated purely based on the passage of time. It is the number of years that a person has lived. As people age, their chances of acquiring a disease or the condition rises. Health problems that are the leading cause of functional decline in advanced chronological age.

**Biological age** refers to the changes in the body that occur as people get older. Because some individuals are affected by these changes sooner than others, some people are physiologically old at 65, while others do not become physiologically old for another decade or more. However, rather than variations in biological ageing, the most notable variances in perceived age among persons of identical chronological age are produced by lifestyle, habit, and the subtle impacts of disease.

The scheme on the right illustrates a biological age predictor that is a biomarker associated with chronological age (black line) and assists in risk assessments for age-related diseases. Based on their biological ages (x axis in figure), individuals of the same chronological age may have varying risks for age-related illnesses. The positive predictive value (red line) of a biological age predictor usually declines from mid-life onwards.

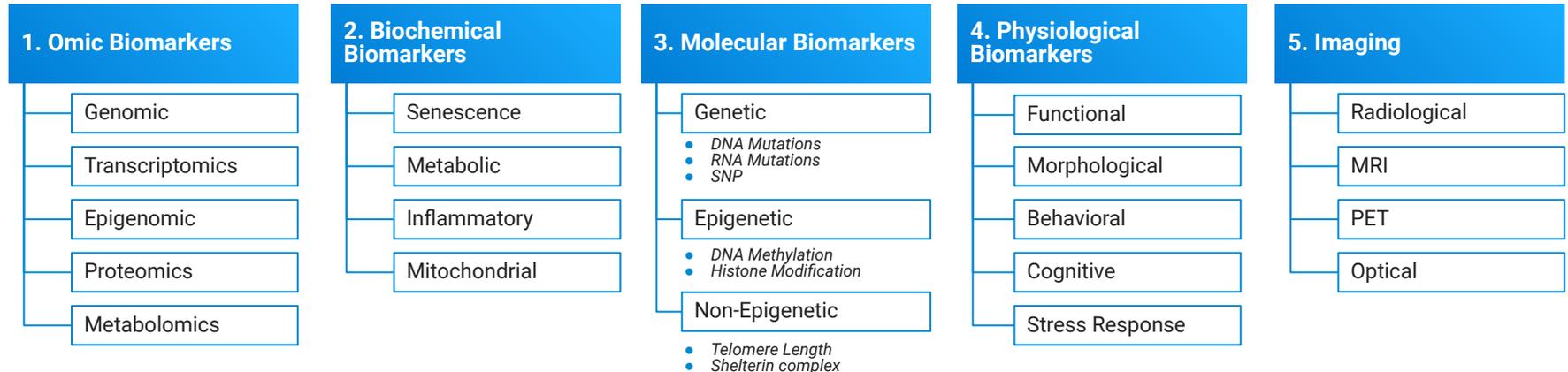
Biological And Chronological Age Juxtaposition



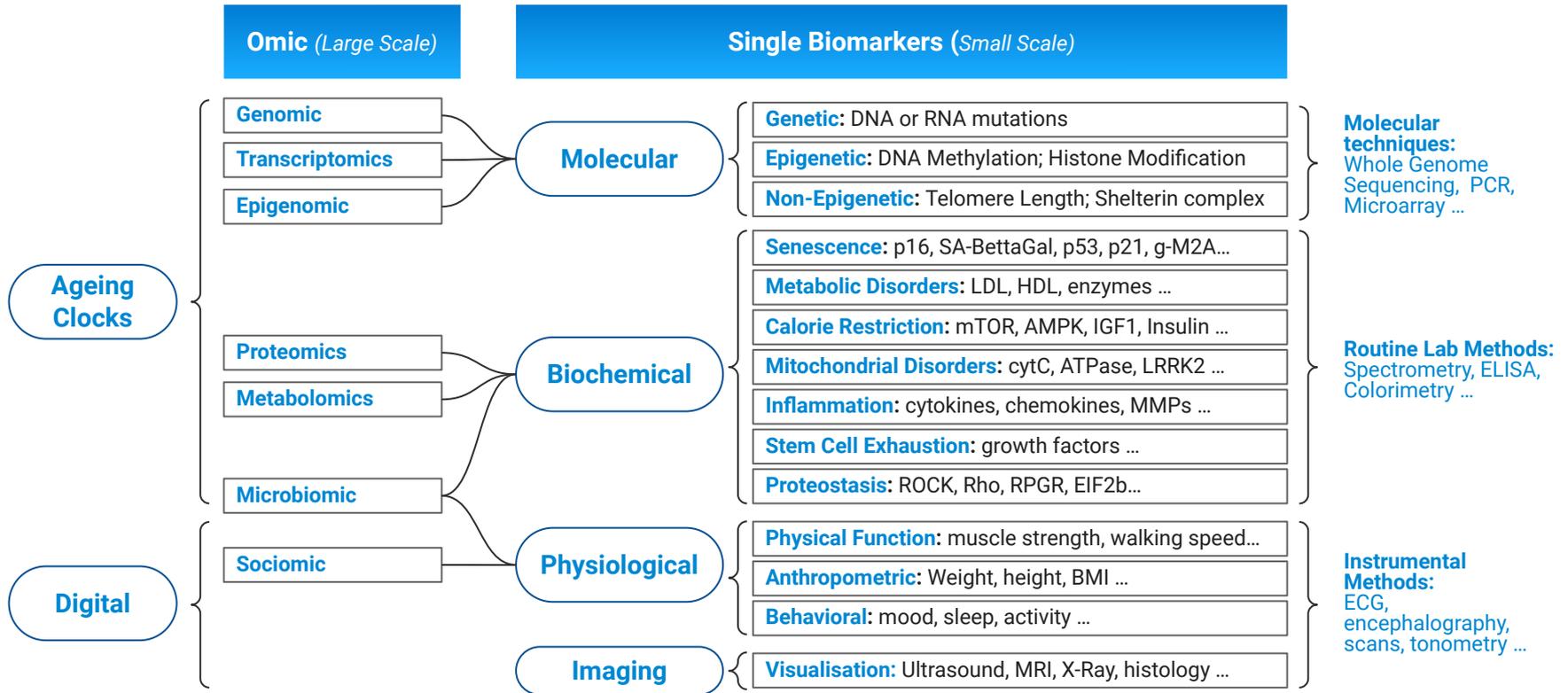
# Biomarkers of Ageing

A **biomarker** or a **biological marker** is an objectively measured and evaluated characteristic to indicate some biological state, condition, or process. They can have different origins, but all of them can be used to diagnose, monitor, and treat numerous diseases that impact individuals' longevity. Usually, one biomarker can not predict a specific state, so there is a need to assess multiple biomarkers simultaneously to represent the actual state of health. Such diagnostics must include **Omics, Biochemical, Molecular, Physiological, and Imaging Biomarkers**.

In older adults, chronological age may not be the best predictor of residual lifespan and mortality because the heterogeneity in health increases with age. **Biomarkers for biological age** and **residual lifespan** are being developed to predict disease and mortality better at an individual level.

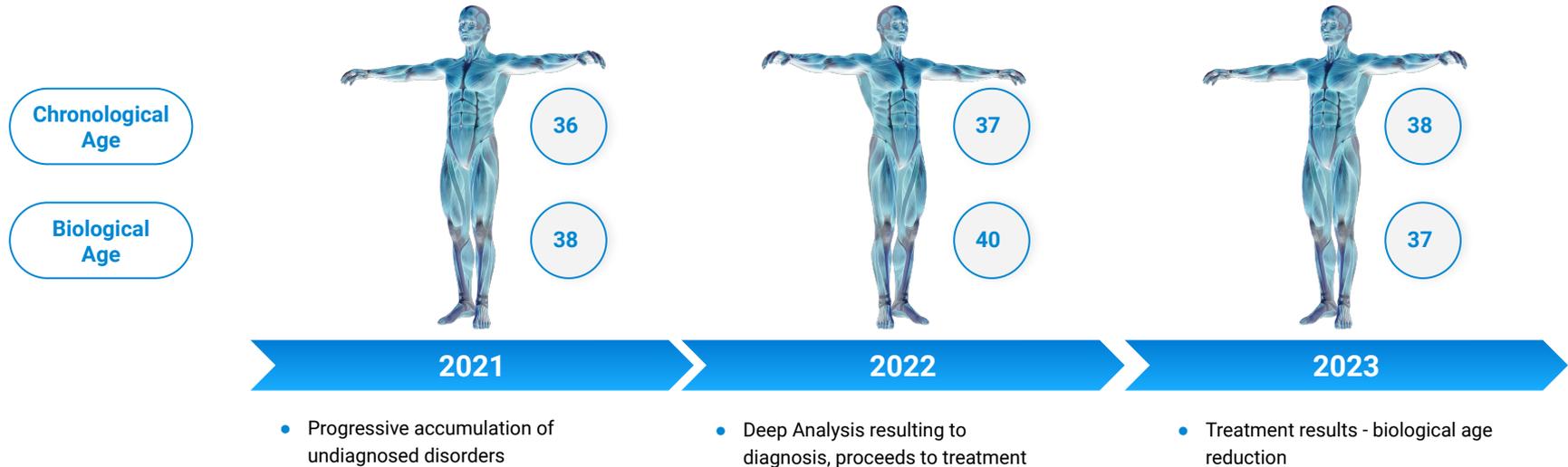


# Type of Biomarkers



# Biological Age Regulation

Due to multiple factors and negative processes such as diseases or disorders contribute to ageing acceleration. During lifetime, a lot of such processes are undetected due to lack of symptoms or other reasons - that is why commonly biological ageing proceeds faster than chronological. If disorders or diseases are indicated and treated, biological age can decrease, which leads to life expectancy and quality increase.

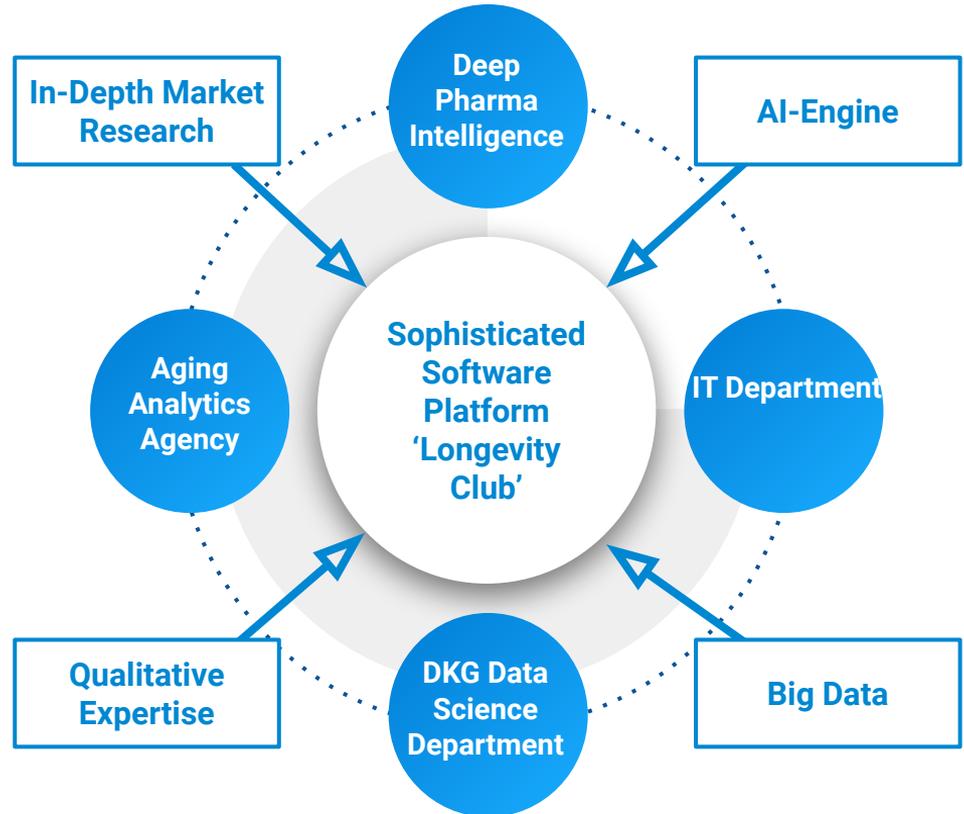


# About Longevity Club

**Longevity Club** is a unique community, members of which will have full access to advanced concierge services, lists of specialists and treatments, as well as educational material and practical advice on healthy longevity.

**Longevity Club is building the daily habit in Longevity commerce**, offering a vast mobile and online marketplace where people discover and save on health and wealth related products, **maximising their healthspan (healthy period of life)**, using the optimal configurations of cutting edge personalised, preventive therapeutics, diagnostics and prognostics, as well as their **wealthspan (period of financial stability)** to achieve financial wellness over the course of extended healthy lifespans.

To develop a sophisticated software platform 'Longevity Club', Deep Knowledge Group (DKG) will use the **best assets to create a synergy effect (see diagram on the right)**.



# Key Elements of the Longevity Club

## Longevity Card Payment System and Loyalty Programme



- Multi Currency Accounts
- Debit Card
- Money Transfers
- Access to Longevity Marketplace
- Management of Longevity points, Bonuses and Discounts
- Referral Programme
- Rewards for Health Data
- Longevity Ambassador Programme
- Additional Discounts for Gaining Advanced Loyalty Levels

## Variety of Longevity Products and Services



- Advanced Cosmetics products and Services
- Fitness and Wellness
- Telemedicine
- Nutrition and Vitamins
- Health Diagnostic Services
- Prognostic Services
- Yoga
- Longevity Educational Options

## Sophisticated AI Longevity Advisor



- Voice Assistant
- Chatbot
- Longevity Stories
- Financial Planner
- Personalized Offers with up to 30% Cash-back / Reward Points
- Biometrics and Other Technologies

## Longevity Club Membership Card



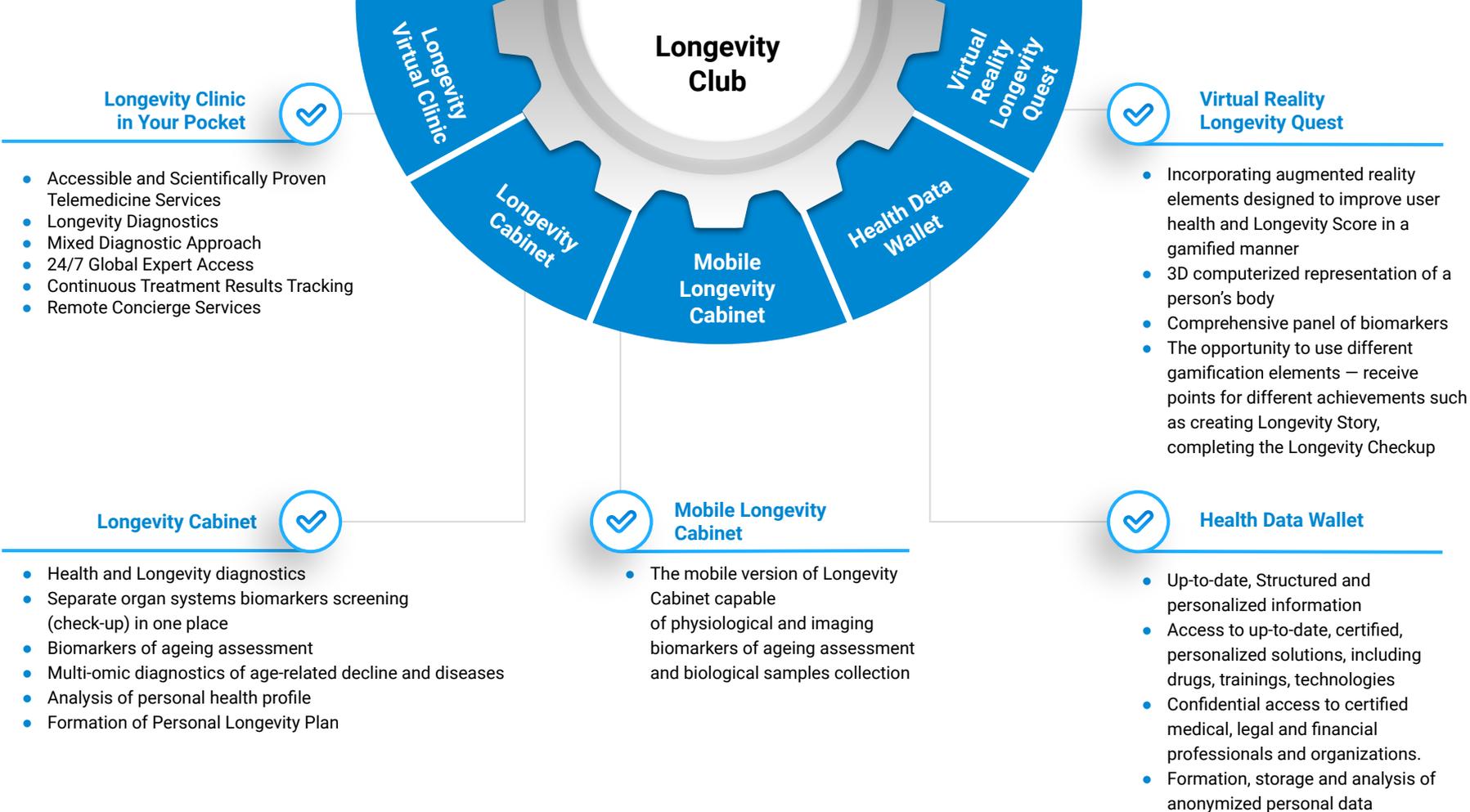
- Fast Sign Up
- Discounts
- Access to Longevity Marketplace
- Real-Time Notifications
- Insurance Options
- 24/7 Support

## Advanced Marketing Technologies



- Access to existing contacts' database from Longevity Investment Dashboard
- Real time campaign analysis with mass-data driven marketing insights
- Intelligence recommendations using smart-matching tool





# Longevity Club Scheme

The first step towards **Longevity Club Journey** is **Longevity Membership Card**, **Longevity Banking Card**, or **All-in-One Card**, which will give access to **the Longevity Marketplace** with a range of services in FinTech AgeTech, MarTech, InsurTech, and Health Care Technologies.



# Timeline

---



# Estimated Project Timeline

Time	Milestone	Description
<b>Phase 1 - April 2023</b>	Launch of Longevity Club, Longevity Banking Card and Longevity Marketplace in London	Creation of Longevity Marketplace with vendors and
<b>Phase 2 - April-May 2023</b>	Launch Longevity Virtual Clinic, Longevity Cabinet and Mobile Longevity Cabinet in London	The validation of Virtual Clinic, Longevity Cabinet and Mobile Longevity Cabinet based on practical results from the 'Patient 0' project
<b>Phase 3 - June 2023</b>	Enhancement of Longevity Club and Marketplace via implementing high-tech solutions	Implementation of AI-assistant and integration Longevity Biomarkers panels developed by Quant Biomarkers Company into Longevity Club Services
<b>Phase 4 - June-July 2023</b>	Refinement of the MarTech system	Improvement of MarTech system via implementing various gamification elements to attract more users
<b>Phase 5 - September 2023</b>	Launch of Longevity Club in Switzerland	Adoption of Longevity Club system to Switzerland Longevity market
<b>Phase 6 - November 2023</b>	Launch of Longevity Club in the USA	Adoption of Longevity Club system to the USA Longevity market

# Longevity Cards

---



# Longevity Cards Overview

**Longevity Club Card** is a pass to access a unique ecosystem of numerous Longevity services. The membership of the Longevity Club allows discovering **cutting-edge products promoting an extended healthspan** available to a very limited number of people. Our Members will have the unique opportunity to choose **between a Membership Card, Banking Card with the full suite of features, products, and exclusive discounts.**



Longevity Banking Card



Longevity Club Membership Card

# Longevity Cards Overview

## Longevity Club Members and Longevity Bank Clients Have:

1

Access to a **highly diverse marketplace of products and services** across the entire scope of Longevity, Wellness and Healthy Living (all the way from healthspan to wealthspan).

2

**Discounts** on Marketplace purchases obtainable through Longevity Reward Points that are generated every time they use their Longevity Card.

3

**Targeted real-time recommendations** on local and global products and service providers best-suited to help achieve and surpass their current Longevity Goals.

4

**AI-driven personalized health recommendations** and suggestions, based on biomarker analysis, the results of a comprehensive diagnosis of the client's health status, on how to promote and maintain a healthy lifestyle and slow ageing.



# Longevity Banking Card

**Longevity Card** is the new way to **lead** a healthy **lifestyle** and **manage** your **money** in one secure app.

We strive to make the mobile experience **easier** and **safer** for people of **all ages** by developing **new features** in combination with cutting edge **HealthTech, AgeTech** and **FinTech** designed for users who are planning to **live healthy, extra long lives** and remain **financially stable**.

The app has its very own **mHealth fitness, wellbeing** and **nutrition console** as well as a **marketplace** of the **best health and wellness brands in world**.

The app is currently in beta testing and will be **ready to launch in Q1, 2022**.

# Longevity Banking Card



**LONGEVITY  
MARKETPLACE**



**UK IBAN**



**MULTI CURRENCY  
ACCOUNTS**



**DEBIT CARD**



**MONEY  
TRANSFERS**



**CASH LOAD**



**PERKS**



**FAST SIGN UP**



**REAL-TIME  
NOTIFICATIONS**



**TRAVEL  
INSURANCE**



**BUSINESS  
ACCOUNTS**



**24/7 SUPPORT**

# In-App Banking Features

- Card freeze (on/off)
- Opposition of the card (on/off)
- Withdrawal (on/off)
- Online payment (on/off)
- Contactless payment (on/off)
- Card limits (expenses / withdrawals)
- Payment by geographical area (Euro zone / Europe)
- Payment by currency (Euro / GBP)
- Payment by time bands (9h> 21h)
- Payment per day (working days / exclusion sunday)
- Shared payment (couple, roommate, parent-child)
- Payment by categories of merchants (restaurants, hotels)
- Payment by age group
- Card activation / order
- Payment by virtual card
- Pin code customization



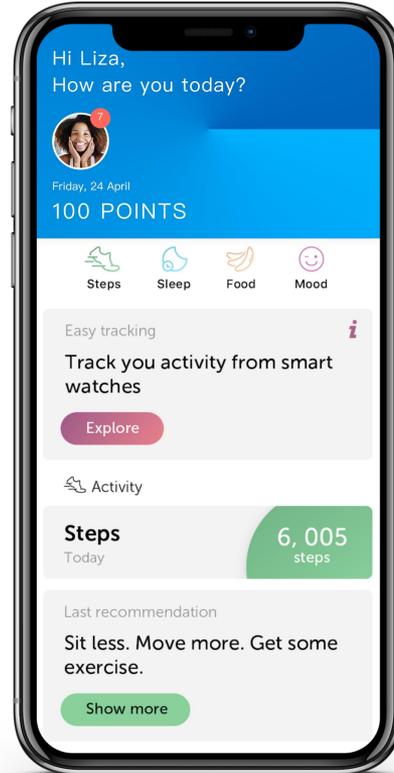
# HealthTech Integration

HEALTHSPAN  
AND FITNESS  
GAMIFICATION

LONGEVITY  
POINTS

DAILY ACTIVITY  
ANALYSIS

SLEEP  
ANALYSIS



AI POWERED  
PERSONALISED  
RECOMMENDATIONS

WEARABLES  
COMPATIBLE

LONGEVITY  
STORIES

NUTRIENT  
TRACKING



# Longevity Membership Card



Access to  
mHealth Application



Discounts



Longevity  
Marketplace



Real-Time  
Notifications



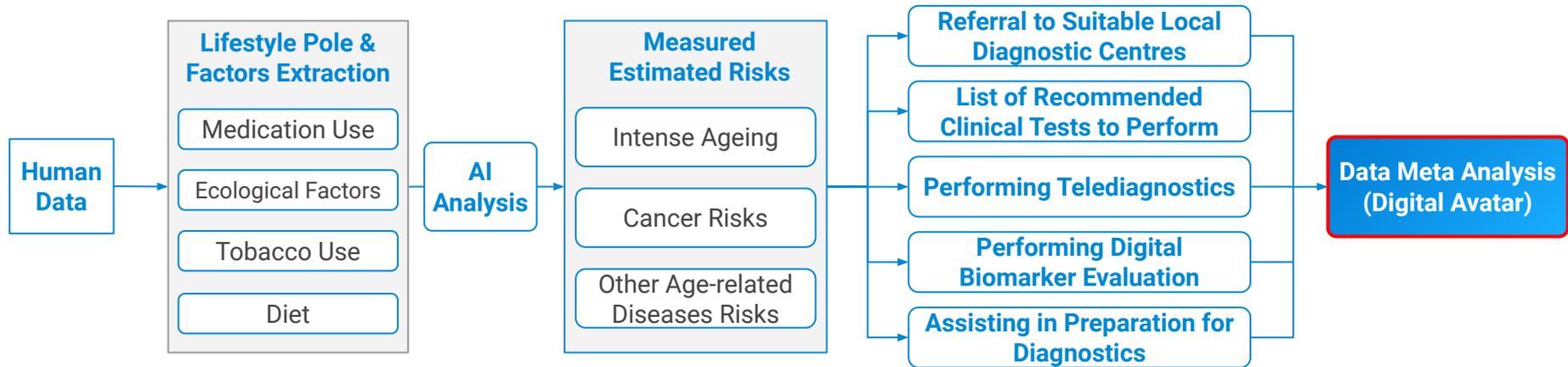
Insurance  
Options



24/7  
Support

# Longevity Membership Card - Integration with mHealth App

**mHealth App is a sophisticated AI-driven online-service** providing users with **deep evaluation of cancer development risks** and Ageing **progression** based on lifestyle factors and clinical analysis, supporting the customer on every step to develop full understanding of health status and actions which should be performed in order to improve it.



The ability to create digital avatars allows for hypothesis analysis and continuous tracking of health status changes in each individual. This opens up a wide range of possibilities for analyzing and tracking deep insights on biomarkers, ecological variables, behavioral factors, and previously undiscovered health assessment correlations. Big data generated from a large study cohort using unique analytical methodologies and objects of investigation improves prediction ability in various cases.

# Longevity Women Membership Card

**Longevity Women Membership Card** or **Rose Membership Card** is a special Longevity Membership Card that is focused on women's health and wellness. Except for standard Longevity Membership Card services, it will include exclusive discounts for FemTech services, check-ups, health monitoring, and telemedicine. It will also enable access via Marketplace to vendors involved in Cosmetic production, wellness therapies, anti-aging treatments, and psychological support. The card will be available in the USA and will be offered instead of Longevity Banking Card.



# Longevity Membership Card - Groupon Business Model

**Longevity Membership Card and Rose Card** will work based on **Groupon business model**. This model implies a two-sided marketplace where local consumers meet deals from local merchants. The company makes money by selling local and travel services and goods. Its value proposition based on attracting local customers to local merchants is quite compelling. Local consumers instead get savings and discounts that they would not get elsewhere.

1

Groupon business model is based on a local e-commerce marketplace that connects merchants to consumers by offering goods and services at a discount. Groupon in part replaces the traditional media that local businesses have used over the years to generate sales at a local level.

2

Distribution strategy and marketing mix: a two-sided marketplace needs both marketing and sales capabilities. When deciding whether to allocate marketing vs. sales resources, it is critical to understand the value of a lead and potential customer on the one hand. The value of a merchant brought to Groupon is intrinsically higher than the value of a local consumer. Therefore, Groupon will use sales processes and support to nurture the relationships with those local merchants.

3

Groupon uses a variety of marketing channels with a direct to customers' business model by making deal offerings available through its marketplaces. The primary driver for consumers' access is the Groupon mobile application. Indeed, in the fourth quarter of 2017, over 69% of Groupon global transactions happened on mobile devices. This makes marketing a critical ingredient of the Groupon growth strategy and an essential component of its distribution strategy.

4

For a platform like Groupon that highly depends on visibility from local consumers across the globe, there is no better way to reach them than through search engines. Indeed, search engines present two key advantage: consumers can be targeted based on specific keywords, consumers can also be targeted based on local keywords.

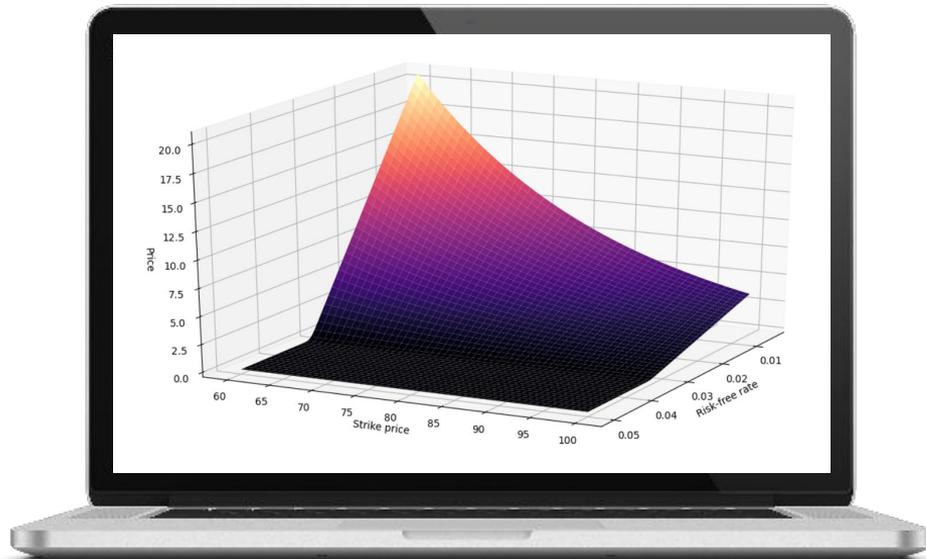
# Advanced InsurTech Platform

---



# Integration with Advanced Sophisticated InsurTech Platform

Human Biomarkers have a wide range of different applications in the finance area. They possess overwhelming capabilities in adjusting the morality predictions and health states. Taking this into account, Deep Knowledge Group seeks to **establish an InsurTech platform, which will be integrated with the unique Biomarkers Panel developed by Quant Biomarkers Company**. This platform will give club members access to the following types of products:



## Support of Longevity Insurance Products

Personal Longevity/Mortality Risk Assessment

Insurance Optimization through Enhanced Longevity Indices

Risk Management for Insurance and Reinsurance Entities

Risks Scenario Simulation

# Insurance Benefits for Longevity Club Members

Longevity Club Ecosystem will include advanced Insurance companies ranking completed by AI solutions with detailed breakdowns by regions and services. Longevity Club will serve as a health and life insurance broker, cooperating with insurance industry leaders and providing Longevity Club members with the best offers on the market.



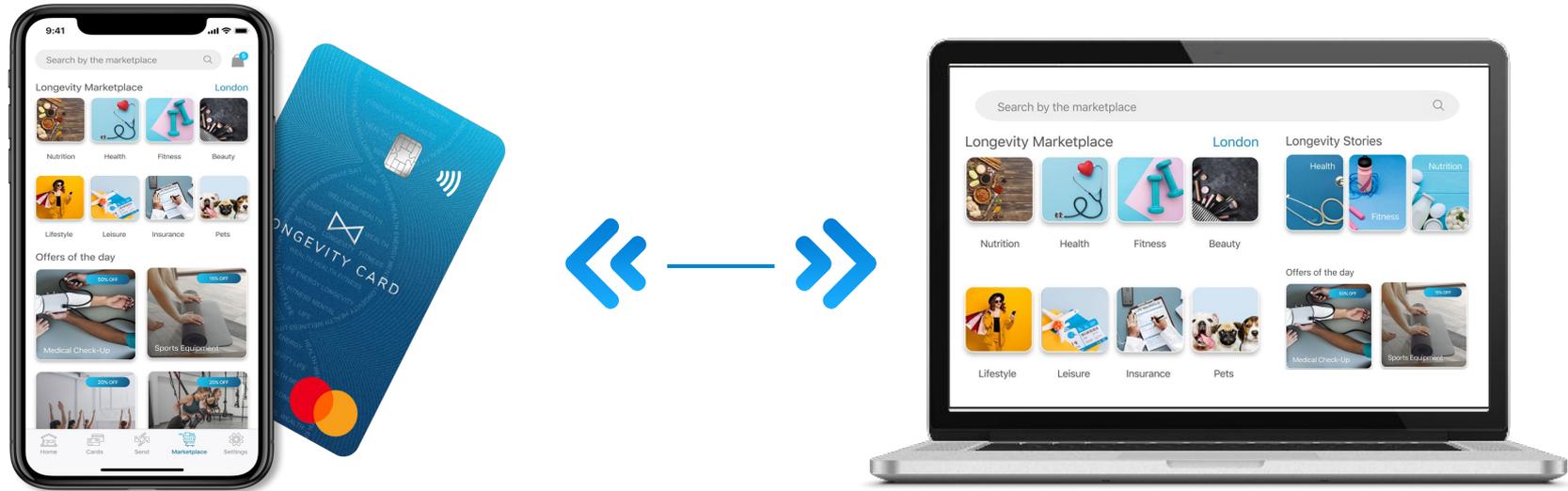
# Longevity Marketplace

---



# About Longevity Marketplace

**Longevity Marketplace offers the world's best longevity products and services, exclusively featuring scientifically and technically validated vendors.** Products and services will be provided in form of recommendations, based on the questionnaire and digital avatar which contain detailed information about the health, lifestyle and daily habits of patients.



# Main Concept of Longevity Marketplace

An important solution provided by the DKG is **the integration of the Longevity Marketplace with the Longevity Banking Card**, this will enable the following features of the Longevity Marketplace:

- user will receive push notifications that provides main information about today's market structure
- the dashboard will also analyze client-input goals and needs, and connect them with service vendors that match and meet their specific needs
- in case if Longevity Banking card is used for operations on platform, the customers will also receive Longevity Reward Points

## Major use cases

### Corporate Longevity Cardholders and Clients:

- access to a highly diverse marketplace of potential products and service providers, enabling supply chain optimization
- discounts on B2B marketplace purchases obtained through Longevity Reward Points
- targeted real-time recommendations on local and global products and service providers
- free-of-charge analytics on how supply chains can be optimized

### Longevity Vendors:

- access to a much larger highly focused client base
- capacity to significantly expand their market and target demographic in exchange for giving up a small portion of their profits (access fee for being a vendor on the platform)
- heightened marketing and public visibility
- potential visibility to investors via the Investment Analytics Dashboard

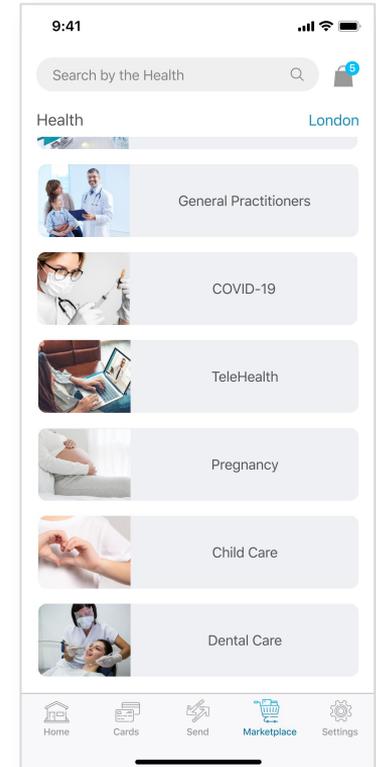
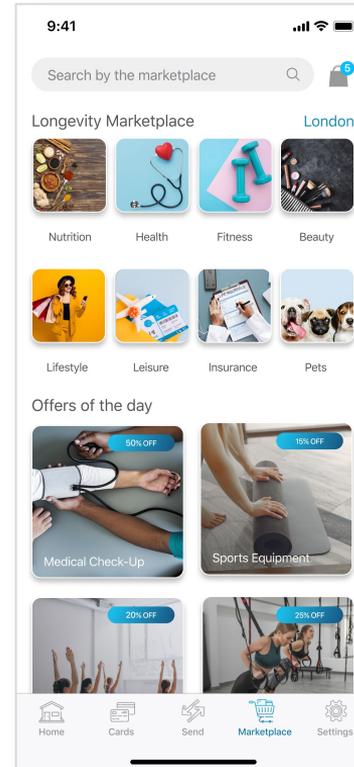
# Longevity Marketplace Products

Products on [the Longevity Marketplace](#) will be provided in the form of a general list with different categories. Clients may choose a specific one and view all goods related to this category. Then select a particular product and buy it using Longevity Card.

The significant services that impact the Longevity and wellbeing of an individual include :

- **Nutrition**
- **Health**
- **Fitness**
- **Lifestyle**
- **Insurance**
- **Longevity FinTech**
- **Pets treatment**
- **Advanced Cosmetics**

**Health** is the most essential factor for Longevity because any ongoing pathological process from your young or adulthood years may have hazardous consequences in senior years. In time, diagnostics and a delicate attitude to your health will decrease the risks of **premature ageing** and **secure healthy Longevity**.



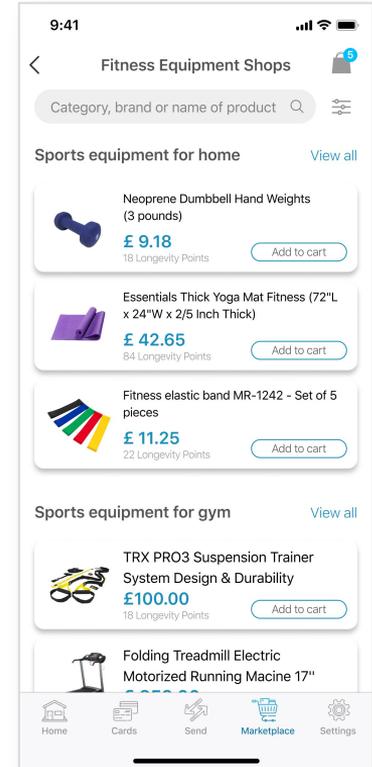
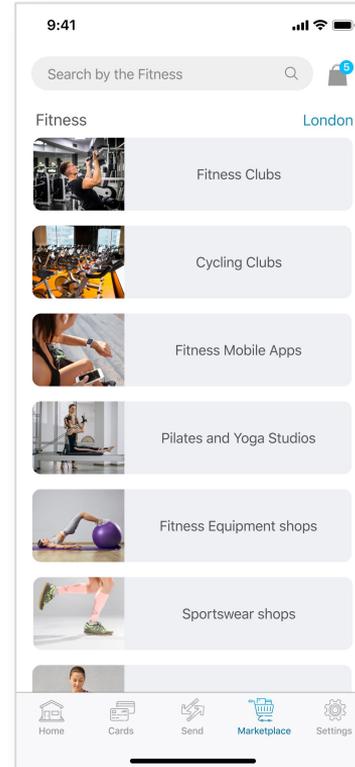
# Longevity Marketplace Products

Another significant aspect of Longevity is **physical activity** and **fitness**. Numerous researchers have shown that doing at least some exercise reduces the chance of mortality, slows the development of some malignancies, lowers the risk of osteoporosis, and promotes increased lifespan.

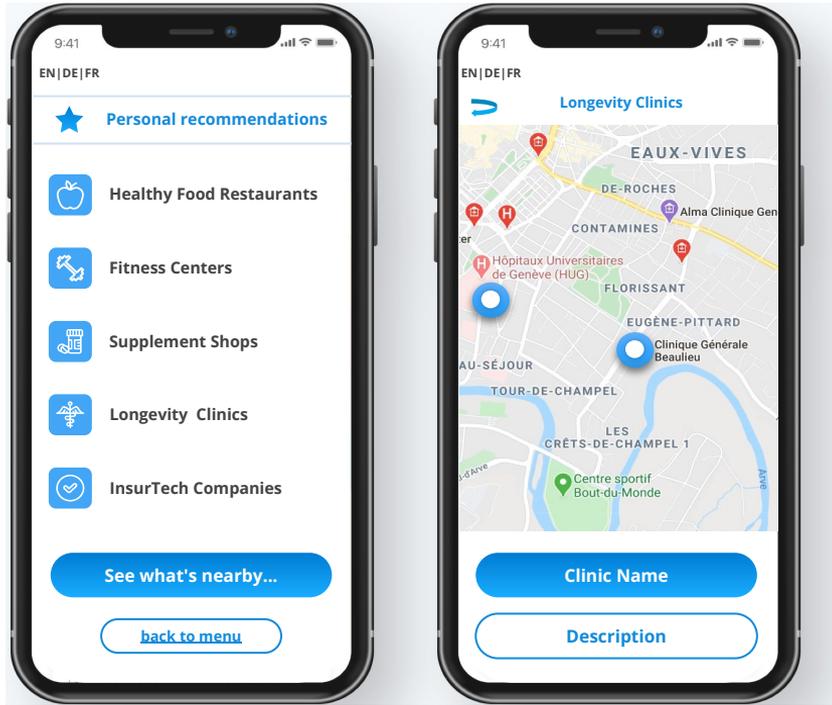
The Longevity Club marketplace will include different services in the area of fitness, from **a search of appropriate places to be engaged in sports activities to available sports products online**.

The advances in technologies made it possible to **do sports in-home** environment without any expensive gym equipment. Using the app recommendations provided on the marketplace, Longevity Club members can do sports whenever they want and keep fit without going to the gym.

**AI assistant** presented on the marketplace will enable members of the Longevity Club to gain **targeted real-time recommendations** on local and global products and service providers depending on their profile and areas of interest and discounts. **Gamification elements** will engage pro-longevity activities via **Longevity Reward Points**, converted into discounts on B2B marketplace purchases.



# Longevity AI-Assistant



*User interface languages: English, German and French*

Longevity Bank's mobile app uses AI assistants to provide daily targeted recommendations to Longevity Cardholders on ways that they can optimize their Healthy Longevity across its full scope (all the way from healthspan to wealthspan).

The Longevity Card Mobile App utilizes **AI-driven smart-matching** in order to suggest relevant products and services from the Longevity Marketplace based on each client's unique profile, including their current: **physical and mental health**, evaluated by in-depth biomarker analysis, **financial status, language and location**.

Using these data points as the basis for connecting them with the most relevant products, services and tools available online and physically (within their area of residence) to optimize and improve their personal Healthy Longevity.

Example recommendations include: where to find healthy food restaurants and grocery stores, progressive gyms and fitness centers, supplement shops, personalized and precision health clinics, insurance companies providing the best modern InsurTech solutions (rewarding clients for maintaining a healthy lifestyle, and covering products and services aimed at maintaining) a healthy lifestyle.

# Longevity Marketplace Vendors

The Longevity Marketplace will collaborate with a wide range of different providers of longevity services in the following sectors:

- 1 Diagnostics & Prognostics, Precision Medicine
- 2 Telemedicine, Personalised Medicine Clinics
- 3 Fitness and Wellness, Nutrition
- 4 Advanced Cosmetics
- 5 Nutraceuticals and Supplements
- 6 Smart Wearables and Wearables Integration

## Our Partners:



# Longevity Card Partners



ECHO  
by LloydsPharmacy

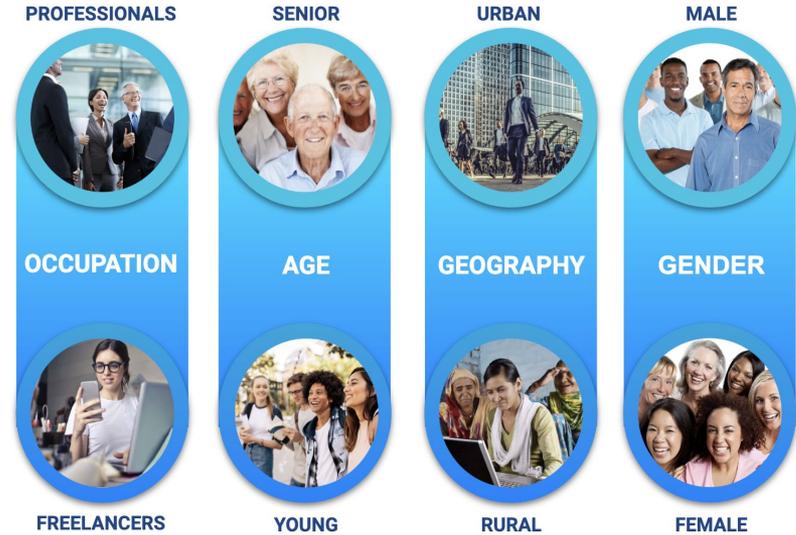
NHS repeat  
prescriptions  
delivered

Providing NHS services

# Customisation

## AI Powered Interface Customization by Age, Geography, Gender and Occupation

Our products will have the unique feature of customization for large groups of different types of users. To achieve full differentiation and personalization, we will start with providing customization for the following user profiles.



### CUSTOMIZATION TYPES

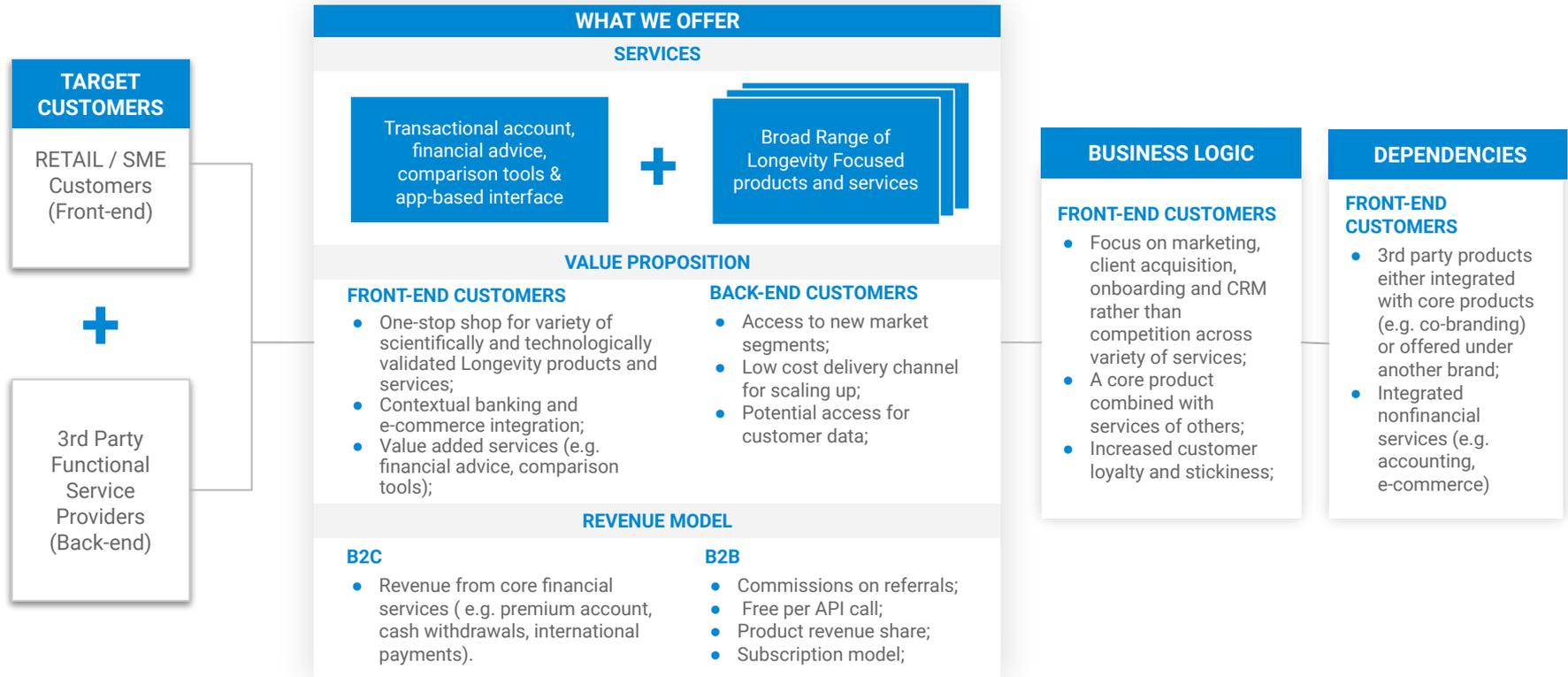
#### BY AGE RANGE

- 20-40
- 40-60
- 60-80
- 80-100
- 100-120

#### BY SUBSCRIPTION

- STANDARD
- PREMIUM
- BUSINESS

# Longevity Card Marketplace Revenue Model



# Digital Avatar

---



# AI Technology for Longevity

## The unique role of AI for Longevity lies in Longevity Medicine.

Longevity Medicine already has leading-edge technologies that achieved a state of market readiness and clinical implementation. However, applying them is primarily a matter of data mining, analysis and management, driven by advances in biomedicine, data science and Artificial Intelligence.

The application of AI and data science to Longevity has the most significant potential to create a real-world impact on human Longevity in a short timeframe and with the highest cost-effectiveness ratio.

AI will play a central role in the Longevity space within several years. It will include the aggregation, development, and deployment of biomarkers of ageing, health, and longevity, preventive medicine diagnostics and prognostics, and precision health technologies.

Longevity Marketplace will cooperate with leading AI platforms in the Longevity sector such as **Buoy Health Platform, Blood Chemistry Calculator, Digital Nutrition Platform, CarePredict Platform, Young.AI, Aging.AI, PhotoAgeClock, BioAge Platform** aggregating information into digital avatar.



BIOAGE



122 LABS

SEQSTER™

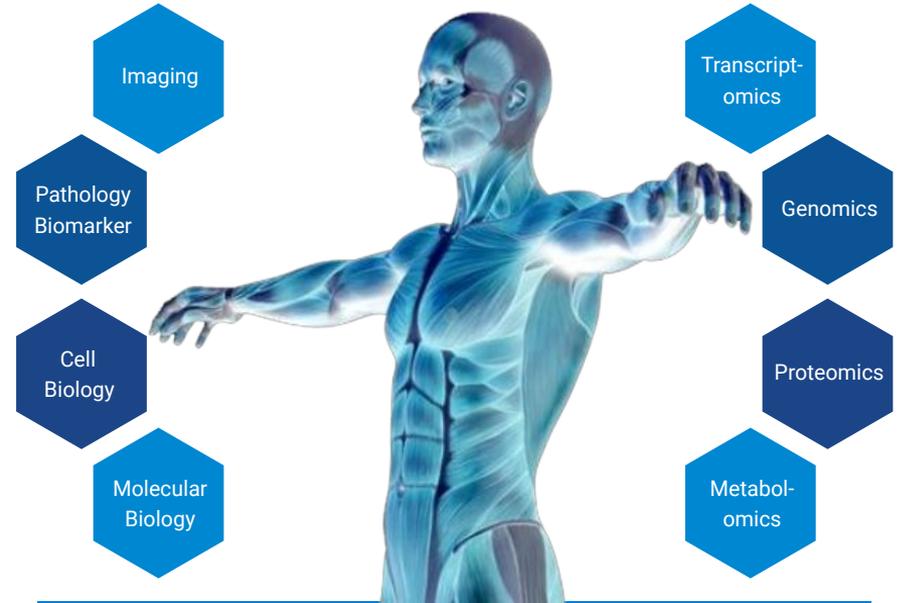


# Digital Health Avatar

The very first step in the longevity plan offered to the club members is the development of **a digital health avatar**. Digital Avatar is a graphic representation that is associated with a user to serve as their identification.

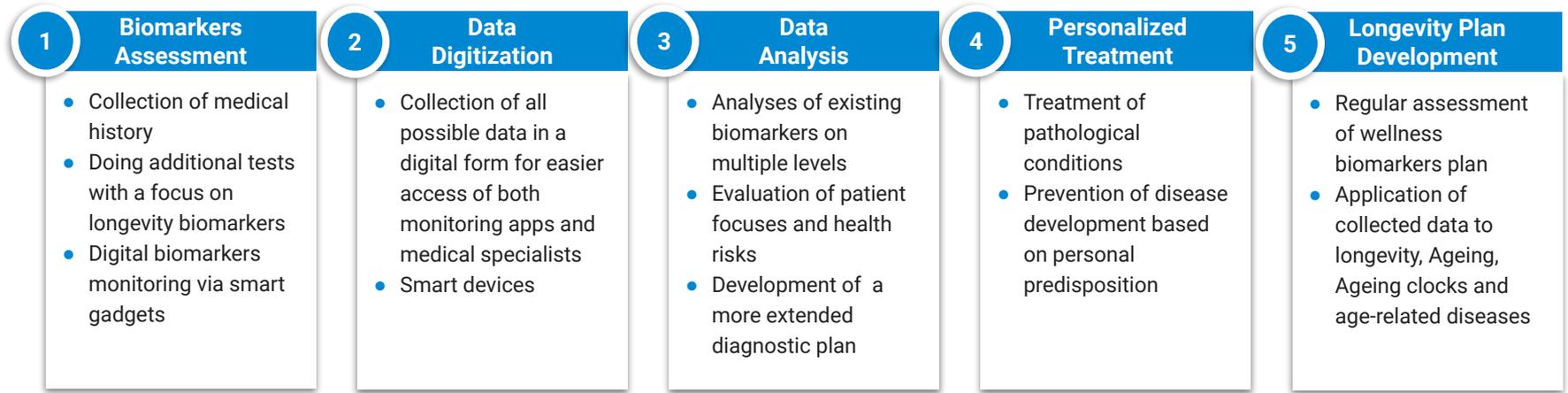
A virtual profile of all health data can be generated through the collection of multiple types of data, some of which are also visualized in 3D through devices or augmented reality. **Biomarkers** are specific parameters found in an organism that serve to diagnose issues, evaluate the overall health status, and predict the Ageing rates of each individual.

With the technologies of healthcare advancing, the digital avatar will evolve from a data collection and disease-focused tool to a **truly Longevity-focused tool**. Instead of focusing on single-dimensional, disease-linked indicators, it will enable examination of the whole organism from an overall health perspective, with a primary emphasis on prevention and patient healthspan extension.



**Digital avatar visualizes Biomarker measures and results based on their analysis**

# Steps for Creation of Digital Avatar



## Key Features of Digital Avatar

**Broadest Input Data**

**Updated Measures**

**Personalized Analysis**

The process of **Digital Avatar Creation** involves the collection of medical history and medical information of the client. One of our aims is to make this process as worry-free and convenient as possible using telemedicine approaches. Therefore, our clients will be provided with a comprehensive list of at-home diagnostic kits and tools, and if necessary, we will be able to arrange online consultations with healthcare professionals. All of the test results will be uploaded to our digital platform.

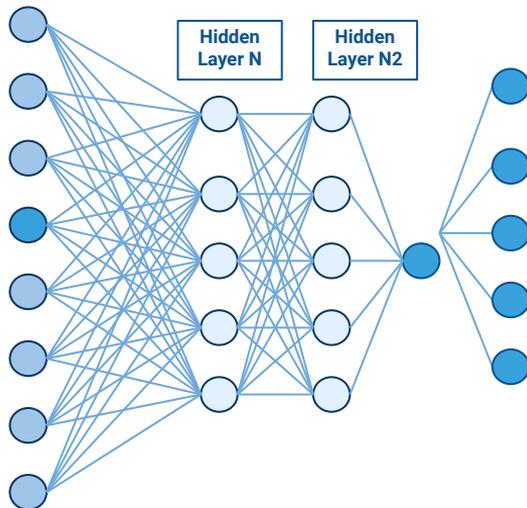
# Digital Avatar Data Processing

**Key differentiation of digital avatar from biobanks is its possibility to operate with input data using AI Algorithms.** On base level after collecting enough data digital avatar would perform analysis and evaluations in various forms such as: Comparison of metrics with average and clinically normal scores, disease risk evaluation, signs of conditions detection. Thus Digital avatar will always contain more data points than it has been imputed. Such approach will grant better and faster further analysis for clinicians or other platforms.

## Digital Avatar Inputs

- Liquid Biopsy biomarkers evaluations
- Digital Biomarkers
- Risk factors
- Lifestyle
- Background
- Anamnesis
- Family disease history
- Physiological Metrics
- Neurological test results
- Ongoing data from wearables

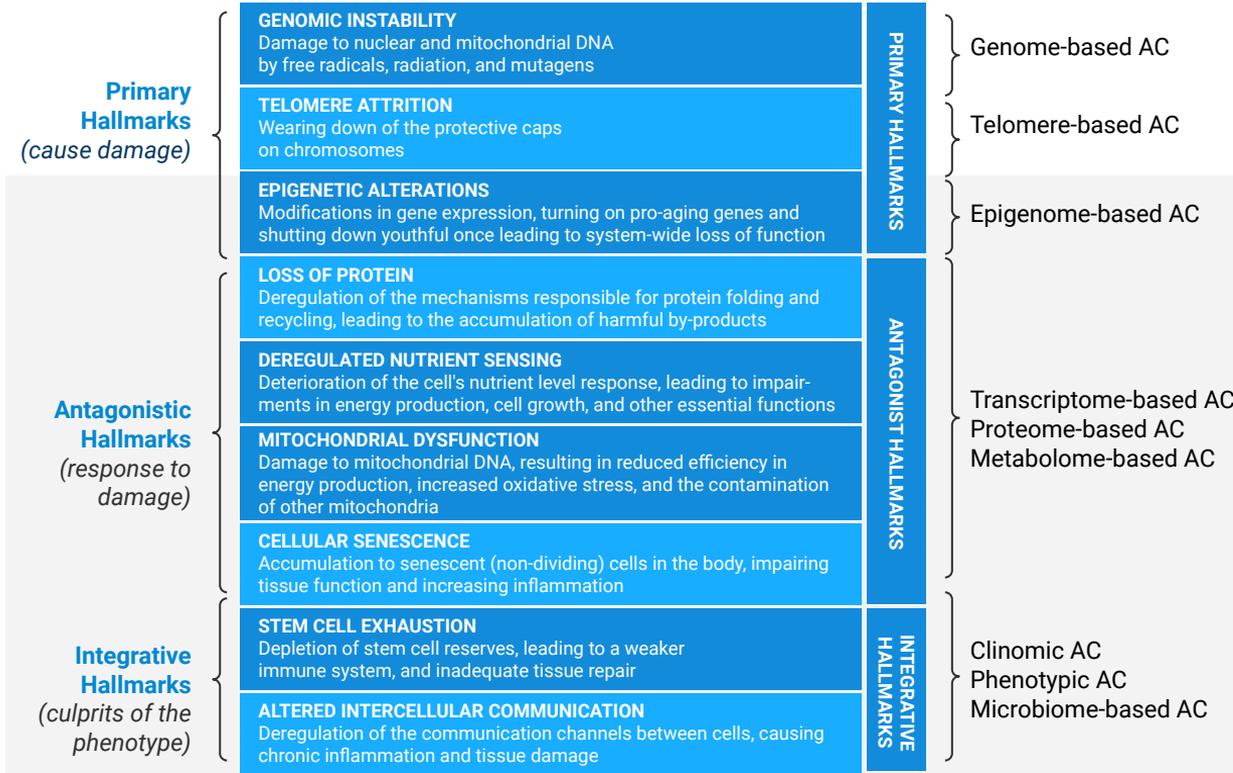
## Digital Avatar Algorithm Analysis



## Digital Avatar Outputs

- Risk of disease development
- Biological age
- Ageing pace
- Functional systems and organs status
- Metabolism evaluation
- Early stage cancer detection
- Data visualisation for clinicians
- Treatment effect monitoring

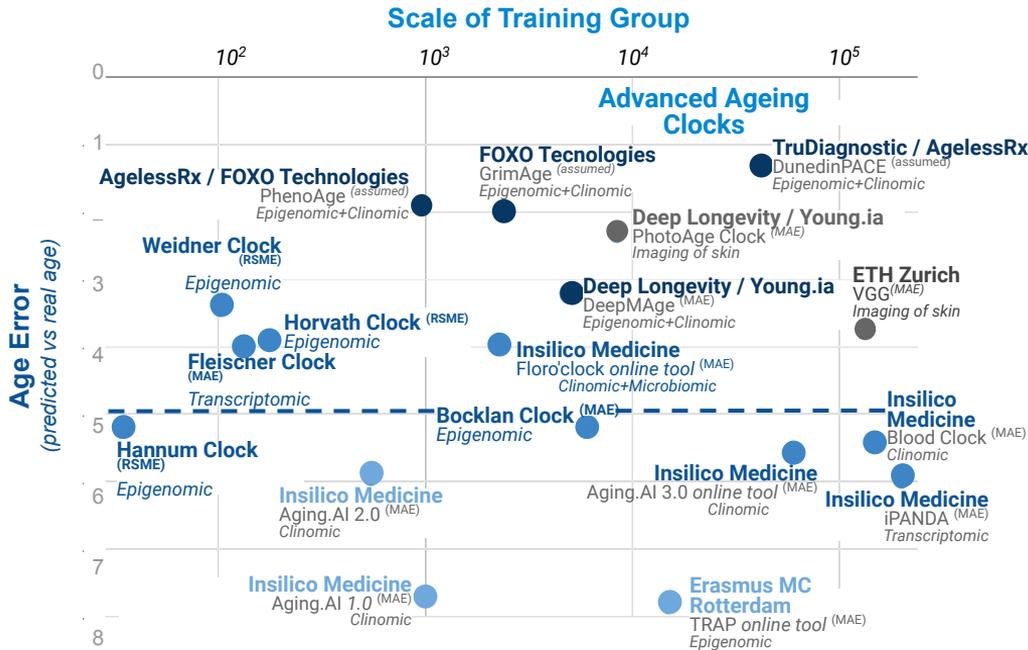
# Hallmarks of Ageing as Biomarkers



In recent years, Ageing science has made significant progress, notably with the finding that the **pace of Ageing is regulated, at least in part, by genetic pathways and metabolic mechanisms** preserved throughout evolution. Dissecting the interconnection of the **hallmarks** and their relative contribution to Ageing is a huge task, with the ultimate objective of discovering pharmacological targets to enhance human health throughout Ageing with minimum adverse effects. Furthermore, **defining the contribution of certain hallmarks and the possibility of evaluating them leads to the development of a system for biological age estimation.** Optimal Ageing Clock would rely on evaluation of each of the hallmarks contribution thus leading to precision and possibility to detect the best treatment targets for patient.

# Comparison of Ageing Clock: Accuracy of Different Algorithms

Accuracy of Ageing Clocks with Different Subset of Biomarkers



To determine biological age and predict life expectancy, a set of similar or dissimilar biomarkers is most often used. **The DNA methylation (DNAm) clocks** combined with blood markers are currently the most accurate biological clocks. Their developers claimed 2-3 times higher accuracy than conventional DNA methylation Clocks like Horvath and Hannum.

**DunedinPACE (TruDiagnostic)**, **GrimAge** and **PhenoAge (University of California LA)** were created using **Elastic net model** extension of linear regression that adds regularisation penalties to the loss function during training. Beside, **DeepMAge (Deep Longevity)** created using feed-forward neural networks, stands out among this bunch.

Other advanced clocks, like **PhotoAge Clock (HautAI)** and **VGG (ETH Zurich)** are based on analysis of skin scans. They precisely detect chronological age.

**MAE (Years) - Predictive accuracy by mean average error.**

# Example of Biomarkers for Ageing Diagnostic

Marker type	Biomarker	What is assessed	Digital platform	Application	At-home tests
Physical Function	Walking speed Fitness activity	Marker of <b>Frailty</b>	Humanity App InsideTracker App Mediage Mobile Health  Vori Health	Ageing rate evaluation Wellness	   
	Muscle movement time	Marker of <b>Age-associated impairments</b> in motor control systems	AgeMeter® App	Ageing rate evaluation	 
	Alternate button tapping	Marker of <b>Muscle coordination</b>	AgeMeter® App	Ageing rate evaluation	
Anthropometric Markers	Digital eyes & face biomarkers	Real-time motor, cognitive, and emotional abilities of <b>Brain</b>	BioEngine4D	Ageing rate evaluation Neurology	
	BMI	Indicator of the <b>Energy metabolism balance</b>	InsideTracker App Mediage Mobile Health	Ageing rate evaluation	
	Height & weight	<b>Abdominal obesity</b>	Mediage Mobile Health	Ageing rate evaluation General Check up	
	Waist circumference	<b>Abdominal obesity</b>	Mediage Mobile Health	Ageing rate evaluation	

# Example of Biomarkers for Ageing Diagnostic

Organ	Biomarker	What is assessed	Digital platform	Application	At-home tests
Cardiovascular system	Heart rate	Indicator of <b>Heart functioning</b>	<i>Humanity App</i> <i>InsideTracker App</i>	<b>Ageing rate evaluation</b>	
	Blood pressure	Index of <b>Cardiovascular activity</b>	<i>Mediage Mobile Health</i>	<b>Ageing rate evaluation</b>	
	Pulse rate	Marker of <b>increased arterial stiffness / stress / autonomous nervous system function</b>	<i>Health Reviser</i>	<b>Ageing rate evaluation</b>	
Ear	Highest audible pitch	<b>Ability to hear sounds</b>	<i>AgeMeter® App</i>	<b>Ageing rate evaluation</b>	
Eyes	Visual reaction time	<b>Ability to respond quickly to visual stimuli</b>	<i>AgeMeter® App</i>	<b>Ageing rate evaluation</b>	
	Visual perception	<b>Ability to perceive light stimuli</b>	<i>AgeMeter® App</i>	<b>Ageing rate evaluation</b>	
Lungs	Forced vital capacity	<b>Lung function test</b>	<i>AgeMeter® App</i>	<b>Ageing rate evaluation</b>	
	forced expiratory volume	<b>Lung function test</b>	<i>AgeMeter® App</i>	<b>Ageing rate evaluation</b>	
Brain	Decision reaction time	<b>Brain activity</b>	<i>AgeMeter® App</i>	<b>Ageing rate evaluation</b>	
	Memory	<b>Ability to to reconstruct the experience and make relevant judgments</b>	<i>AgeMeter® App</i>	<b>Ageing rate evaluation</b>	

# Longevity Virtual Clinic

---



# Longevity Virtual Clinic Concept

For many years, the idea of a one-suits-all place for advanced treatment has been just a futuristic idea. **Longevity Virtual Clinic** is a brand-new concept of the modern clinic that brings cutting-edge technologies and services to the doors of **Longevity Club members**. The main objective of Longevity Virtual Clinic is to guide **Longevity diagnostics** and **support the client** with all necessary procedures and Longevity focused treatments.

The members of the club would need to undergo complex health screening to upload the personal health and biomarkers of Ageing data to the platform. This information will be analysed by analytics and **AI-assistant** to create **Digital Avatar**. Digital Avatar is the representation of the current health state. Depending on this profile, the AI assistant and Longevity experts will provide **solutions tailored to individuals' needs**. They may involve additional diagnostics and treatment of current health declines in appropriate clinics and offer the best-personalized **Longevity Plan guidelines** for clients worldwide.



# Longevity Virtual Clinic Services

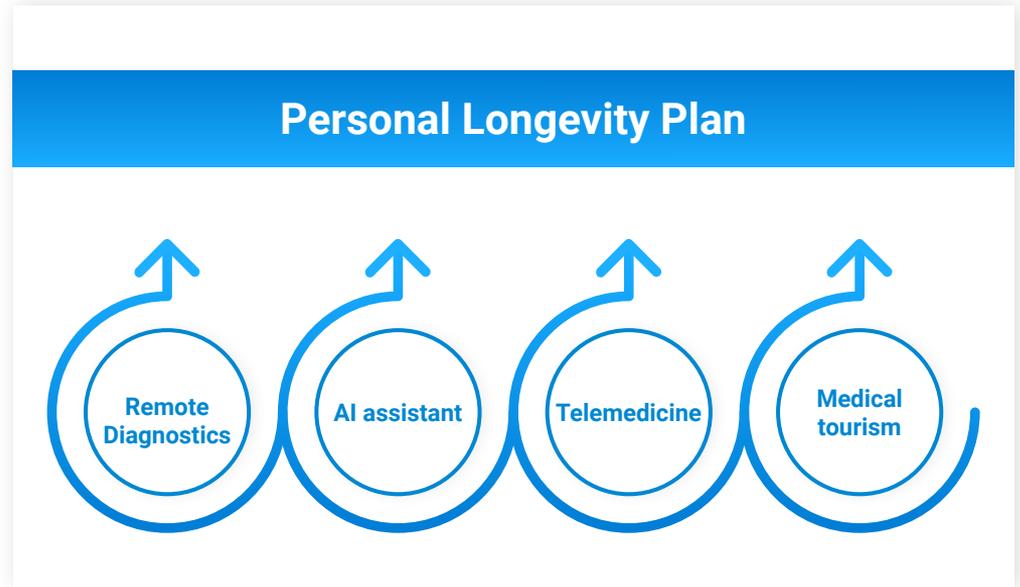
Virtual Longevity Clinics will cover 4 areas of medical care:

- Remote Diagnostics;
- Telemedicine;
- Medical tourism; and
- Personal Longevity Plan.

**Remote Diagnostics** is necessary to guide the patient through the list of essential check-ups depending on clinical history and lifestyle. It will fill up the gaps between patient health data and current health state. Based on this information, **Digital Avatar** and **AI assistant** will create a better recommendation list and **Personal Longevity Plan**.

**Telemedicine** is necessary to support the client during diagnostics, manage test results, and the specialists from vendor companies with the full range of diagnostics services and required treatment.

However, some diagnostic services can be unavailable in the country of residence or be rather expensive. In such cases, Virtual Longevity Clinics offers alternative services for **Medical Tourism** to make Longevity diagnostics available for every member of the Longevity Club.



# Longevity Virtual Clinic: Stages of Development

1

**Service development stage.** We collect and systematize information about radical life extension. We develop methodology, business process standards.

2

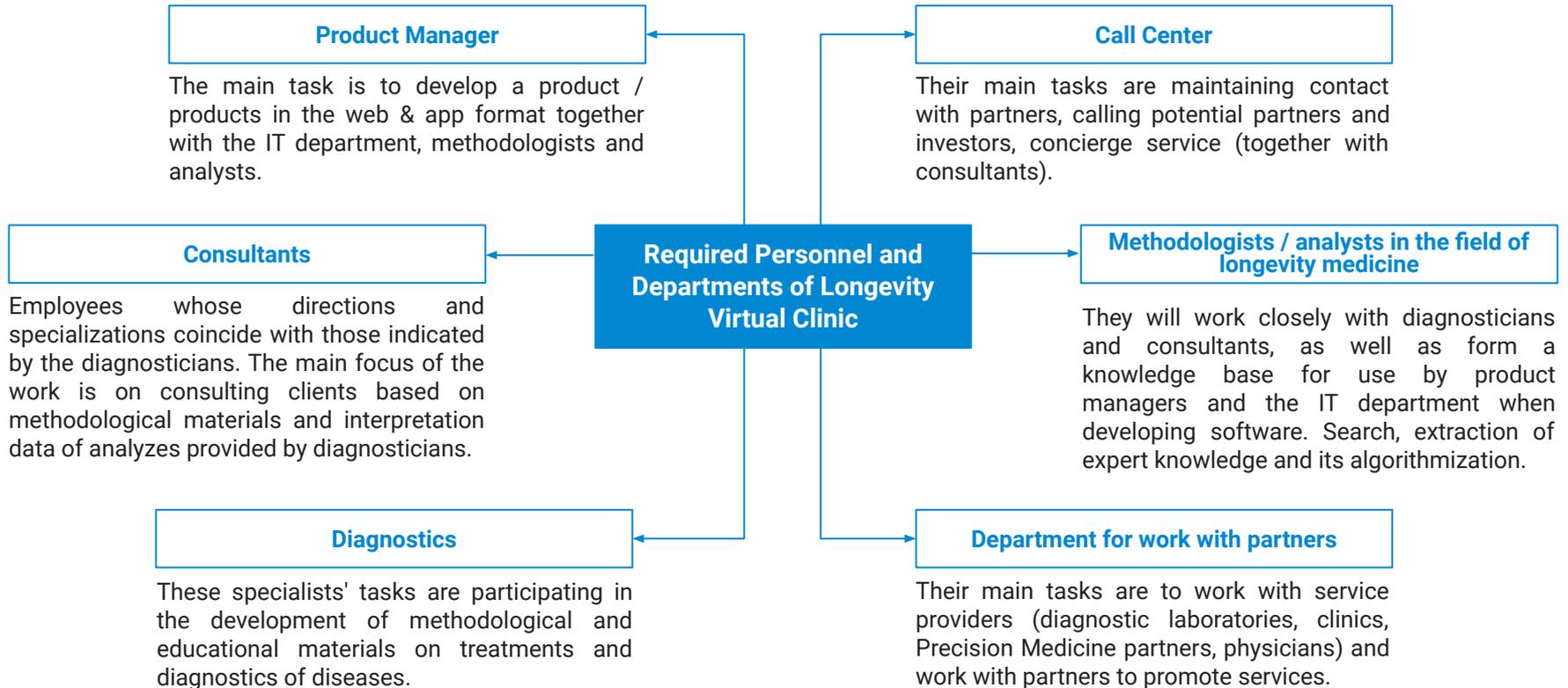
**Stage - scaling.** Ultra high-net-worth individual (UHNWI) up to 12 geolocations (value grows at this stage). Move the concierge service to the right side as vital. We need to see what competencies we need at each stage. (2-5 competencies per person)

3

**Stage - full automation.** Minimization of human participation 40-50 people in the state. 12-20 geolocations, financial centers. Application will require a smaller number of people to maintain.



# Required Personnel and Departments of Longevity Virtual Clinic



# Remote Diagnostics

**Remote diagnostics** allows patient testing to be done outside of conventional clinical settings, such as in the home or in a remote area, which can increase monitoring and access to care. Remote diagnostics technology may significantly improve an individual's quality of life, by allowing clients to maintain independence, prevent complications, and to minimize personal costs.

**Main possibilities of remote diagnostics:** safety and proactive care, clinician-centric monitoring, personalised education, analytics and reporting.



## Upload your results

Have your blood tested at a lab, at home, or upload your existing blood and DNA test data.



## Get a Longevity Plan

Longevity Club will help you set up a goal-oriented Longevity Plan with nutrition, fitness, and lifestyle recommendations. You'll use it to change your health for the better.

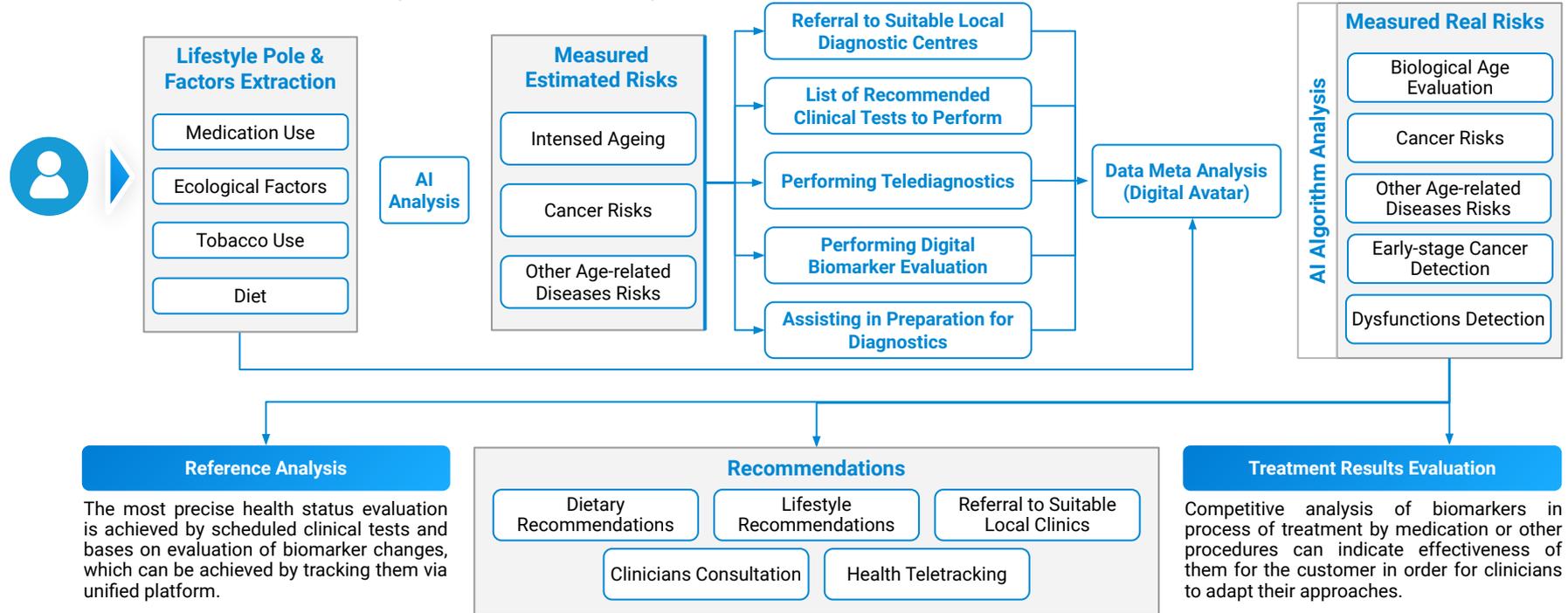


## Track your progress

As your body improves, your blood biomarkers change, too. Retest every 3 months to see what's working and what's not.

# Remote Diagnostics Pipeline

Longevity Virtual Clinic Platform is a sophisticated AI-driven online-service providing users with **deep evaluation of cancer development risks** and Ageing **progression** based on lifestyle factors and clinical analysis, supporting the customer on every step to develop full understanding of health status and actions which should be performed in order to improve it.



# Longevity Check-Ups

**Longevity check-up** is a type of medical check-up that collects in-depth data on the patient's health to assist in the prevention of disease and to guide the patient towards an increased lifespan. **Longevity check-ups** are the first step to and a powerful tool of **Longevity Medicine**. Early diagnostics and advanced data parsing allow to tackle any diseases before they develop larger imbalances and deficiencies in the patient's body, often resulting in an easier and more complete treatment. Effective treatment of such diseases has a direct influence on the patient's lifespan and, together with proper advising on nutrition and lifestyle **could ensure that the patient lives a longer and healthier life**.

## Longevity Screening Panels or Check-ups:

Genome Testing

Allergies Testing

Reproductive Aging Testing

Microbiome Testing

Skin Check-up

Physical State Assessment

Omics Testing

Eyes and Ears Check-up

Cardiovascular Diagnostics

Oncology Testing

Endocrinology Check-up

Psychological Aging Testing

Nutrition Assessment

Post-COVID Check-up

Micro- and Macroelements,  
Heavy Metals, Electrolytes,  
Antioxidants Level Assessment

Osteoporosis Testing

Immune Aging Testing

Kidneys Check-up

Liver Check-up



# Longevity AI-Assistant Integration in Digital Avatar

After diagnostics, the client uploads the **results** to Virtual Longevity Clinics. This is raw data for the formation of **Digital Avatar**. **AI-assistant** analyzes given data and creates a list of recommended tests and procedures. If there is an insufficient amount of information, the AI assistant recommends undergoing **additional testing** to fill the gaps in Digital Avatar. After all necessary information is collected and analyzed, the client acquires **Longevity Plan** and, respectively, **the list of anti-ageing procedures explicitly recommended to the individual**.

## Digital Avatar Outputs

- Risk of disease development
- Biological age
- Pace of aging
- Status of functional systems and organs
- Metabolism evaluation
- Early stage cancer detection
- Data visualization for clinicians
- Treatment effect monitoring

## AI-Assistant Analysis



## Examples of Recommended Services

- Omics technologies
- Comprehensive health assessment
- Full body MRI
- Sleep diagnostic assessment
- Standard panels (cardio, onco, immune, f/m, etc.)
- Comprehensive blood analysis
- Intermittent hypoxic training
- Stem cell therapy services
- Biomaterials storage services
- Immune system assessment
- Remote patient monitoring services



**Reduction in biological age and risk of disease development**

# Premium Content for Longevity Club Members

After completing the Longevity diagnostic, **Longevity Club members** would receive access to **the Premium Longevity Content**. **Premium Longevity content** includes the Practical Longevity book that covers the most significant amount of data concerning Longevity in one place, guidelines for Digital Avatar score optimization, VR Longevity quest, Personal Longevity Guide, and unique anti-aging services available in your region. This premium content is available only for **Longevity Membership Cardholders** and can be accessed only by **Longevity Platform**.



# Results of Longevity Diagnostics

Depending on the results of the **Longevity diagnostics**, the person will be redirected to the **current Longevity Layer** with detailed explanations of factors that reduce their lifespan expectancy and available solutions. Without eliminating the risk factors from lower layers, the person can't fully access the potential Longevity because these factors will deal constant damage to a person's health.

The list of treatments will include **a personalized treatment** and **lifestyle plan**, which will promote their Longevity on a current layer. After completing recommendations from the current layer, members of the Longevity Club will open access to further anti-ageing treatments and advanced Longevity Technologies. Longevity Virtual Clinic provides its clients' **navigation** and **full support** along the whole way to their **Super Longevity**.

## Longevity Layers

3

Advanced Healthy Longevity (the DKG Method)

2

Performance Enhancement

1

Healthy Longevity

0

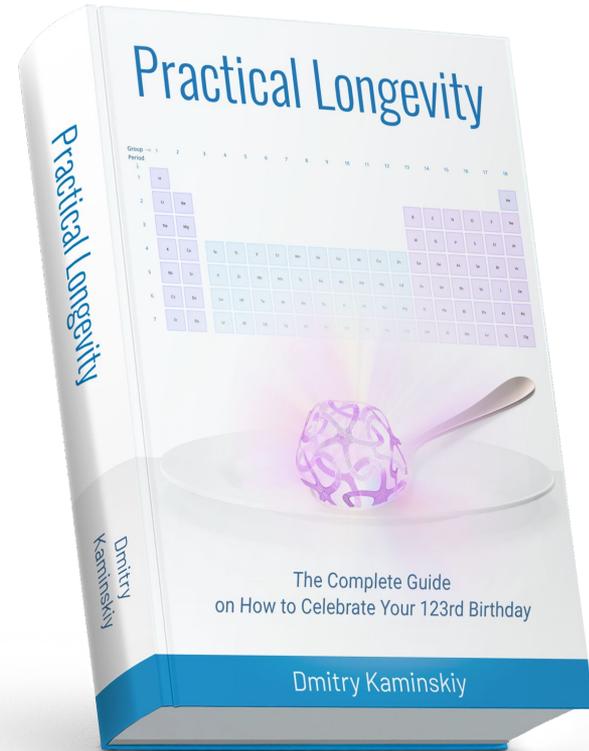
Normal

-1

Anti-Longevity

# Practical Longevity Book-App

- **Practical Longevity Book** will be designed as a smartphone or computer app using gamification elements, such as Navigation Menu, Longevity Reward System and Longevity Virtual Reality Quest.
- **Sophisticated Navigation Menu**, using specially developed algorithms based on the client's 15-category question responses, helps the user determine his or her entry level.
- Practical Longevity Book is divided into **5 qualitative layers**, increasing in levels of effectiveness (in terms of Practical Longevity), and technological sophistication.
- Each of the **5 layers** includes several major and subchapters that describe factors that influence on human longevity and the way how to deal with the issues **to reduce the negative effects on health**.
- Invaluable recommendations of longevity experts in each of the layers provide a reader with detailed instructions on what to do **to move to the next longevity layer**.



# Personalised Longevity Plan

**Personalised Longevity Plan** includes recommendations regarding lifestyle, nutrition, sleep, exercise, stress resilience, etc. based on comprehensive assessment.

Good nutrition, exercise and other healthy behaviors may help your body heal. A good plan for healthy living may improve your quality of life. It might also lower your risk for future illnesses such as other cancers and heart disease. A healthy lifestyle may be helpful in addressing concerns such as: weakness, loss of balance, fatigue, stiff muscles and joints, weight loss or weight gain, problems sleeping, restlessness.

**Longevity Guide** helps do actionable steps to achieve your goals based on your unique health insights. These can be anything from losing weight to minimizing anxiety to improving the quality of your sleep.



# Virtual Reality Longevity Quest

**Virtual Reality Longevity Quest** is a real-life video-game-style missions **incorporating augmented reality elements designed to improve user health and Longevity Score in a gamified manner.**

In order to create a 3D computerized representation of a person's body, **this application will be created as a body scanner.**

Quant Biomarkers Company will develop a comprehensive panel of biomarkers. **These biomarkers can be measured and tracked over time in a 'digital twin'** – a sort of databank-avatar for the human body.

Also, users will have an opportunity to use different **gamification elements** – receive points for different achievements such as creating Longevity Story, completing the Longevity Checkup, becoming Longevity Club Member, etc. **All accumulated points can be exchanged for different discounts in our Longevity Marketplace.**



# Medical Tourism

**Medical tourism** refers to the practice of going to another country for medical or dental treatment. The reason for this can be various: inaccessible or overpriced procedures in the country of origin, advanced facilities, lack of health insurance, legal issues.

The companies that provide services for medical tourism are responsible for **the full-time consultancy and support** of clients in selected countries. This includes patient transfer and wellbeing, appointments with doctors and clinics, data storage and privacy, health insurance, and any issues clients might face. They also search and analyze which country and specifically clinic is the most suitable for clients' needs.

**Insurance plans** usually can not cover all medical needs of the client and advanced treatment if it is needed. Therefore, patient care might be incomplete, and to fulfill such a loss some insurance companies promote services of medical tourism companies.

**The client's privacy** is the top priority for such companies. It is also possible to provide these services as an ordinary vacation.

1

## Patient Preparation

- Search for a country and clinics for precise patient care
- Documents preparation and medical data digitization

2

## Patient Transfer and Support

- Visa
- Booking flights and housing
- Personal guide, consultant or interpreter in targeted country

3

## Medical Services

- Appointments with doctors and clinics
- Patient data transfer
- Health assessment and precise treatment

4

## Safe Return to a country of origin

# Key Tasks Solved by the Virtual Longevity Clinic

**Informing.** Up-to-date, structured and personalized information based on a wide range of sources, including scientific publications, expert advice, platform recommendation service.

**Technologies.** Access to up-to-date, certified, personalized solutions, including drugs, trainings, technologies.

**Data Security.** Confidential access to certified medical, legal and financial professionals and organizations.

**Data Storage.** Formation, storage and analysis of anonymized personal data.

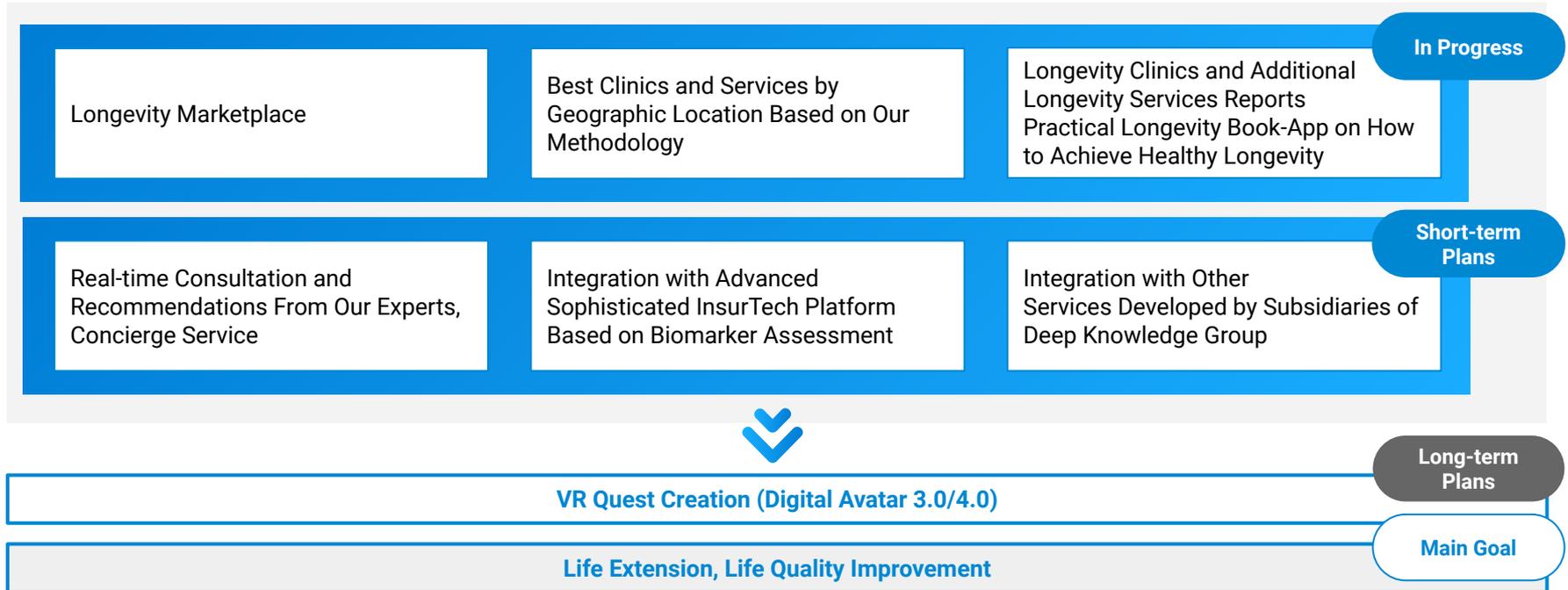
**Research.** Support for scientific research by providing access to data, attracting specialized specialists.

**Initiative.** Providing and maintaining a platform for the formation of communities united by the mission of the platform and the implementation of public initiatives.



# Virtual Longevity Clinic Roadmap

Virtual Clinic is an online platform that will offer clients all kinds of services developed by the Practical Longevity Group and other divisions of Deep Knowledge Group for the convenient and efficient life extension. The platform will be available only for the members of Longevity Club.



# Longevity Cabinet

---



# Longevity Clinics in London

The **Longevity Clinic** is a specialised medical institution, whose specialists deal exclusively with the problems of prolonging active life in its various aspects. They can be multidisciplinary or focus on one of the following areas:

Diagnosis and Treatment of Age-dependent Diseases
Aesthetic Medicine and Cosmetology
Reproductive Medicine
Regenerative Medicine
Functional Medicine
Space Medicine
Sport Medicine
Rehabilitation

Longevity diagnostic is a **new approach** to assessing human health, which differs from the **traditional** in that **comprehensive examination programs** and interpretation of results are conducted with a focus on **prolonging the active quality of human life**, taking into account risk factors affecting ageing and the **development** of common diseases **associated with age**.

Performing laboratory (tests of blood and other biological fluids) and instrumental (ultrasound, MRI, etc.) tests to detect diseases, including in the early stages of development

Biomarkers of Ageing

Immune Status Study

Genomic Status Study

The **paradigm of Longevity** and healthy ageing as a top priority has a **significant impact** on approaches to **primary, secondary and tertiary disease prevention**. Along with clinical (objective) health indicators, specialists in the field of **Longevity Medicine** emphasise the **subjective assessment of health and quality of life**, as well as the unity of **chronological (passport), biological and subjective (psychological) age**.

# Methodology for Selecting Longevity Clinics in London

The main goal of this analysis was to investigate longevity clinics and additional longevity services of London and identify top 10 clinics and precision medicine clinics, hospital, diagnostic services, laboratories with additional longevity services out of over 100 registered in London.

The top 10 longevity clinics and services ranking was created using data collection approach. The evaluation of over 100 clinics and additional longevity services by experts allowed to build a ranking of London clinics and services from the most advanced and competitive clinics at the top to less effective and developed at the bottom of the list.

While some clinics at the bottom of top longevity clinics rank can be treated as less advanced in comparison with clinics which top the rank, they should be considered as truly effective ones as they are all in top 10% of London clinics.

Every **Longevity Clinic** from the list obtained **scores** from three independent experts. The **weight of each of the experts' scores in the final mark is 50%**. The method of normalised score allowed to rank every single clinic from **10** (the top score) to **2** (the lowest possible score). The best performing clinic from our rank obtained **9.2 out of 10 points**, as it was decided not to use the best performing clinic from the list as the benchmark.

The aim of the analysis was to create a **golden standard** of longevity clinic. Comprehensive **investigation** of clinics allowed to reduce the level of subjectivity of the analysis significantly. The empirical approach to the **comparative analysis** of longevity clinics in London allowed to represent the most advanced clinics and diagnostic centres in one of the longevity centres in the world.

There were chosen 6 most significant indicators which helped to **rank** all clinics from the list, such as availability of services, equipment, team composition, **intellectual property**, pricing and geographical location to compare the performance of clinics.

# Longevity Clinics in London

1	<b>Echelon Health</b> (68 Harley Street)
2	<b>Health Optimising</b> (56 Maida Vale)
3	<b>Human Health</b> (Honor Oak Park: 43 Honor Oak Park and Crystal Palace: 33 Anerley Road)
4	<b>London Center for Longevity and Metabolic Health</b> (264 High Street)
5	<b>London Integrated Health</b> (150 Princes Ave)
6	<b>Medical Express Clinic</b> (117A Harley St)
7	<b>One5 Health</b> (One5 Health City: 30 Moorgate and One5 Health Marylebone: 83 Baker Street)
8	<b>Paar London</b> (S. Molton St)
9	<b>Preventicum</b> (The Cursitor Building, 38 Chancery Lane, London)
10	<b>Wellgevity</b> (18 Dover Street, London)

Locations of the Longevity Clinics

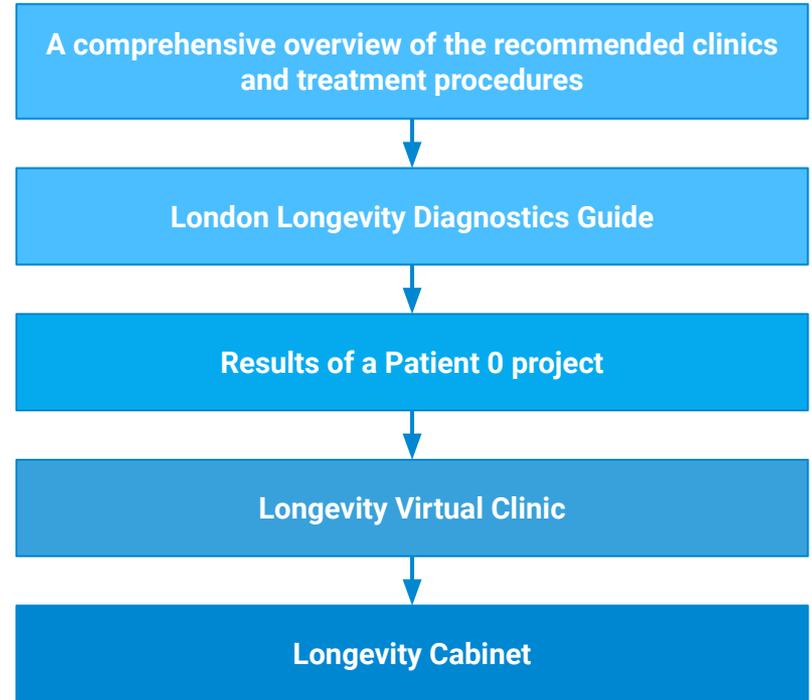


# Special Case in London

**Special Case in London** is a project focused on developing a mobile app that will contain a **comprehensive overview of the recommended clinics and treatment procedures**. It will help Members of the Longevity Club to choose the optimal solution that best suits a person's needs, health, geographic location, and financial status.

Developed by Aging Analytics Agency, **London Longevity Diagnostics Guide** is the first of its kind to guide potential patients through clinics, diagnostics, and treatment procedures to go for a Longevity Check-Up in London. The purpose of this project is to provide practical recommendations for longevity and health screening.

Currently, we are pursuing a **Patient 0** project aimed to validate all accumulated data and compare the results of the services and screening in different Diagnostics Centers in the London area so that our clients will receive the **evidence-based approach** to Longevity Diagnostics and Treatment in London. We will adapt the results of a Patient 0 project to **Longevity Virtual Clinic** and **Longevity Cabinet** to create the most advanced opportunities for Longevity Journey in the London.

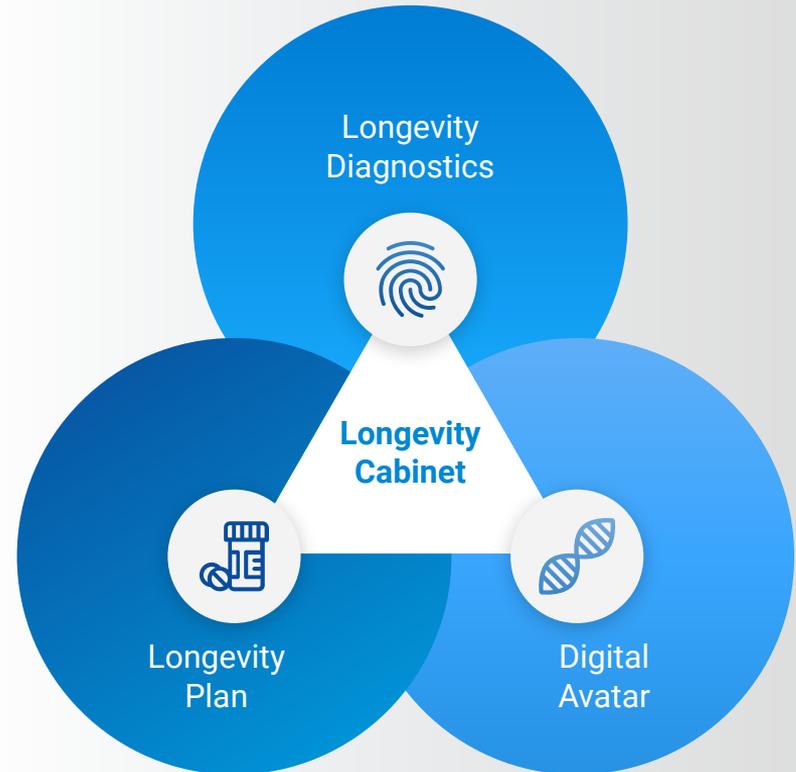


# Longevity Cabinet

**Longevity Diagnostics** usually involves whole-body health assessment and consultations with numerous specialists. As a rule, diagnostics labs and doctors are located in different places or even countries. Due to this, the concepts of **medical tourism** and **telemedicine** were developed.

**The Longevity Cabinet** project is focused on development of a place that will include all necessary equipment and specialists to diagnose and treat the age-related decline and provide a personalized **Longevity Plan**.

**Longevity Plan** is based on hereditary predispositions to diseases, medical history, environmental risks of living in a specific area, biomarkers of Ageing, personal aims of a client, and respectively solutions that reduce the risks of developing age-related diseases as well as premature Ageing. All collected screening information will provide data for a **Digital Avatar** of a patient, a visual representation of the health state with a personalized strategy to achieve Longevity using scientifically approved information.



# Diagnostics Tools for Longevity Cabinet

The range of **diagnostics tools** will help the doctor assess the health state from biochemical to whole organism level. They also allow screening of the functional state of separate organ systems and defining the onset of any pathological process in the body that may impact healthy Longevity. Our expert analytics team has developed **robust diagnostic/treatment algorithms** that allow for a tailored approach to every patient.

## Equipment for Longevity Cabinet

### Genetic and biochemical biomarkers testing:



Automatic Biochemical Analyser



Immunofluorescence Quantitative Analyzer



DNA sequencer

### Imaging biomarkers assessment:



Ultrasound



X-ray



Full-body MRI

### Physiological biomarkers testing:



Spirometry



Electroencephalogram



X-ray densitometer



Electrocardiogram



Oxygen Sensor



BMI analyzer

# Longevity Cabinet Treatment Services

Except for the Longevity check-ups, the services of the Longevity Cabinet include a range of **treatment services** aimed at **improving patient well-being** and **health**. They include management of pre-developed diseases, personalized treatment recommendations, and solutions to **promote Longevity**.

## Additional Services Provided in Longevity Cabinet

 <b>Treatment Plan Creation and Consultation</b>	 <b>Longevity Treatments (e.g. Intermittent Hypoxia Training)</b>	 <b>Urgent and Emergency Care</b>
 <b>Environmental Risk Factors Identification</b>	 <b>Management of Chronic Diseases</b>	 <b>Immunization</b>
 <b>Nutrition Plan</b>	 <b>Telemedicine</b>	 <b>Longevity Marketplace Additional Services</b>

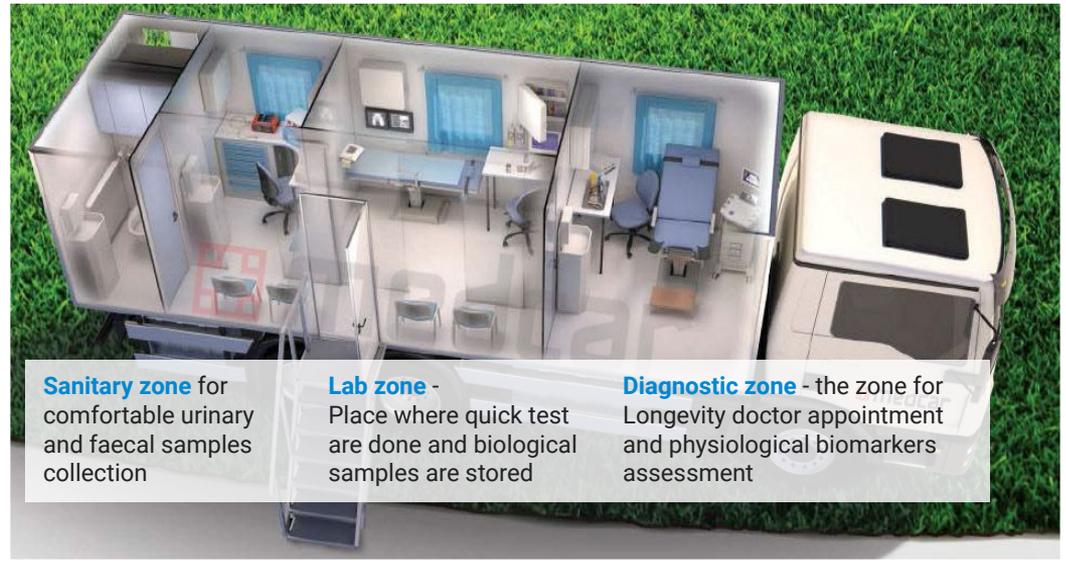
# Mobile Longevity Cabinet

---



# Mobile Longevity Cabinet

The **Mobile Longevity Cabinet** project is focused on development of mobile clinics that can provide Longevity assessment independently of a person's location and residence. The mobile vehicles offer a wide range of services to ensure proper diagnosis and adequate follow-up of patients with specific medical needs, referral of critical cases to advanced care, and detection of possible outbreaks of diseases. A medical team and pharmaceutical supplies accompany each mobile clinic. The **Mobile Longevity Cabinet** provides full-scope, scientifically and medically validated Ageing diagnostics. It may be the best solution for people who want to make a personalized check-up of different health aspects in one place. The sets of check-ups remain the same, except for MRI diagnostics and some athlete tests that require training apparatus. Mobile Longevity Cabinet provides a set of quick biochemical tests with fast results. However, the cabinet doesn't have biochemical analysers for a broader range of tests. Therefore, biological samples will be transferred to a local **Longevity Cabinet**.



# Scheme of Mobile Longevity Cabinet Work

---

- I. Patient comes to mobile health vehicle for **health check-up** and **diagnostics**.
- II. Paramedics take basic tests and examine patients condition, then they input patient's condition and test results in **database**.
- III. Doctors in medical centers **immediately receive data** and patient's results from database.
- IV. Medical professionals **analyse symptoms** and **test results**, then they request specialised tests which are performed on site.
- V. After getting all the required information doctors form **diagnosis** and **recommendations** with a **treatment plan**.
- VI. Doctors' **recommendations come back** to paramedics that give **necessary treatment** to the patient.
- VII. All **patients' medical history** is stored in the highly secured cloud infrastructure.

# Biochemical Testing in Mobile Longevity Cabinet

Nowadays, there is no need to spend hours in clinics to do biomarkers testing. Just **make an appointment** with **Mobile Longevity Cabinet** to provide them with blood, urine, or other types of biological samples and get back to routine. The results will be available within 24-48 hours after sample collection via **email notification**. After results notification, our experts will offer a range of solutions depending on health problems or personal Longevity aims.

1

Samples collection

Our specialists collect biological samples (blood, genetic material, urine, saliva, faecal) for biomarkers assessment in sterile conditions.



2

Samples storage

The mobile clinics have a fridge suitable for biological samples storage that will not disturb the biomarkers composition.



3

Sample transferring

The transferring is done as soon as possible to local Longevity Cabinet. The fast transfer is vital for quality diagnostics.



4

Sample analysing

Modern analyzers in Longevity Cabinet extract data from samples, create Digital Avatar and provide the Longevity solutions in concrete case.



# Laboratory Qualification Policy

Many countries have different regulations regarding Mobile Laboratory Qualification Policy. In UK and Switzerland, Mobile Clinics need to be qualified in the same way as regular clinics, while others have additional requirements.

In general, the list of requirements includes:

- Certificate of registration with a phone number that is accessible 24 hours a day, 7 days a week
- A protocol for emergency follow-up treatment.
- To keep written or electronic records of provided services.
- Toilet facilities.
- Maintain a general liability insurance policy of \$1,000,000.
- Provide the patient with a postoperative information packet.
- Allow handicapped access through a ramp or a lift.
- Keep a sterilizing system in place.
- A sufficient amount of drinkable water, especially hot water, is readily available.
- Staff should consist of technician, administrator, quality manager, and respectively a medical specialist with M.Sc., Ph.D. qualification and 6 years of clinical practice.
- Commitment to Good Manufacturing Practice and Good Clinical Practice to deliver a good quality of diagnostics for the patients.

## Good Manufacturing Practice Guidelines



# Health Data Wallet

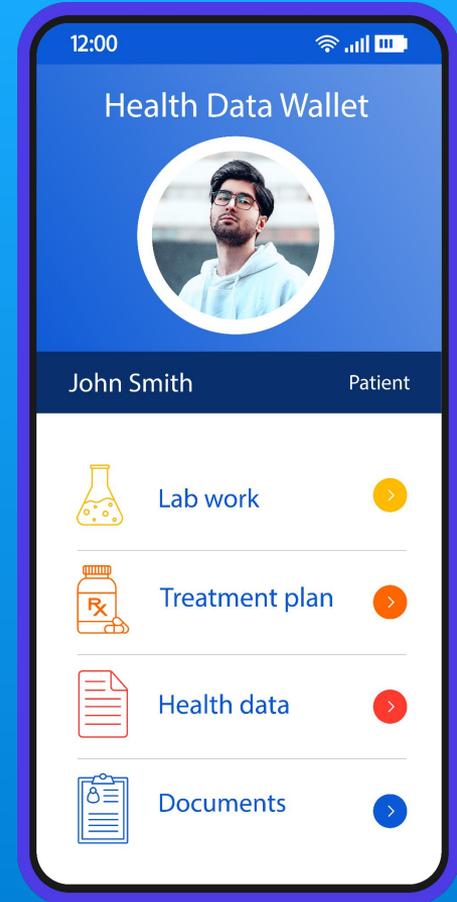
---



# Health Data Wallet

The **platform** is a comprehensive SaaS solution that implements a personalized, secure, digital ecosystem based on the **collection, analysis** and **use** of data to implement the organizational, analytical, medical and related functionality provided by service providers in the interests of extending the quality of life of customers. The **platform** is implemented in accordance with the following basic principles:

- **Complexity.** The Platform strives to provide users with a comprehensive product that includes the solution of medical, legal, financial and environmental aspects of the Ageing problem.
- **Universality.** The Platform provides its users with a full range of relevant services so that not a single opportunity to solve user problems is missed.
- **Individual approach.** As part of a personalized medicine ecosystem, each Longevity service provided to a specific client takes into account individual characteristics and Longevity aims.



# Basic Functionality of Health Data Wallet

The functionality of the **Platform** covers the following areas: **scientific**, **medical**, **infrastructure**, and **wellness**. The scientific direction is focused on assisting in organizing and conducting research in **Longevity** by scientific institutions, research groups, and private researchers. The medical direction is aimed at helping to organize and carry out a complete cycle of therapeutic and preventive measures in the field of Longevity based on existing and **newly developed methods** by medical centers, clinics, individual rooms. The **infrastructure** direction is designed to integrate, provide, and control providers' services and tailored patient treatment. Wellness direction ensures the provision of wellness-related services to clients. The **Platform** integrates all these directions to create an appropriate environment for the realization of a **personalized Longevity Plan** and anti-ageing treatment solutions.

## Scientific

- Planning research and experiments
- Acquisition of the necessary equipment
- Data collection and analysis;
- Verification and testing of the results (ideas, methods, preparations)
- Longevity Conferences

## Medical

- Identification of recommended screening panels for health and ageing assessment and search for suitable Longevity clinics
- Formation of personal health profile
- Creation of Longevity Plan depending on patient health
- Anti-ageing treatment

## Infrastructural

- Connection and verification of service providers
- Support of matching between Longevity service provider and target audience, with specific Longevity goals
- Monitoring the quality of services provided by service providers

## Wellness

- Financial services
- Insurance services
- Transport services
- Educational services
- Psychological services
- Real Estate services
- Concierge service

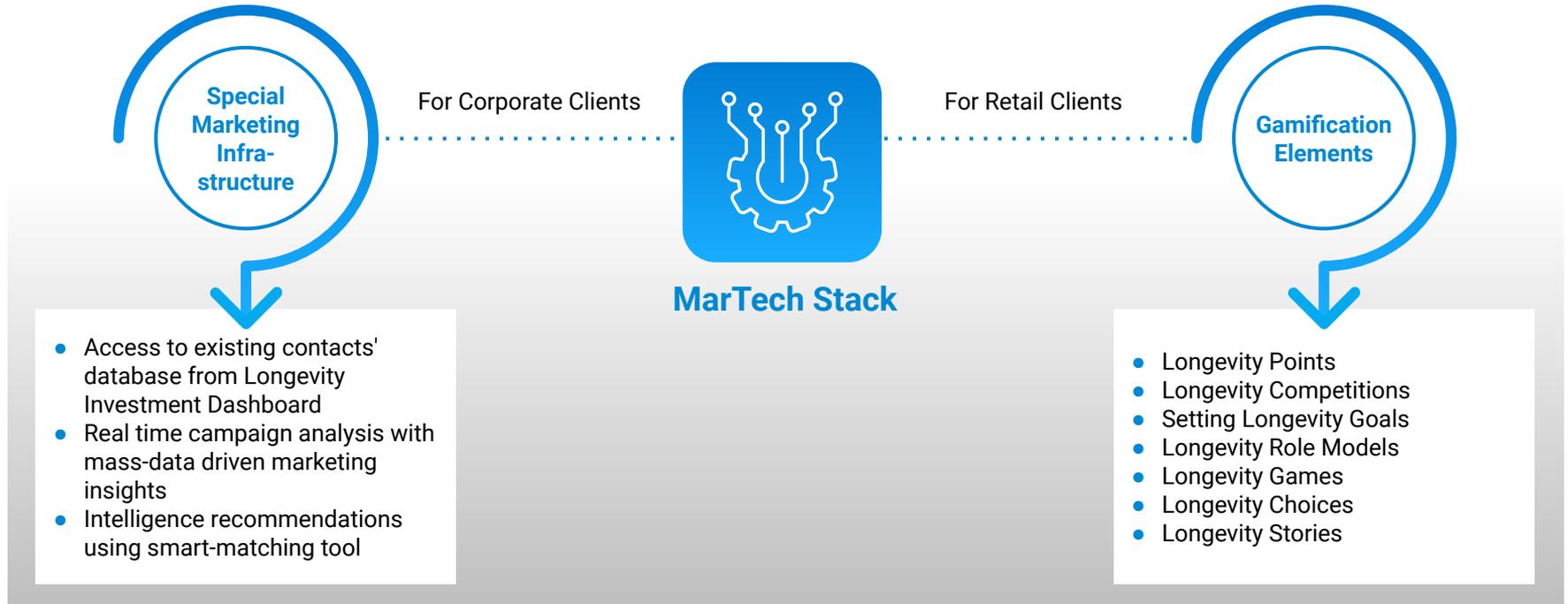
# MarTech System

---



# MarTech System

**MarTech System** is a set of software solutions that support mission-critical business objectives and drive innovation within their organizations. Each Longevity Club member will be granted access to **Longevity MarTech System** and to the full scope of its perks and benefits. Our solution may also benefit Longevity social media influencers that are going to use the platform to grow their audience.



# Special Marketing Infrastructure for Corporate Clients

For corporate clients, Longevity Club Ecosystem envisages access to a unique Longevity environment with powerful opportunities for networking and comprehensive industry dashboards which allow companies to multiply their business opportunities.

The Dashboard generates quantifiable and advanced data-driven investment SWOT analysis and due diligence for Longevity companies and investors across 20 Longevity sectors

- Portfolio constructor
- Interactive Network Diagrams
- Stock predictions
- Companies database
- Institutional investors' database
- Comparative SWOT analysis
- Mindmaps
- Analytical reports



# Special Marketing Infrastructure for Corporate Clients

**Data gathering:** algorithms unobtrusively organise systematic collection of helpful data (with user's permission) about consumer habits, preferences, needs and desires.



**Aggregation:** system provides a comprehensive suite of marketing services in one place for optimised sales targeting solutions across multiple media channels.



**Analytics:** real time campaign analysis coupled with mass-data driven marketing insights allows for intimate understanding of target market - when to reach them, and with what message.



## Special Marketing Tools for Corporate Clients



**Network building:** system intelligently builds integrated community of users, studying communal habits to optimise marketing efficiency and introducing concepts e.g. gamification to inspire brand loyalty and enhance customer relations



**Geotargeting:** reach customers at the optimal time: in-store alerts, local amenity recommendations, special offers tailored to individuals



**Intelligent recommendation using smart-matching tool:** demonstrate an intimate understanding of customer needs and provide actionable, smart product recommendations

# AI-driven Optimization of Supply Chain for Corporate Clients

The optimization of the supply chain will be provided based on the following resources:

Information about the Longevity Reward Points transaction

Location-related information

Global comparative analytics

## Longevity Reward Points

Longevity Reward Points could be used as a transaction indicator of the dynamics of the given product, thus allowing the optimization of the supply chain for the Longevity Club corporate clients.



## Location-related Information

Based on the information about the location of the user, Longevity Club platform will allow its customers to predict the change in products supply through the analysis of the Longevity Cardholders relocation.



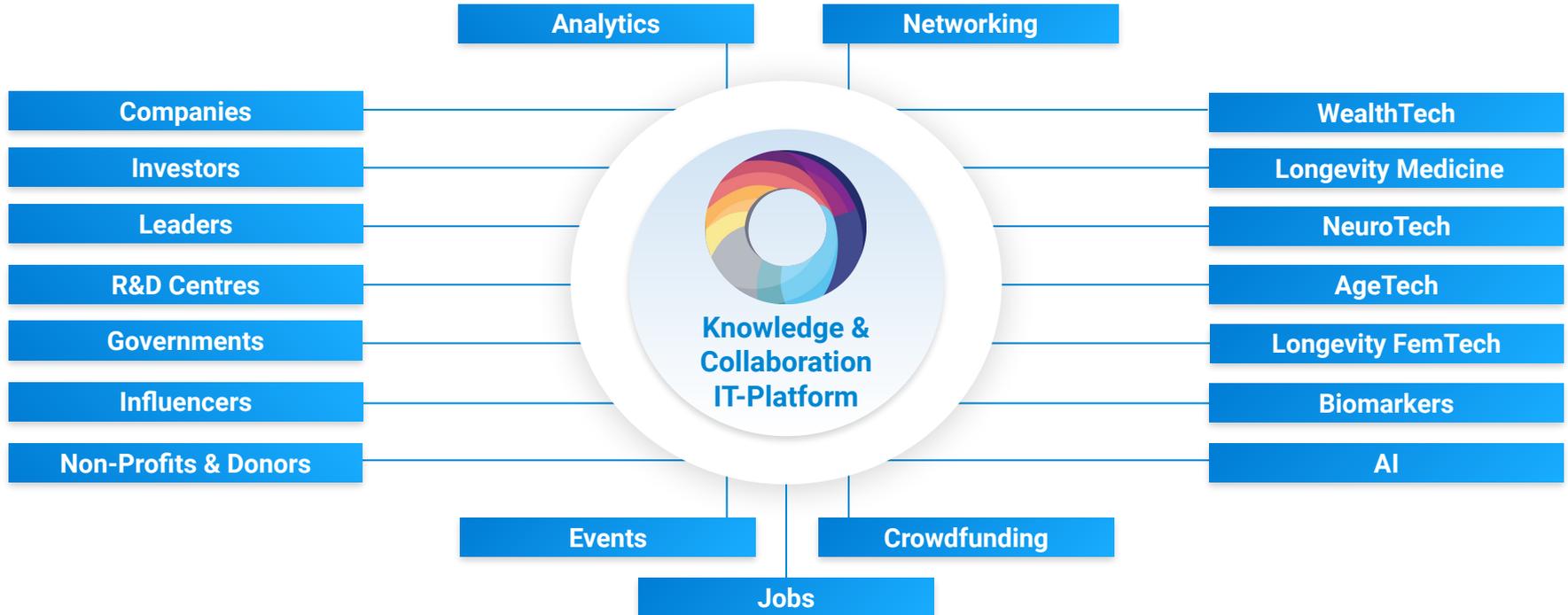
## Global Comparative Analytics

Taking into account the existing information about other markets both in the Longevity and external Industries, Longevity Club customers will have an opportunity to assess and optimize their supply chain.

Taking into account the amount of data that will be generated via the aforementioned sources, the only reasonable solution that will allow to analyse such information is Artificial Intelligence. Longevity Club platform will be furnished with the cutting-edge AI-based clustering and predictive algorithms that allow to structure and analyse gathered information, as well as derive additional insights about the inner dynamics of the markets and their customers.

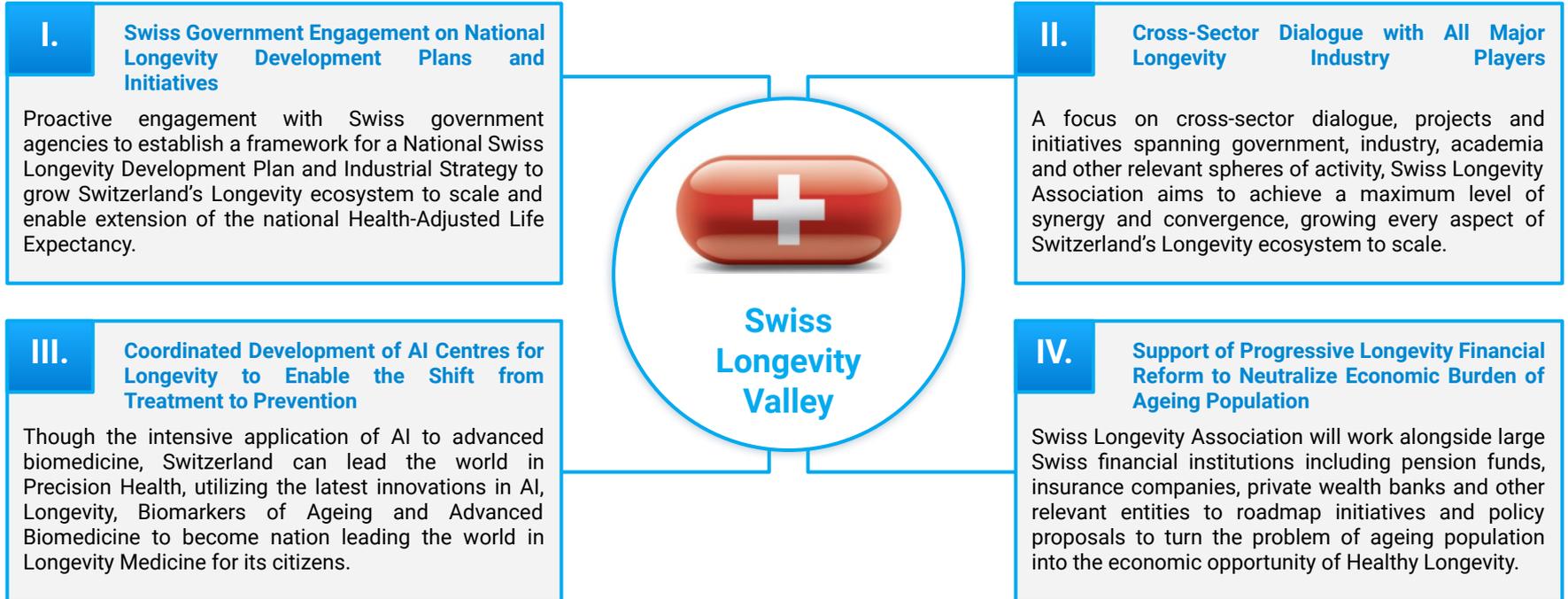
# Integration with Longevity.International

To enhance the marketing campaign, we will also have an integration with Longevity.International, which provide access to the largest knowledge and contacts database in the Longevity Industry.



# Integration with Swiss Longevity Valley

For the launch of our platform in Switzerland, we will also cooperate with Swiss Longevity Valley to expand the network of loyal customers in this region.



# Gamification Elements for Retail Clients

One of the key features of Longevity Club Ecosystem will be a unique reward system for the retail users. Each user may earn **Longevity Reward Points** by completion of special assignments in the mobile application.

## Longevity Competitions

Earn Longevity Reward Points and compete with your friends in Longevity Score.

## Longevity Games

Play interactive Longevity games and earn extra Longevity Reward Points.

## Setting Longevity Goals

Set your personal targets and track them 24/7.

## Longevity Choices

Take part in animated new-generation Longevity stories.

## Longevity Role Models

Stay healthy and reduce your biological age, inspiring by following your favourite bloggers and influencers on the platform.

## Longevity Stories

Inspire your friends, upload your own stories how do you stay healthy and Longevity progressive personality.

# Longevity Reward System for Retail Clients

A **key element** that drives the users' interactions with Longevity is the longevity score, an overall rating that users are **initially assigned** based on the data they submit and initial health and **fitness assessment**.

The score will be **calculated** using a proprietary algorithm based on biomarkers of Ageing that employs **machine and deep learning techniques** that focus on the users' **performance, activity**, and behaviour patterns.

Additionally, users will be able to unlock **premium services** by improving their longevity score (through Longevity Token issuance). **The fully automated personal trainer of Longevity (Longevity AI-Assistant)** will provide users with advice and guidance how to **boost their Longevity score**.

The **Longevity score** acts as an Ageing clock that is capable of accurately calculating the '**biological age**' of a user; it is quite possible, and often likely, for a person's biological and **chronological age** to differ significantly.

## Biomarkers used to identify a Longevity Score:



DNA  
Methylation



Sleep Analysis



Gene  
Expression



Medical Health  
Records



Epigenetic  
Clocks



Blood  
Biochemistry



Activity  
Tracking



Micro-Electro  
Mechanical  
Systems

# Longevity Reward Points

## REFER

Invite your Friends, Family Members and Co-Workers to Join Longevity Card and Get Free Longevity Points

## USE

Use your Longevity Banking Card and Integrated Health App Actively and Earn More Longevity Points and Perks

## REPRESENT

Build Longevity Ecosystem with Us: Become Our Ambassador, Grow the Community and Promote Healthy Lifestyle

## PROVIDE

Provide Us with your Daily Fitness Activity via Wearables and Get Special Offers and Additional Deals and Discounts

No Matter What is Your Age, Occupation or Location.  
With Longevity Card You Will Earn Rewards for Being Healthy.



# User Acquisition Strategy

Longevity Club user acquisition strategy includes 3 major components. It is planned to attract users via Longevity Conference participants, Age-friendly communities and via social media campaigns. Such strategy allows acquiring loyalty users at low cost.

## Longevity Conferences

Self-hosted events

Outside conferences

As Longevity Industry expected to grow, a number and a scale of this channel of communication will increase.



## Ageing Well Communities

UK Network of Age-friendly Communities is:

- 50 member places across England, Scotland, Wales and Northern Ireland;
- 11,617 people attended and viewed all-online events, up from 3,040 in person in 2019-20;
- 7,890 newsletter subscribers, up from 5,869 in 2019-20;
- 20,842 Twitter followers, up from 17,499 in 2019-20.

## Social Media Promotion

93% of marketers uses Influencer Marketing

Social media influencers empower target audience. [Study](#) has shown that influencer marketing brought in more total sales than sponsored posts.



# Data Security and Privacy

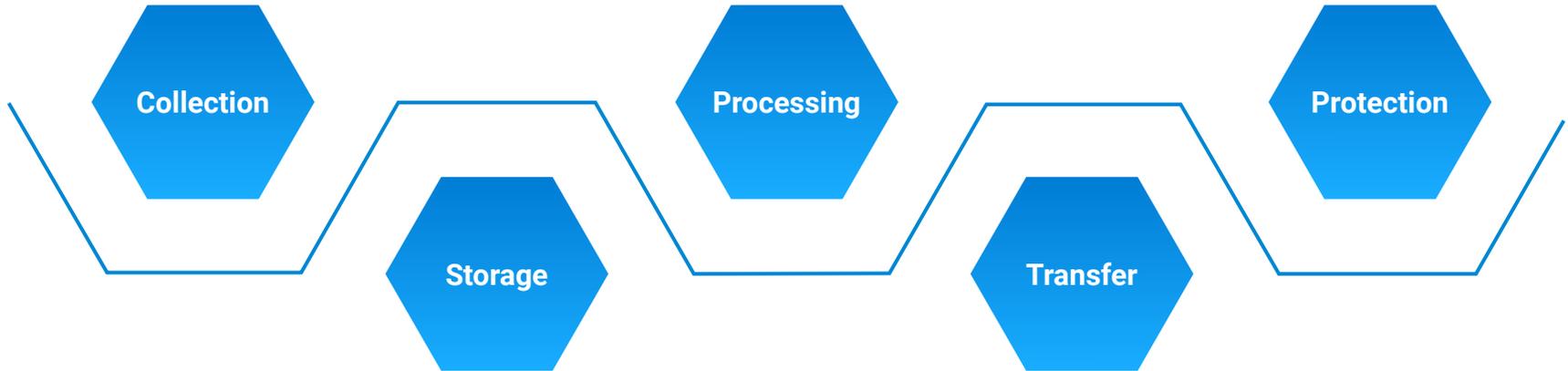
---



# Data Security and Privacy

The issue of **Personal Data Protection** has been raised for many years due to the rapid development of medicine and numerous health app that use physiological data. The Longevity Club platform's biggest priority is the privacy of customers. Our **cybersecurity system** will make sure any personal information about patients that the platform contains is effectively protected at all times **against improper access, disclosure, or loss**. Deed Knowledge Group will make sure the records are **made, stored, transferred, protected, and disposed** of according to data protection law and other relevant regulations.

## Control over Customer Privacy on Each Step



# Advanced Cybersecurity

## Advanced Cybersecurity System

### Role-based access control (RBAC)

- Access based on defined business functions
- Flexible access control technology
- Complex combination of role assignments, authorizations, and permissions
- Usage of security tokens for authentication
- User passwords hashing

### Built-in security features

- Data encryption
- Virtual networking
- Network security groups
- SSL termination
- SSL protocols allowing / blocking
- OWASP ModSecurity Core Rule Set
- Security Center

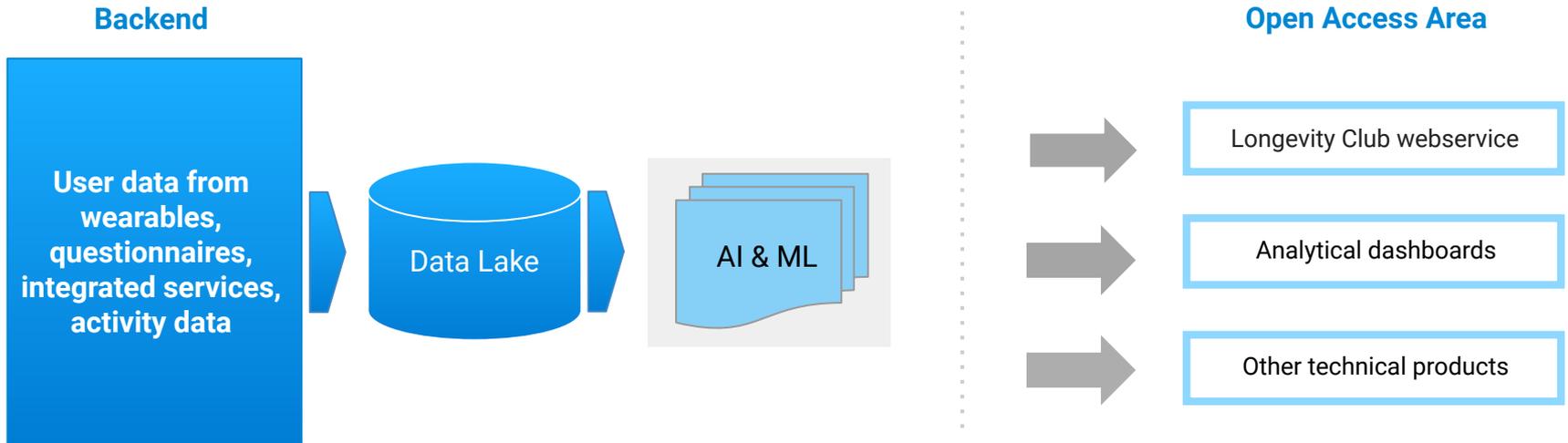
### Data Security Features

- Data anonymization
- Communication via blockchain
- Trusted secure communication protocols
- Access management
- Containerization
- Separation of computation applications
- Complying with GDPR clause

# Big Data Analysis

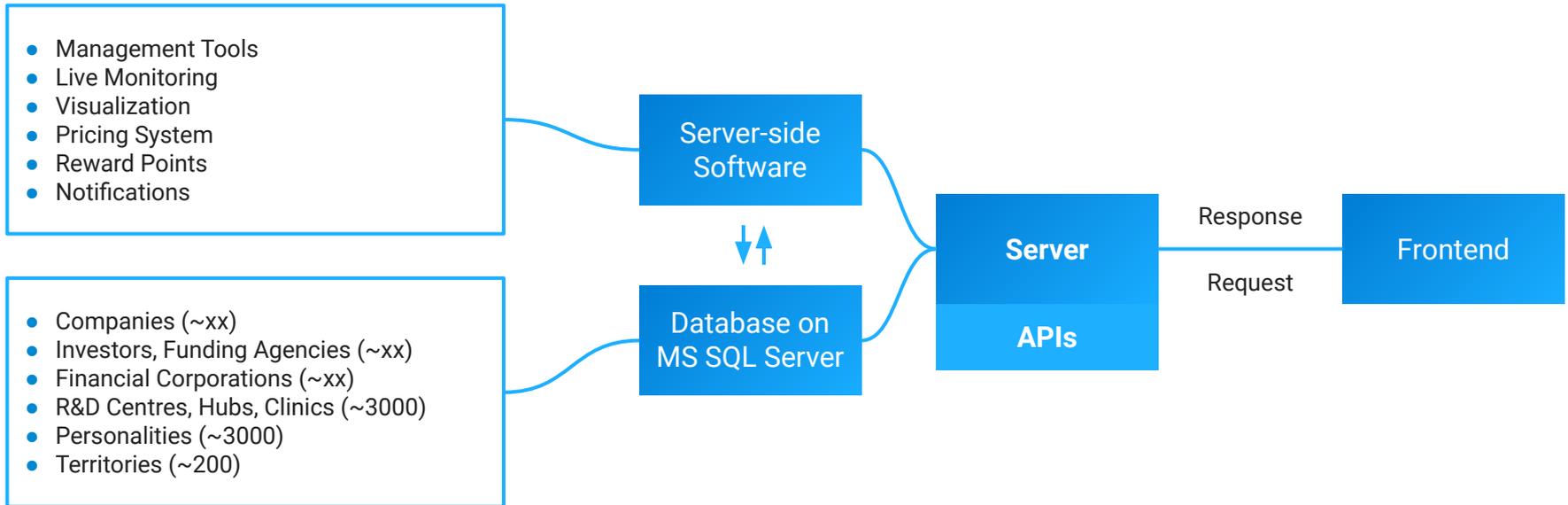
**Big Data analysis** will be performed with the **Lakehouse concept**:

1. User data from wearables, questionnaires, integrated services flows into the Data Lake - centralized repository that allows you to store all your structured and unstructured data at any scale
2. Then user data is being cleaned up, processed, ML is applied
3. Last step, the analytical outcomes are used in Longevity Club webservice (also Analytical dashboards and other technical products).



# Blockchain Data Storage

Data will be securely stored at instances of Cloud: relational DB (RW), ADLS Gen2 (Data Lake), Spark tables, Cosmos DB. DKG also active on many fronts in the realm of DeepTech, GovTech and Frontier Technologies with PARA, datamahadev.com, Global AI Hub, IT-GRAD, 01Gov, GovMind.



# Non-Fungible Tokens (NFTs)

**Non-Fungible Tokens (NFTs)** is a new concept in a cybersecurity. NFT is a unique digital certificate, registered in a blockchain, that is used to record ownership of an asset such as an artwork or a collectible. The technology relies on a decentralized network of computers that verify the legitimacy of a transaction using powerful encryption. In healthcare and pharmaceuticals, it is can protect sensitive medical data and combat counterfeit medications.

The reason underlying NFTs usage for data security is a common practice of the companies that provide various services and possess this type of sensitive data can get profit from it, without patients permission. A novel idea of using NFT for health data applied in Longevity club will allow users to **track the use of their personal medical data** and enable a feature **to earn money** whenever a transaction with the data occurs.



# AgeTech

---



“The One Billion People in Retirement Globally are a Multi-Trillion Dollar Opportunity for Business”

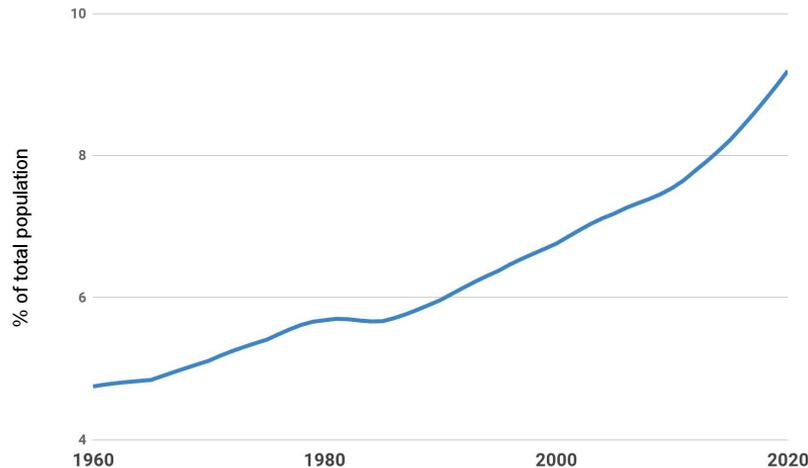
---

~ *Dmitry Kaminskiy interview in the Financial Times*



# Introduction – Population Ageing Problem

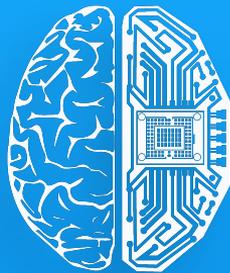
## Population Aged 65 and Above (% of Total Population)



**Population Ageing** is a phenomenon caused by an increase in the proportion of older people in the total population. It results from long-term demographic changes, shifts in population reproduction rates, fertility, mortality rates, and the development of new technologies responsible for increasing of the life quality and average life span.

The UN estimates that the world's population aged 60 and over was 600 million in 2000, almost **three times higher** than the number of people of this age group in 1950 (205 million). In 2009, it exceeded 737 million people, and by 2050 it will be more than 2 billion people, having tripled again over the next 50 years.

Except for the average lifespan, the question of **Healthy Life Expectancy (HALE)** has arisen. HALE predicts how long an individual will live in a 'healthy' condition. Considering the trends and consequences of demographic Ageing, the most crucial task for the industry is to develop solutions to promote healthy longevity and investment in an extended lifespan.



# DEEP KNOWLEDGE GROUP

E-mail: [info@dkv.global](mailto:info@dkv.global)

Website: [www.dkv.global](http://www.dkv.global)