# The biggest doctor-patient environment based on blockchain

Whitepaper

**medicohealth** +

*Building bridges to better health.*

medicohealth

# Content

# Abbreviations

**EHR - Electronic Health Records**

**EMH - Eletronic Medical Records**

**PHR - Personal Health Records**

**PHI - Personal Health Informations**

**mHealth - Mobile Health** a term used for the practice of medicine and public health suported by mobile devices

**Telemedicine** - the remote diagnosis and treatment of patients by means of telecommunications technology

**CAGR** - annual growth rate of an investment over a specified period of time longer than one year

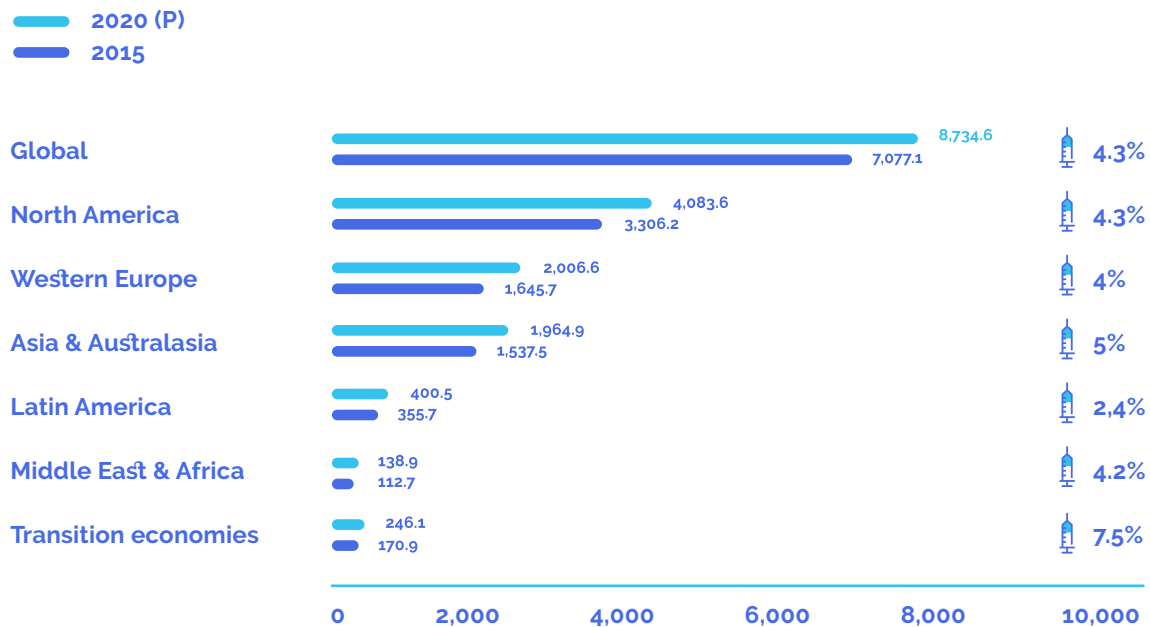| Version number | Purpose/Change | Date |
|---|---|---|
| 1. beta | Initial draft version | 01/06/2018 |
| 2. beta | Implemented adjustments from legal advisors | 28/06/2018 |

*WP may be subject to further change, as required by commercial, technical, legal or any other grounded considerations, as the project progresses.*

# 1. Introduction

### Global healthcare challenges

Global healthcare expenditure continues to increase. Overall healthcare spending is expected to grow from 7 trillion USD in 2015 to almost 9 trillion USD in 2020, with estimated CAGR of 4,3 %. Long term projections forecast a further increase to more than 18 trillion by 2040[1].

### HEALTH CARE SPENDING, 2015 - 2020 (CAGR)

- 2020 (P)
- 2015

| | 2020 (P) | 2015 | CAGR |
|---|---|---|---|
| Global | 8,734.6 | 7,077.1 | 4.3% |
| North America | 4,083.6 | 3,306.2 | 4.3% |
| Western Europe | 2,006.6 | 1,645.7 | 4% |
| Asia & Australasia | 1,964.9 | 1,537.5 | 5% |
| Latin America | 400.5 | 355.7 | 2,4% |
| Middle East & Africa | 138.9 | 112.7 | 4.2% |
| Transition economies | 246.1 | 170.9 | 7.5% |

0    2,000    4,000    6,000    8,000    10,000

**Source: Deloitte, 2018 Global health care outlook, The evolution of smart health care**

North America accounts for almost 50 % of the global expenditure. In USA, this represented 16.9 % of GDP in 2016. Spending varies between countries from 5 % in Turkey to 11.5 % in Switzerland as for the OECD report for 2016, but significant growth in spending is predicted world wide[2].
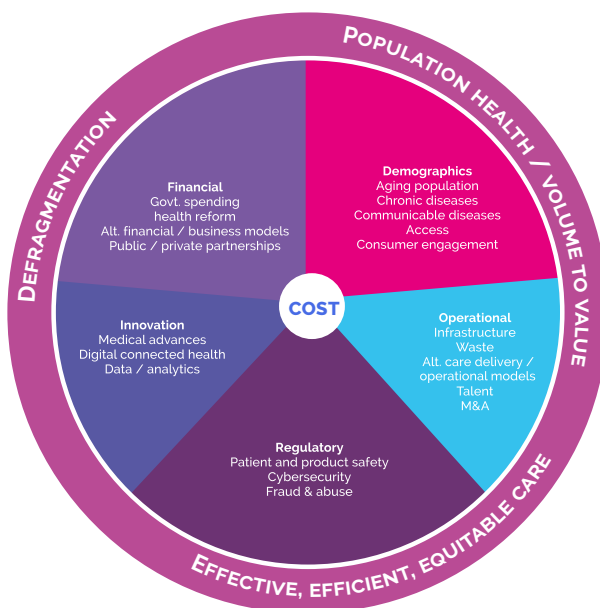
## medicohealth
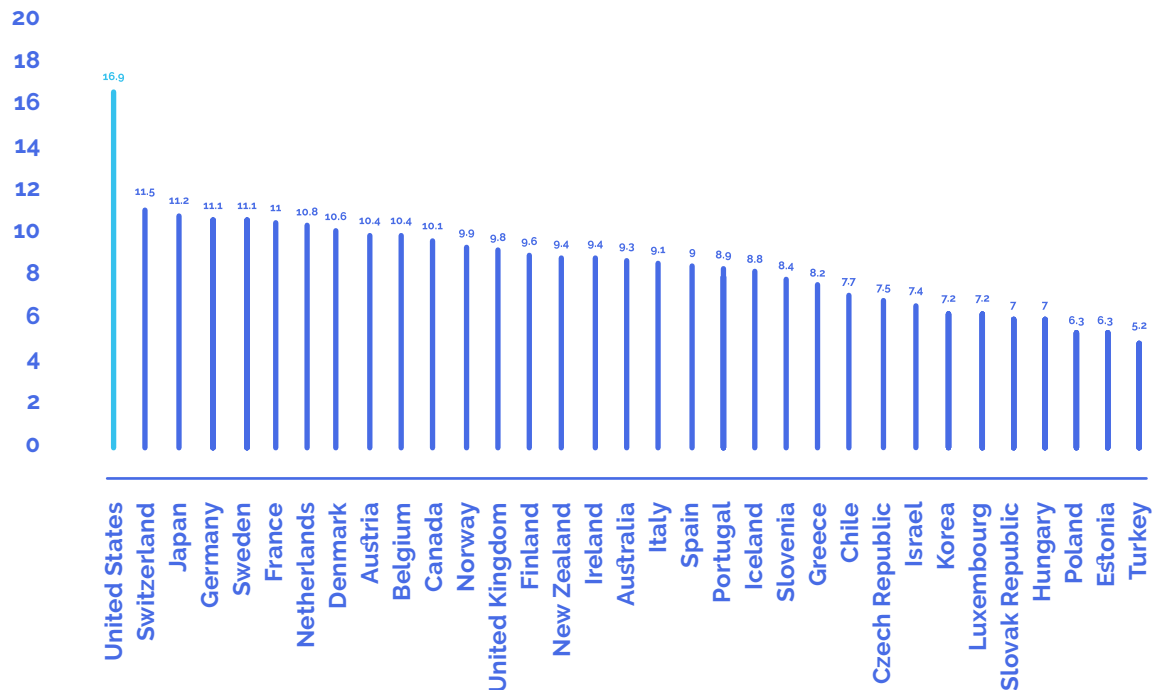
**Source: Health at a Glance, 2016**

Expenditures are rising and so are the needs. Developed countries are continuing with an increasing ageing trend, adding to the demand for healthcare services. Medical technology is developing rapidly, bringing new treatment opportunities and further adding to overall system complexity.



Drivers of expenditure growth (especially in the developed world, which accounts for most of the global spending) can be found in both **demographics** (the elderly population – over 65 years of age – is anticipated to increase by 8 per cent from 559 million in 2015 to 604 million in 2020[3]) and innovation bringing a growing number of treatment options[4].
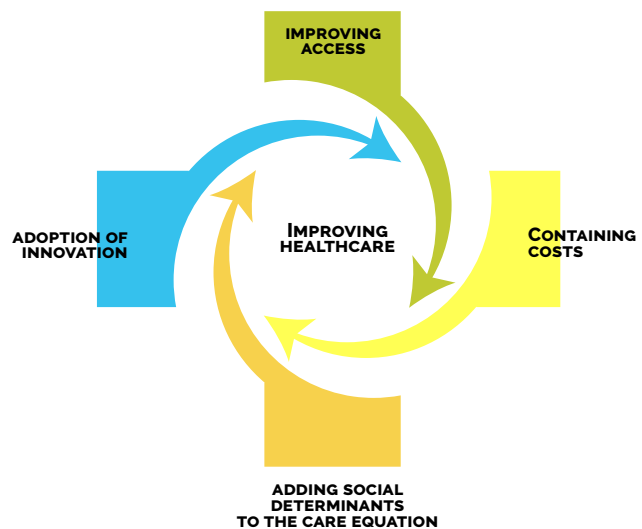
**Financial** inefficiencies, **regulatory** (including cyber security) burdens and operational difficulties (including infrastructure and lack of talent) present the remaining pillars of global healthcare issues that are driving the costs.

**Source: Deloitte, 2016 Global health care outlook, battling costs while improving care**

Growing healthcare needs are not compensated by the increased expenditure. Even developed countries are experiencing decreased healthcare service accessibility. Healthcare providers' skills and experience are not the only determinant of treatment quality. As they have to be complemented by accessibility, fast availability, and the ability to provide the best possible care to the patient.

According to Merritt Hawkins, it took an average of 24 days for a patient to make an initial appointment with a physician in the 15 large urban areas in the USA. Similarly, in the U.K. GP appointment waiting times are expected to approach three weeks[5].

As a response, people are increasingly using search engines to gather information that should have been provided by the physician.[6] Needless to say, this type of behaviour involves risks and can add to delays to treatments of serious conditions.

IMPROVING ACCESS

ADOPTION OF INNOVATION

IMPROVING HEALTHCARE

CONTAINING COSTS

ADDING SOCIAL DETERMINANTS TO THE CARE EQUATION

Source: Karen Taylor, Worldwide: 2017 Global Healthcare Outlook: Making Progress Against Persistent Challenges, 2017

Therefore, **improving access to healthcare** remains the key challenge for healthcare: "The global shortage of general and specialist staff is increasing patient waiting times and affecting their access to diagnosis and treatment." [7]

Increasing the number of care workers presents a logical solution. For instance, Japanese Government plans to train additional 250,000 care workers, just to satisfy the demand for eldercare by 2020. It remains to be seen whether the number of healthcare workers can start to catch up with the actual needs. But this is still a partial solution of a complex problem and **technology** (especially **telemedicine and mobile health**) can help in a major way.

# 2. Healthcare system limitations

**Healthcare accessibility**

Long waiting times for healthcare present an important health policy issue in many countries. Loosing time when in need of medical attention can affect patient suffering and is one of the drivers of general dissatisfaction with healthcare systems. Problems are global. Developing countries are not alone in the world struggle to match the demand for medical providers. Developed countries are facing the same problem combined with cost containment. With 9 per cent of GDP on average in the OECD to 16.9 per cent in the United States in 2016, healthcare is presenting one of the largest industries in the world. All issues impacting the global healthcare sector are indirectly increasing healthcare expenditures. Complex and fundamental changes are bound to happen in healthcare system to drive down expenditures intended for health.

Long-term care expenditure has risen over the past few decades in most OECD countries and is expected to rise further in the coming years, with population ageing leading to more people needing ongoing health and social care, rising incomes leading to higher expectations of the quality of life in old age, the supply of informal care potentially shrinking and productivity gains difficult to achieve in such a labour intensive sector[8]. Projection scenarios suggest that public resources allocated to long-term care as a share of GDP could double or more by 2060[9].

Access to healthcare providers varies around the world. According to the European Union survey "Statistics on Income and Living Conditions" approximately 3 per cent of the population on average across Europe reported unmet needs for healthcare due to cost and waiting lists in 2013[10]. Based on NHS (UK) data, the number of patients (admitted in hospital) have risen to their highest level in the last 7 years. Almost 40,000 admitted patients did not start consultant-led treatment within 18 weeks of referral.[11]

In Canada, specialist physicians surveyed report a median waiting time of 21.2 weeks between referral from a general practitioner and receipt of treatment – longer than the wait of 20.0 weeks reported in 2016. This represents a 128% increase from 1993, when it was just 9.3 weeks[12].

Even though the number of physicians and nurses per capita has increased in nearly all OECD countries since 2000, workforce shortage will remain one of the major contributor to healthcare issues even in the following years, as the number of doctors per 1,000 population is projected to remain almost the same even in 2019[13].

Healthcare provider shortages and cost containment are being addressed with healthcare reforms in many countries, but despite the interest, governments failed to provide the necessary resources to deliver healthcare to more patients for less money.

Due to unavailability of physician appointments, patients are searching online to manage their health. The research conducted for the UK Digital Health Report that is based on 61 million Google searches and a survey of 1013 adults found out that one out of five people decide to diagnose themselves online with search engines when feeling unwell or experiencing any kind of symptoms. 11 per cent said that this was because they were unable to get a doctor's appointment, while the other 10.8 per cent said Google was the best option because their GP wasn't available quickly enough[14].

On the other hand, it is estimated that between 11 % and 17 % of the population are willing to pay an extra charge for private healthcare, whether to avoid long waiting times, to access new medical treatment and technology, or to avoid the perceived risk of infection in public-sector hospitals[15].

**Figure: Doctors per 1,000 as compared with world population**
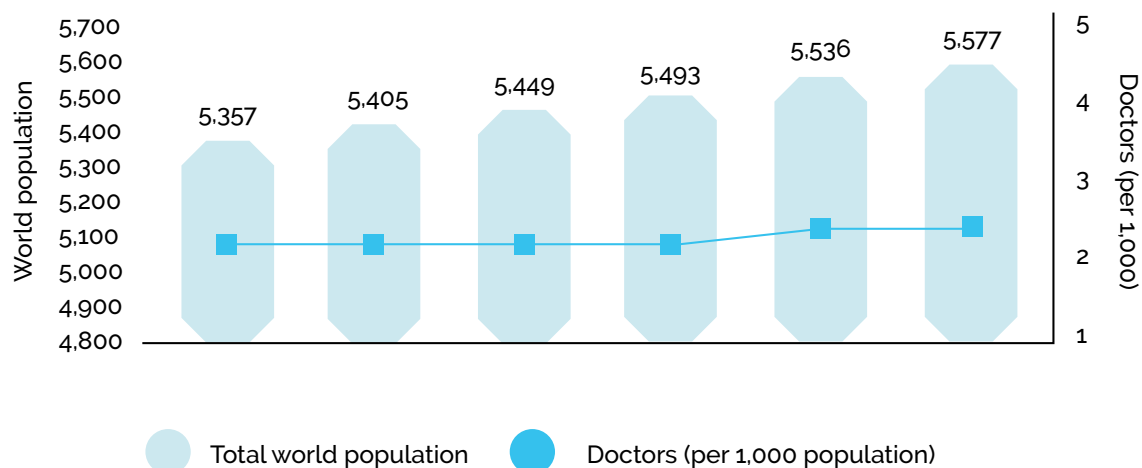


Source: Deloitte, 2016 Global health care outlook, battling costs while improving care

# 3. IT transforming healthcare market

As described, healthcare industry is encountering many challenges and technology enabled care became an integral part of the solution[16]. Although health systems remain a highly labour-intensive sector, there has been an expansion of information and communications technology (ICT) in healthcare over the last years[17].

The increasing value of IT in the healthcare system is recognised by consumers as well. They see the benefits of online and mobile information exchange with their health provider. Mobile technology is giving patients the control over how personal information is used, where it is stored and who can have access to it. It provides a powerful tool for patients to become an active partner in their health. According to American national survey in 2014, people with online access to their medical data are more motivated to improve their health[18].

Sixty-two percent of respondents to Deloitte's 2015 Survey of U.S. Health Care Consumers feel comfortable consulting with a provider via email or phone; 52 per cent of consumers would like access to technology that enables review of quality and satisfaction rankings; and 36 per cent of consumers have no concerns about using mobile technology to pay their medical bills (23 per cent have done so in the past year)[19].

**Medicohealth platform will empower patients with information necessary to become an active partner in their health care. Patients will have better connections with providers, which will enable them to bolster their engagement with more informed decision and ultimately enhance the quality of their healthcare.**

Medicohealth platform will integrate solutions that are serving mobile Health (mHealth) and Telemedicine market. Safe storage with secure access management of individual health information will be enabled with perspective of full integration of Electronic Health Records (EHR) on the Medicohealth Platform.

**Mobile Health market**

Mobile technology use has increased significantly. By 2017, 3.4 billion people worldwide owned a smartphone[20]. Patients and providers search for information online using social media as a platform to exchange experiences, connecting via apps or internet connections. Half of mobile users now actively use technology/apps to manage their health and wellbeing on a day to day basis, identifying treatment options or to help diagnose illnesses.

Mobile Health market value was $2.4 billion in 2013 and is forecast to reach $21,5 billion by 2018, a compound annual growth rate of 54.9 per cent[21]. There is approximately 97,000 mHealth apps on the market, among which 70 per cent is focused on consumer wellness and fitness. Merely 30 % of apps target health professionals, covering patient consultation, pharmaceutical information etc.

Mobile Health growth based on BCC Research

## Global Revenues Prediction

Growth per year of **54.9%**
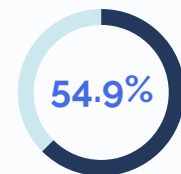
2013 mHealth valued at $2.4 billion

2018 Forecast to reach $21.5 billion

## European Revenues Prediction

By 2018 Europe will be the largest mHealth market worth $7.1 billion

With the highest predicted growth per year at 61.6%

**Source: Deloitte, 2017 Connected health: How digital technology is transforming health and social care**

**Telemedicine market**
Telemedicine has a potential to critically improve physician access, by eliminating travel barriers and adding to flexibility and capacity of specific healthcare services.

The World Health organisation[22] adopted a broad description of telemedicine:
*"The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities."*
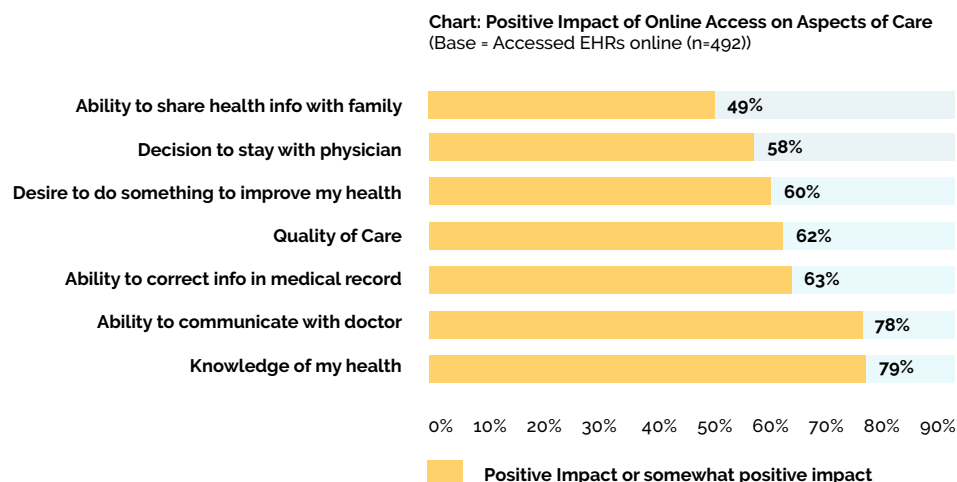
The telemedicine market value was estimated at $18 billion in 2015 and is expected to increase over $40 billion in 2021[23]. But despite the market value and the urgent need for healthcare transformation, telemedicine continues to be hindered by legal and technological obstacles.

Telemedicine is facing many legal obstacles[24]:

· an absence of an international legal framework to allow health professionals to deliver services in different jurisdictions and countries,

· a lack of policies that govern patient privacy and confidentiality regarding data transfer, patient data storage,

· sharing between health professionals and jurisdictions,

· health professional's authentication – license validity information

· risk of medical liability for the health professionals offering telemedicine services.

*Using blockchain technology has a potential to efficiently address majority of the above-mentioned obstacles.* **Medicohealth Platform can and will help close the gap in physician access, globally.**

It is important to stress that easy, useful and secure electronic access to health information is a catalyst for engaging patients and families in their care. Patients who use online access more frequently report a substantial increase in positive impact on knowledge of their health and desire to do something to improve their health[25]. This is also supported by the survey results of Harris Poll, which was conducted for the National Partnership for Women & Families in 2014 (n= 2,045 adults). As seen from the graph bellow, it can be concluded that online access has a positive impact on a wide range of activities that are essential to better care and better health.

**Chart: Positive Impact of Online Access on Aspects of Care**
(Base = Accessed EHRs online (n=492))

| Aspect | Positive Impact |
|---|---|
| Ability to share health info with family | 49% |
| Decision to stay with physician | 58% |
| Desire to do something to improve my health | 60% |
| Quality of Care | 62% |
| Ability to correct info in medical record | 63% |
| Ability to communicate with doctor | 78% |
| Knowledge of my health | 79% |

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%

▇ **Positive Impact or somewhat positive impact**

**Source: National partnership for women & families: Engaging Patients and Families: How Consumers Value and Use Health IT, 2014**

**Safe storage with secure access management of individual health information**

Massive amounts of primary data concerning the health and lifestyles of people can be found in the form of Electronic Health Records (EHR), Electronic Medical Records (EMR) and Personal Health Records (PHR), insurance claims, other medical databases. Personal records gathered by mobile app creators and/or manufacturers of portable devices are increasing constantly. EHR usually reflects the partial view of a healthcare provider without the ability for patients to control or interact with their data[26]. The health data currently under patient's control is more appropriately addressed as Personal Health Records (PHR). A PHR is a record controlled by the individual and may include health information from a variety of sources, including multiple healthcare providers and the patients themselves[27].

Medicohealth platform will integrate solutions that will prove to be operational, focusing first on ensuring the most secure decentralized and anonymous data repository. The system will enable the storage of PHR data in the form available to patient that will be time limited (by the choice of the patient) and will help physicians evaluate patient conditions. Please see chapter on Medicohealth solution stack in reference to technical solution of data storage.

Medicohealth will allow anonymous and secure communication with physicians. Separation of personal data from any health information stored in distributed data repository will be recommended to patients using the Medicohealth platform. By the patient's choice, the protected health information (PHI) can be saved into the repository. PHI includes any demographic information that can be used to identify a patient (e.g. name, date of birth, address, Social Security number, health care information, etc. …).

It is paramount that the solution complies with the existing privacy regulatory landscape that addresses PHI and personal data. Access to this personal information is restricted in most countries by special laws, so integration and use for socially significant goals is difficult.

The complexity of the landscape is presented in the picture below.

## Illustrative Privacy Regulatory Landscape



### Canada

- Quebec Privacy Act
- Canada - PIPEDA
- Canada - PIPITPA
- Canada - CASL

### United States

- HIPAA Privacy & Security Rule
- Genetic Information Nondiscrimi-nation Act
- Telephone Consumer Protection Act
- CAN-SPAM
- California Civil Codes
- California Online Privacy Protection
- Connecticut Confidentiality of Social Security Numbers
- Massachusetts Regulations
- Texas Identify Theft Act
- Texas Health and Safety Code

### Latin America

- Mexico - Federal Law on the Protection of Personal Data
- Argentina - Regulation 60 (DNPDP Disposition 60)
- Argentina - Data Protection Law 2000
- Brazil - Data Protection Bill of Law No. 5276/2016

### EMEA

- Netherlands - Dutch Notification of Data Breach Law
- France - Digital Republic Act
- Germany - Federal Data Protection Act & Works Constitution
- Spain - Royal Decree 1720 - 2007
- Italy - Personal Data Protection Code
- European Union - General Data Protection Regulation (GDPR)
- European Union - Directive 2002/58/EC
- European Union - e-Privacy Directive

### APAC
- Singapore - Personal Data Protection Act 2012
- India - Privacy Rules 2011
- Philippines - Data Privacy Act of 2012
- Australia - Federal Privacy Act 1988

**Source: Deloitte Development LLC**

Enabling the storage of PHI and electronic health records (EHR) will follow developments on the regulatory landscape.

Data remains secure during storage and processing – physician evaluation. Data can be queried, but only by queries that are permissioned by digital identity credentials for specific data operations defined by legally binding smart contracts and for a limited time. Incorporated privacy maximising algorithms will maximise security for data processing, in compliance with regulatory demands.

# 4. EHR integration

Medicohealth's vision was to integrate class leading solutions that will be operational first rather than building from scratch, which is especially important in connection to EHR integration. From the global perspective, EHR interoperability and connectivity present a big challenge. Processing and analysis of clinical data is also complicated by the existence of different data standards. A limited number of major healthcare IT projects managed to achieve interoperability. In healthcare informatics, there are numerous SDOs (standards developing organizations) and when developing a working solution, this means building upon many existing standards. Clinical information in EHR is inherently complex, but complexity and ambiguity in specifications creates errors, requires multi-party consensus, and demands change management[28].

**SDO's**     **Layers of interoperability**

ISO TC215

CEN TC251

HL7

SNOMED → **Interoperability**

CDISC

DICOM

ASTM

GS1

**Technology layer**
- Technical Interoperability
- Exchange data from A to B
- Interexchange formats
- APIs (Application Program Interfaces)
  - HL7: v2, v3, CDA, FHIR

**Data Layer**
- Semantic Interoperability
- Exchange meaning form A to B
- Identifiers and Codes
- SNOMED CT

**Human Layer**
- Process Interoperability
- Clinical Interoperability
- Business processes Interoperate

**Institutional layer**
- Role of Government
- Culture
- Incentive
- Education
- Regulation
- Information Governance

**Source: Benson T, Grieve G. "Principles of Health Interoperability SNOMED CT HL7 and FHIR" 3rd Edition, Springer, 2016 5/2/2017**

On the other hand, significant advantages associated with EHR systems and financial incentives by the governments of various countries are driving the growth of EHR market worldwide. 65 % of the hospitals around the globe have installed some form of EHR in 2015 compared to 54 % in 2014[29].

In order to enable EHR integration we are focused on OpenEHR implementation. OpenEHR is an open source standard for data management, access, exchange and storage, allowing any organization or provider shared access to standardized data through a compatible application. Its specifications are defined and maintained by the openEHR Foundation.
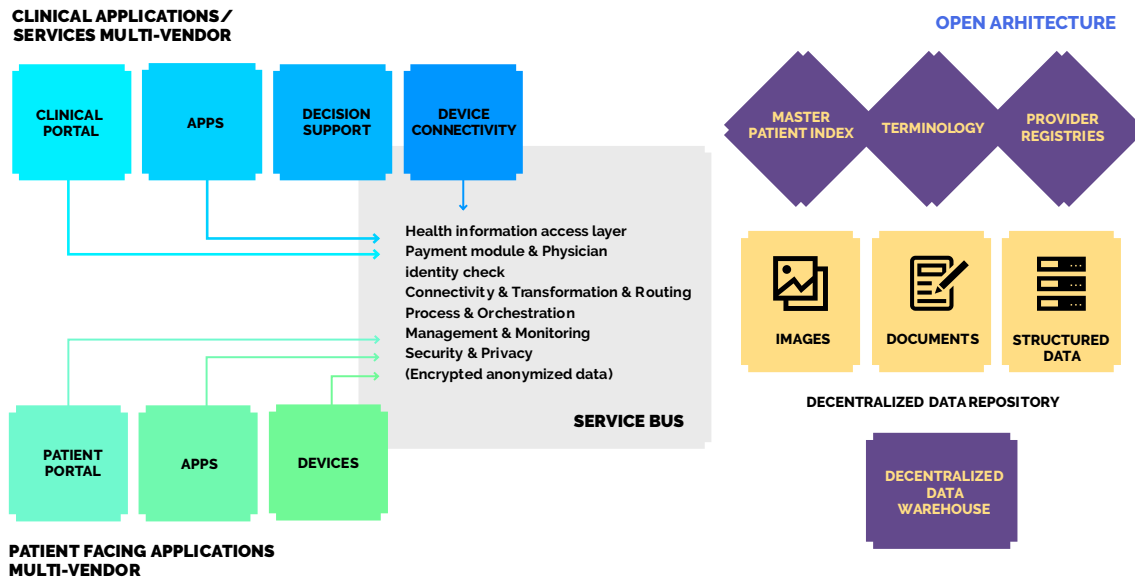
The possibilities that come with EHR integration are presented on picture bellow.
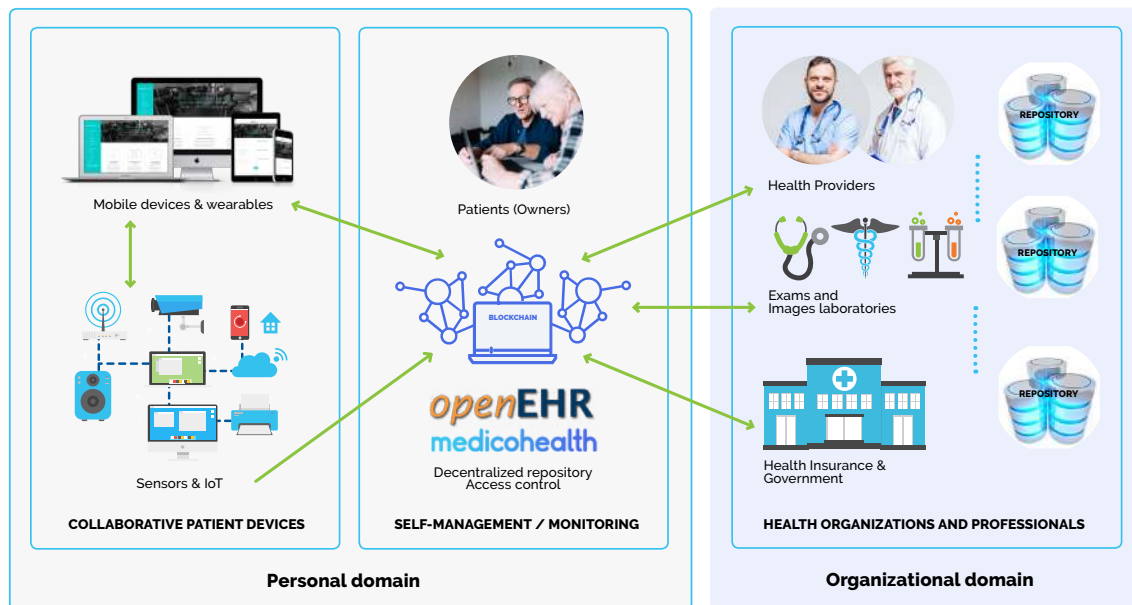
Data under personal domain refers to PHR and all health data that is in patient's possession and can be exchanged with physicians by the choice of the patient and with his consent.

Implementation of OpenEHR has the objective of achieving semantic interoperability and its architecture can be separated in the Reference Model and the Archetype Model. The first allows interoperability by exchanging data between systems only in terms of standard open reference model instances recurring to domain-specific ontologies. As for the Archetype Model, it allows semantic interoperability through the use of structured statements based on the information (reference) model and defines valid data types, structures, and values to keep the information both flexible and structured. There is also the Service Model that describes EHR cantered basic services in a health information environment[30].

CLINICAL APPLICATIONS/
SERVICES MULTI-VENDOR

| CLINICAL PORTAL | APPS | DECISION SUPPORT | DEVICE CONNECTIVITY |

SERVICE BUS

Health information access layer
Payment module & Physician identity check
Connectivity & Transformation & Routing
Process & Orchestration
Management & Monitoring
Security & Privacy
(Encrypted anonymized data)

| PATIENT PORTAL | APPS | DEVICES |

PATIENT FACING APPLICATIONS
MULTI-VENDOR

OPEN ARHITECTURE

| MASTER PATIENT INDEX | TERMINOLOGY | PROVIDER REGISTRIES |

| IMAGES | DOCUMENTS | STRUCTURED DATA |

DECENTRALIZED DATA REPOSITORY
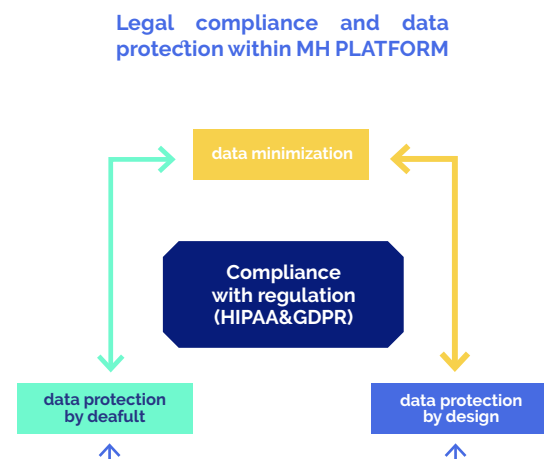
DECENTRALIZED DATA WAREHOUSE

Transparency, interoperability and centralization have been major barriers to EHR adoption and Medicohealth platform will be working on applying platform level interoperability that the industry needs.

**Legal compliance**

Complexity of the privacy regulatory landscape requires a diligent approach reviewing the compliance for each market. The chosen solution for the data repository will enable compliance with applicable personal data protection laws and regulations, such as HIPAA and GDPR. Specific requirements of individual jurisdictions will be addressed prior to enabling services.

Because of strict privacy and security standards for the use and disclosure of PHI, using decentralized storage in healthcare demands additional carefulness in order to comply with (HIPAA, GDPR) rules. PHI will encrypted with enabled anonymization and based on patient's consent. Patient will maintain full control over which physician can access his medical data, and to what extent. Please see chapter on Medicohealth solution stack in reference to technical solution of data encryption, access and storage. As blockchain technology is developing fast and is ahead of formal guidance and regulation, the developments on the regulatory landscape will be closely followed.

Legal compliance and data protection within MH PLATFORM



data minimization

Compliance with regulation (HIPAA&GDPR)

data protection by deafult

data protection by design

# 5. Medicohealth solution

After closely looking at the possibilities for global and efficient use of blockchain technology in healthcare, with actual state of the art of technology in mind, we came up with Medicohealth Platform.

**Medicohealth** is a blockchain-based project designed to improve a fragmented healthcare system, where we know we can make a significant difference for the better, by tackling just one truly important issue – the need of prompt, affordable, and reliable consultation about a patient's condition from a physician or a specialist of their choosing.

**Patient-physician system will allow:**
- anonymous questions to physicians (fast physician comments)
- telemedicine integration in-line with applicable local legislation
- booking physician appointments
- anonymous data storage and access approval
- secure and anonymous payment module
- physician identity/license validity check

**Physician-physician system will allow:**
- physician-physician on-line consultation
- anonymous data storage and access approval
- secure and anonymous payment module
- physician identity/license validity check

**Medicohealth Platform** will allow for fully anonymous, safe, and efficient communication with the world's leading physicians. Physician credentials, together with license validity information, are updated in an immutable decentralised database. Patient data will be anonymously stored and accessed only by selected physicians for a limited time, whereas patient will maintain full control over which physician can access his medical data, and to what extent.

Payments are fully tokenised and anonymous and will be performed on the blockchain. Token runs the system and compensates the service provider, platform, underlying protocol, and blockchain layer use.

Medicohealth will implement strong privacy and security arrangements (data encryption and authentication mechanisms) and clear governance structures for sensitive data processing, which might include EHRs. Patients will be in control of their own data, grant the access to physician (maintaining the right of not to share) while securing and limiting the period when data can be seen[31].

**The Medicohealth solution works like this.**

*John has a medical concern and needs a quick guidance on how to approach his issue. John uses Medicohealth cross-device web portal to find the perfect physician (registered on the Medicohealth platform) for him based on their ratings, prices, availability, and specialization. John makes his ideal choice and contacts the physician. The physician obtains access by John giving his consent to view John's medical information anonymously through a secure, decentralized data repository and comments on it through Medicohealth application. The physician's license can be checked through a regularly updated immutable database, linked to a licensing authority. Physicians can get compensated for their comments with our token that fuels the whole network.*

Medicohealth is actively building the database of physicians for cooperation on the Medicohealth platform. The database will be integrated into the web portal.
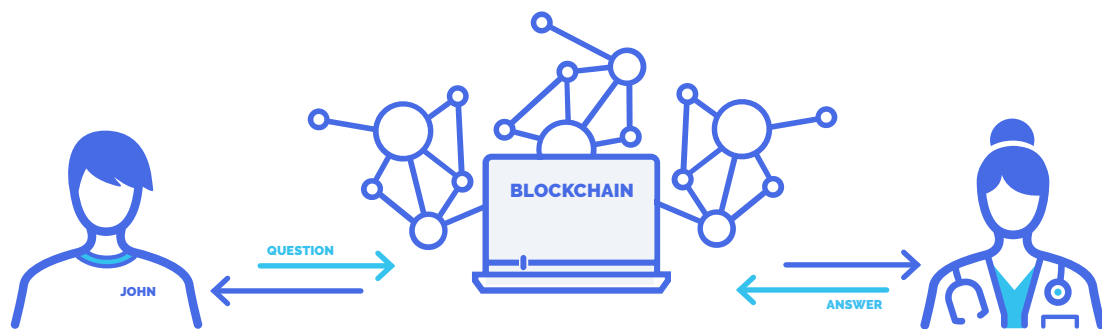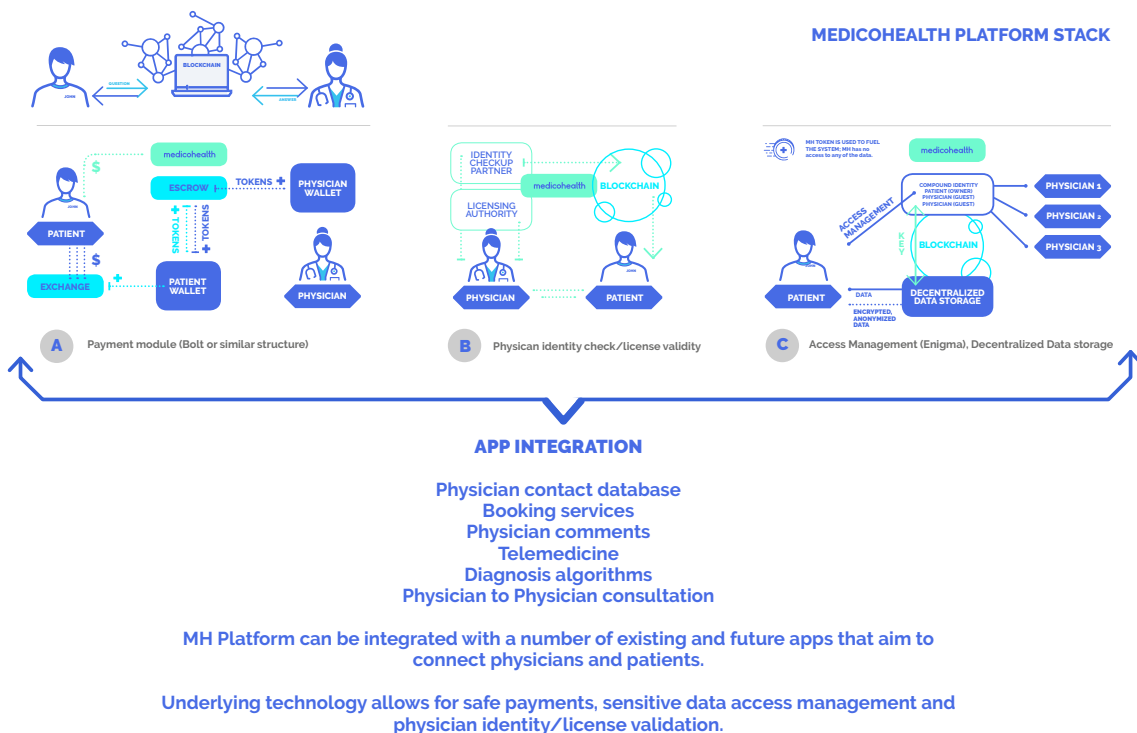
The web portal will integrate Medicohealth Platform and enable patient-physician and physician-physician communication. And blockchain technology will make this possible by integration of advanced industry solutions to Medicohealth platform as presented in solution stack.
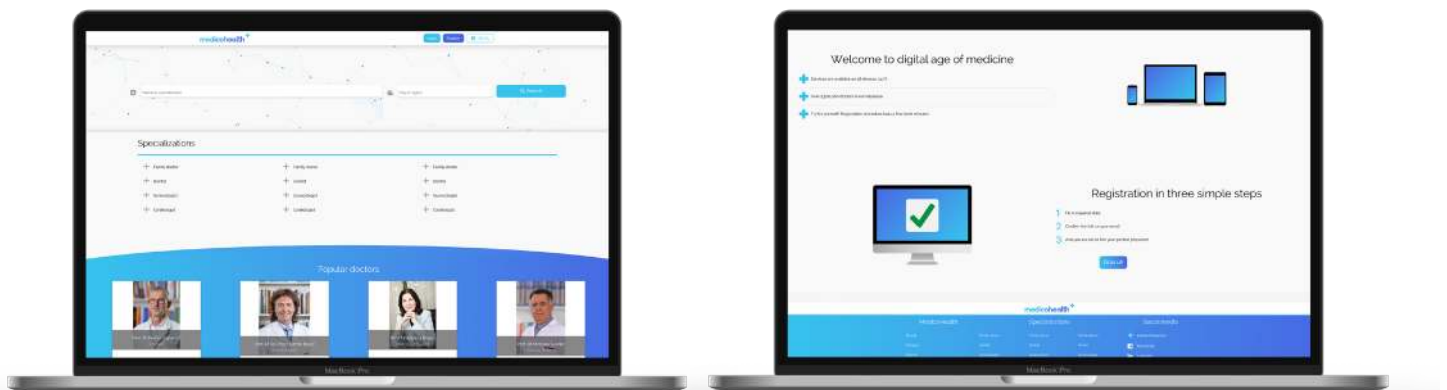
# 6. MedicoHealth solution stack

Application of blockchain technology allows for truly global and safe physician-patient interaction, which can be integrated in MH or third party apps. Protocol stack includes leading technological solutions that are to be adopted to comply with regulation and healthcare specifics.



**MEDICOHEALTH PLATFORM STACK**

A — Payment module (Bolt or similar structure)

B — Physican identity check/license validity

C — Access Management (Enigma), Decentralized Data storage

**APP INTEGRATION**

**Physician contact database**
**Booking services**
**Physician comments**
**Telemedicine**
**Diagnosis algorithms**
**Physician to Physician consultation**

**MH Platform can be integrated with a number of existing and future apps that aim to connect physicians and patients.**

**Underlying technology allows for safe payments, sensitive data access management and physician identity/license validation.**

The platform will remain protocol agnostic, as it is hard to predict which of the current solutions will prevail as industry standards.

**Token functionality**
In addition to being a service voucher, from an end user's or an APP developer's perspective, MH token serves the function of fueling all subsystems and delivering robust and safe interactions.

**MH token enables:**

· Secure payments

· Secure data storage and access management

· Physician identification and License validity checks

Each of the modules from the protocol stack are further elaborated below.

## Payment module

Smart contract will define the relationship between a patient and a physician. Payments will be automatically processed on the blockchain. This includes payment terms and a possibility to challenge the service quality and the payment itself. Data access and communication is already fully anonymized, but direct payments could compromise this. Tokenization and payment to the MH allows for pseudo anonymity and needs MH and physician to collude in order to breach full anonymity.
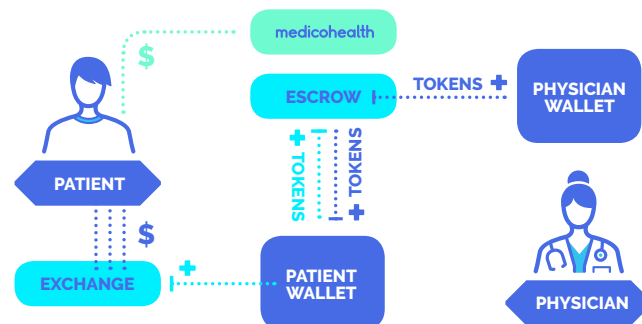


In order to secure full transaction anonymity, we intend to implement an anonymous payment channel like Bolt (Blind Odd-chain Lightweight Transactions[32]). Depending on the development in the field of anonymous payment channels and overall system anonymity protection, other solutions may be implemented including KYC and AML processing to ensure full regulatory compliance.
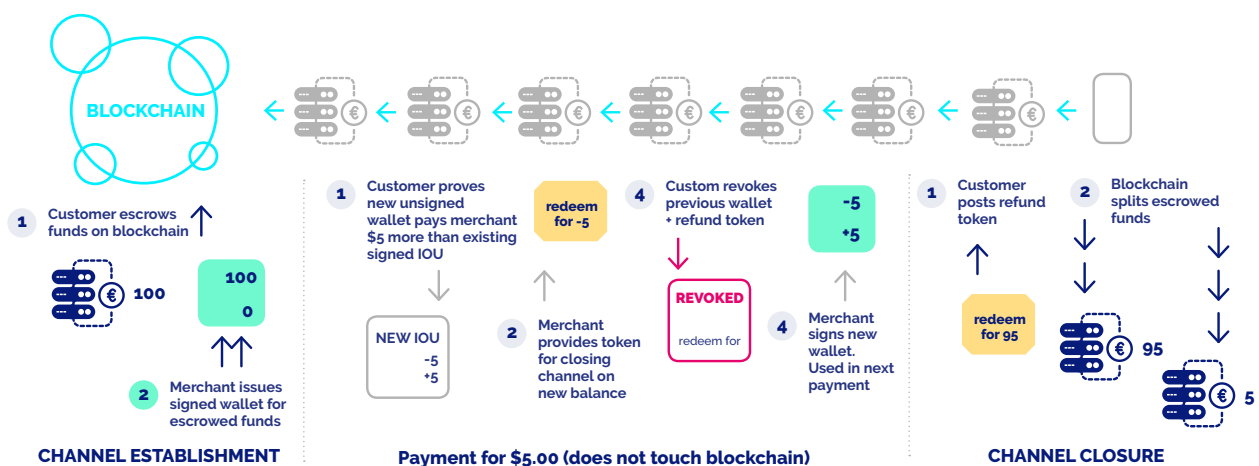


Customer Merchant

*Figure: High level description of bidirectional channel protocol. The customer is the anonymous party. The merchant is a known identity. Only channel establishment and closure touch the blockchain.*

**Source: Bolt: Anonymous Payment Channels for Decentralized Currencies**

Implementation would allow for full anonymity, with a possibility for MH to act as a zero knowledge intermediary. Implementation depends on system deployment and actual function.

**Encryption cryptography and access management**

Data security is paramount for any healthcare application. Centralized solutions bring high responsibility to centralized data holder. Regardless of security measures, security breach or a planned misuse of a centralized database with sensitive personal data represents a serious problem. This has been addressed by authorities, GDPR in EU and HIPAA in the USA. But regulation cannot change the fact that in centralized solutions, individuals cannot have full control of their data.

Latest developments in encryption – solutions like Enigma – are offering a zero-knowledge infrastructure that allows an individual to control the access to their data that is securely stored in a decentralized or centralized data repository. Simply said, data access can be awarded and revoked in an anonymous setting or as the creators describe it: "We implement a protocol that turns blockchain into an automated access-control manager that does not require trust from a third party[33]."
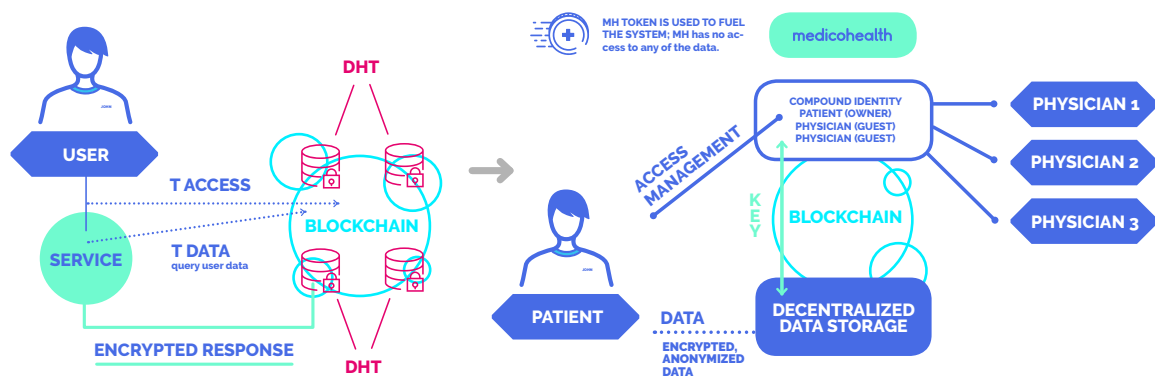


**Decentralized Data storage**

The system addresses three main privacy issues: Data Ownership, Data Transparency and Auditability, and Fine-grained Access Control. Deriving from pseudo-identity mechanism, a compound identity is developed, where some parties own the identity and the rest have restricted access to it[34].

Medicohealth Platform infrastructure is developed to protect privacy on every step in a decentralized way. In the first use of application, we are just protecting the anonymized data that is securely stored and accessed only by selected physicians for a limited amount of time. But developing a robust access control allows for future development and possible structured applications like EHR.

Access management is directly connected to data storage. We have recognized the following solutions for decentralized data storage that fit with the MH system.

**Decentralized secure data storage**

Centralized storing of data provides for an efficient way of keeping and distributing data. With sensitive data, like health records or information, centralized solutions present a certain risk. With the proposed encryption solution, a centralized database could be used in a relatively secure way – due to data encryption and access control. But repeating security breaches and misuse of personal data, held in centralized databases, calls for a different solution. Using a decentralized version of storage, especially with sharded or fragmented data distribution, adds another security layer to the system, allowing for full regulatory compliance.

We should point out that data storage is fully offchain and thus can be deleted. Distributed ledger is used for running the decentralized storage system and (where applicable) hashing the data for immutability.

For basic functionality (data anonymity and permission control), required in the model, three class leading solutions seem to fit the purpose.

**Enigma**

In addition to cryptography, Enigma will offer a decentralized storage system. Fully sharded system should allow for unparalleled security:

*"Blockchains are not general-purpose databases. Enigma has a decentralized offchain distributed hash-table (or DHT) that is accessible through the blockchain, which stores references to the data but not the data themselves. Private data should be encrypted on the client-side before storage and access-control protocols are programmed into the blockchain. Enigma provides simple APIs for these tasks in the scripting language."*



PUBLIC

$OP_1$

$f : X \longrightarrow Y$

PRIVATE

BLOCKCHAIN

ENIGMA

shares

encrypted data

public data
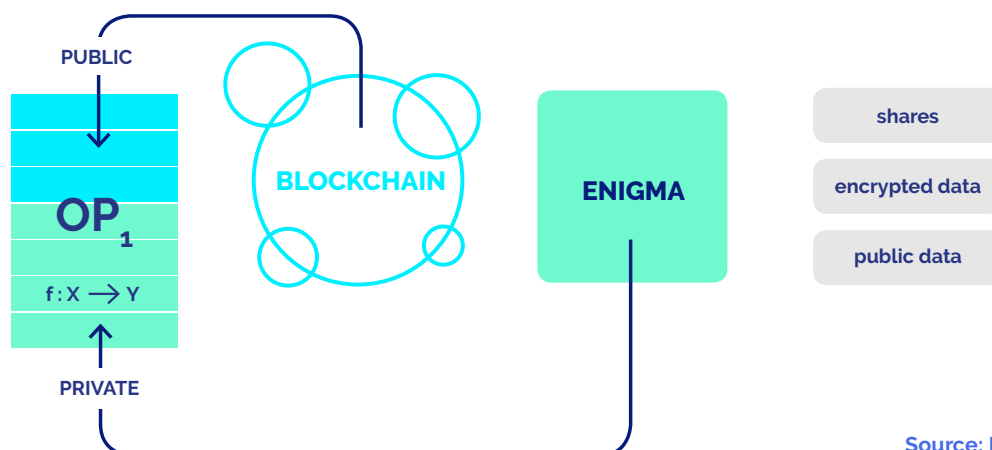
Source: Enigma

*"Off-chain nodes construct a distributed database. Each node has a distinct view of shares and encrypted data so that the computation process is guaranteed to be privacy-preserving and fault tolerant[35]."*

Healthcare data is one of their development priorities. Future implementation could include secure data manipulation, with calculations made without exposing the raw data.

**Storj**

Storj is a working, decentralized storage solution. They have active projects using health records, but have officially warned against use of the same in the system. The advantage of the system comes from the fact that it is already applicable, with fully sharded data, which (together with our encryption system) could comply with regulation.

*"A shard is a portion of an encrypted file to be stored on this network. Sharding has a number of advantages to security, privacy, performance, and availability. Files should be encrypted client-side before being sharded. The reference implementation uses AES256-CTR, but convergent encryption or any other desirable system could be implemented. This protects the content of the data from the storage provider, or farmer, housing the data. The data owner retains complete control over the encryption key, and thus over access to the data."*
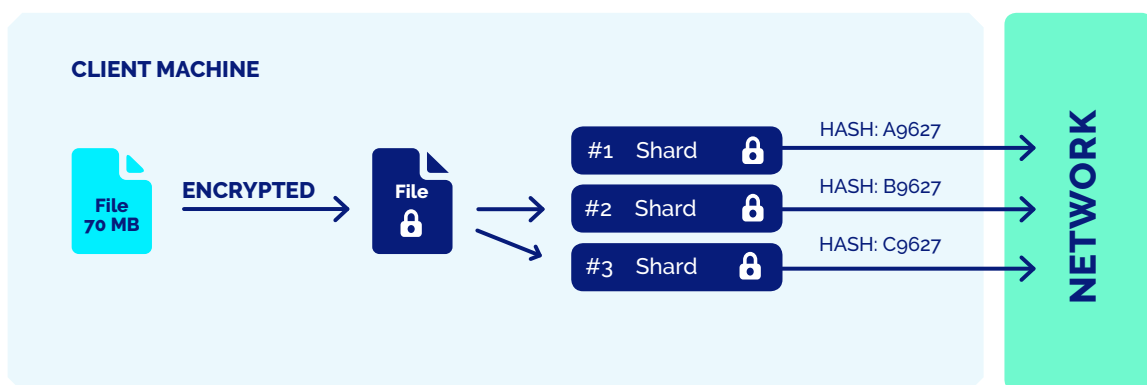


Source: Storj

*"The data owner may separately secure knowledge of how a file is sharded and where in the network the shards are located. As the set of shards in the network grows, it becomes exponentially more difficult to locate any given shard set without prior knowledge of their locations (see Section 6.3). This implies that security of the file is proportional to the square of the size of the network [36]."*

**OriginTrail**

Though primarily developed for use in supply chain, a decentralized data management solution offers an off chain, scalable storage of interconnected data in graph. The solution is especially applicable for its ability to embed standards (already implements GS1), which could prove decisive in possible EHR implementation. Alpha network is already available, so testing the fit in the MH PLATFORM could start promptly. Embedded support of zero knowledge proof could be used within the basic system setup. Smart contracts within the system allow for storage time limits, which works well within the MH system.

MH PLATFORM aims to provide best solutions for its users. This includes flexibility and adoptability in a fast changing blockchain environment. This is why we plan to keep the PLATFORM module agnostic. Depending on technological developments, different solutions for encryption, access management, payment system and data storage may be applied. Currently, we are developing with the cutting edge, open source solutions and will continue to do so in the future.

**Medicohealth's physician identity/license validity**

One of the core functionalities of the MH PLATFORM is the ability to recognize Physician identity and license validity, while allowing for patient anonymity. Physician licenses are highly regulated. Depending on legislature, national bodies issue the license and keep track of its validity.
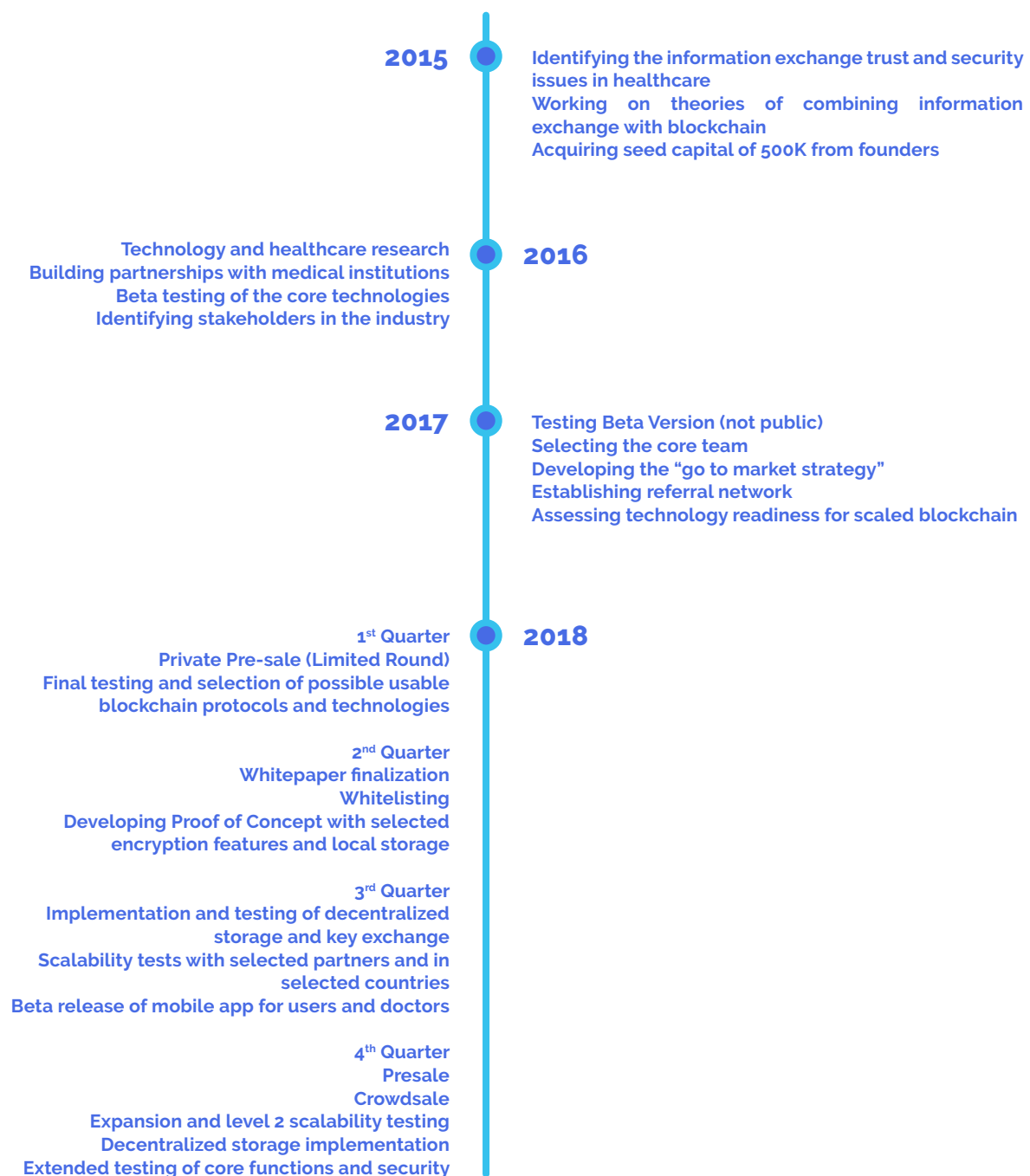
**IDENTITY MANAGEMENT**
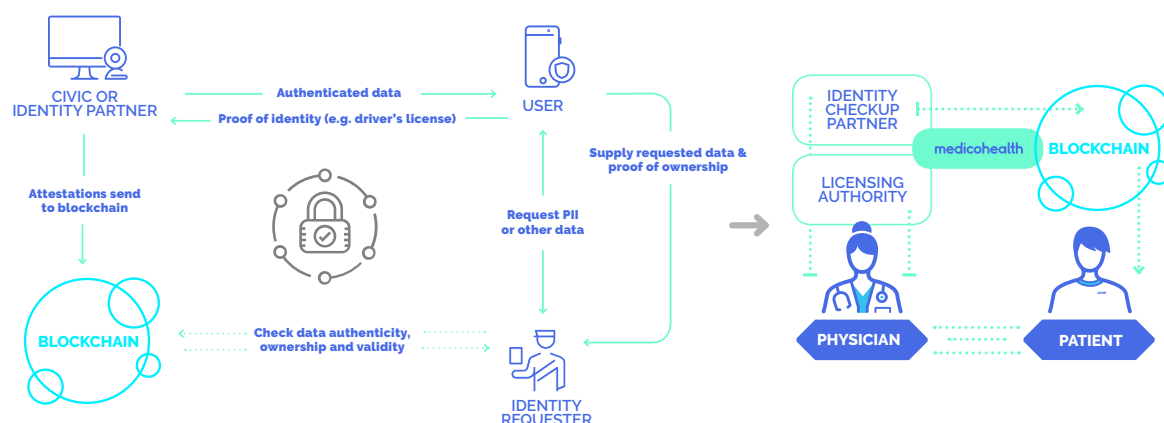


Linking an actual person to the license, hashing it to blockchain, and allowing robust checkups through MH PLATFORM can be done through CIVIC or a similar solution.

In this way, MH PLATFORM will assure that patients are communicating with selected physicians that have valid licenses.

# 7. Roadmap

The roadmap shows planned activities without any further details and the planned time for their execution.

**2015**
Identifying the information exchange trust and security issues in healthcare
Working on theories of combining information exchange with blockchain
Acquiring seed capital of 500K from founders

Technology and healthcare research
Building partnerships with medical institutions
Beta testing of the core technologies
Identifying stakeholders in the industry
**2016**

**2017**
Testing Beta Version (not public)
Selecting the core team
Developing the "go to market strategy"
Establishing referral network
Assessing technology readiness for scaled blockchain

1st Quarter
Private Pre-sale (Limited Round)
Final testing and selection of possible usable blockchain protocols and technologies
**2018**

2nd Quarter
Whitepaper finalization
Whitelisting
Developing Proof of Concept with selected encryption features and local storage

3rd Quarter
Implementation and testing of decentralized storage and key exchange
Scalability tests with selected partners and in selected countries
Beta release of mobile app for users and doctors

4th Quarter
Presale
Crowdsale
Expansion and level 2 scalability testing
Decentralized storage implementation
Extended testing of core functions and security

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**2019**

Payment module with tokens
Physician Identity Module
Release of mobile App for secured communication
Opening of the platform for third party developers
Full Platform functionality
Expansion to RUS and GUS
Expansion to US market and Latin America
Establishing new partnerships with national and
international health insurance companies - private
and public ones

Establishing partnerships with hospitals using
our Platform
Expanding to Middle East
Expanding to Africa
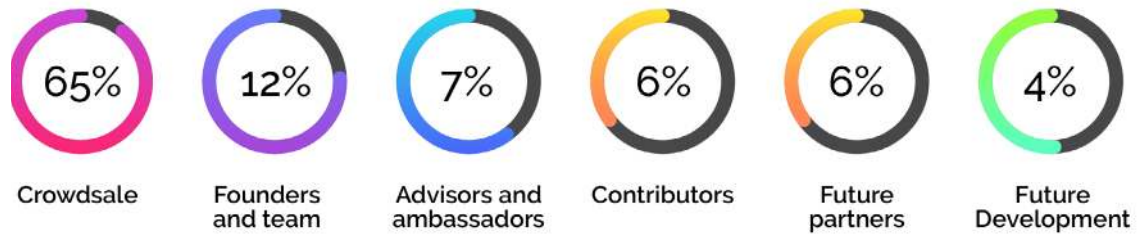Establishing cooperation with Universities

**2020**

**2021**

Establishing cooperations with Clinical
research and trials
Expanding to China
Further Asia expansion

# 8. Token Distribution



65% Crowdsale
12% Founders and team
7% Advisors and ambassadors
6% Contributors
6% Future partners
4% Future Development

Symbol: (MHP). Token price is set to $ 0,08.
Medicohealth token is fully ERC20 compliant and will be available for purchase with ETH.

Private Presale 4.000.000 USD
Presale 16.500.000 USD
Goal 23.500.000 USD

Crowdsale 65% ( 325.000.000 MPH )
Founders and team 12% ( 60.000.000 MHP )
Advisors and ambassadors 7% ( 35.000.000 MHP )
Contributors 6% ( 30.000.000 MHP )
Future partners 6% ( 30.000.000 MHP )
Future Development 4% ( 20.000.000 MHP )

Early contributors and private Investors get 20% to max. 50% bonus.

Presale 10% Bonus

Crowdsale Bonus:
Day 1 = 10% Bonus
Day 2 to 4 = 7% Bonus
Day 4 to 10 = 5% Bonus
Day 10 to 30 = 3% Bonus

For all private investors and early contributors the 20% to 50% bonus will be locked from 6 months to 12 months. For them it is also possible to pay in EUR, USD, and BTC. For presale and crowdsale the ETH/USD exchange rate will be locked on the start of crowdsale and will be valid for the entire time of the crowdsale.

Hardcap for presale is 16.500.000 USD. Any unsold tokens will be transfered to the crowdsale. If the hardcap goal of 23.500.000 USD in crowdsale is not fulfilled by the end date of the crowdsale, the remaining unsold Medicohealth tokens will be burned.

Medicohealth already received an angel investment, therefore token buyers are contributing to a project that already went through the scrutiny of due diligence made by private investors.

| Research and Development | Sales and Marketing | General and Administrative | Operations and Management | Legal Regulatory | Security |
|---|---|---|---|---|---|
| 50% | 20% | 10% | 10% | 5% | 5% |

Founders & Team tokens are held in 2 allotments. The first allotment of 6% will be released one year after the Token Generation Event. The second allotment of 6% of tokens will be released two years after the Token Generation Event.

Contributors contribute voluntarily and their participation cannot in any way be defined or treated as an equity investment into the company that owns the project and IP on the address www.medico.health. Contributors agree with Terms of Service published on www.medicohealth.io.

The ownership of the token does not include the right to:
- ownership of the company
- ownership of the service's IP
- profits of the service
- participate in decision making

The company owns all intellectual property of the service, which includes:
- brand name and domain
- source code of the website
- ranking algorithm
- database of profiles
- design

Contributors / token buyers will be able to use tokens to access services that are available on Medicohealth platform.

# 9. The Medicohealth Utility

**Token Model (tokenomics)**

Utility tokens represent access to MH platform. The major characteristic of MHP utility tokens is that they can be considered as more than just a contribution towards better healthcare; by creating a MHP utility token, Medicohealth grants its holders access to services it is developing. As the platform grows the limited supply of token issued could put the early contributors into a favorable position. The limited supply of tokens will not influence the long term capacity of MHP token to efficiently run the platform as the service costs have to stay competitive in fiat value. Even exponential demand growth would not affect this feature.



In this context, we should take a closer look at the Medicohealth token. As opposed to current industry standards for utility tokens that usually involve products or services that may hypothetically exist in the future, the MedicoHealth token was brought out to fuel the platform that implements ready to use solutions in a revenue generating ecosystem. If the platform succeeds token holders will be able to use their MHP tokens for services offered through the MH platform (including but not limited to medical services) worldwide.

**The Medicohealth Token—a powerful utility token model**
The Medicohealth token is at the core of the Medicohealth platform ecosystem, it is the fuel that drives the whole project. As a Medicohealth token holder, you have the opportunity to benefit from substantial advantages by accessing cutting edge innovative technologies. Your Medicohealth account is way more than just a wallet or a place of storage for your token, your Medicohealth account is your gateway to a world of new possibilities in healthcare.

With Medicohealth, entering the healthcare markets with fiat and crypto-currencies, was never this easy and intuitive before. Medicohealth token holders will benefit from special conditions and reduced fees on Medicohealth platform, giving you even more opportunities to take on the markets and win.

Here is a quick breakdown of just some of the real-world products and services that the Medicohealth utility token can be used on early stages of Medicohealth platform development:

**For patients:**
• **anonymous questions to physicians (fast physician comments)**
• **telemedicine integration in-line with applicable local legislation**
• **booking physician appointments**
• **complementary health insurance**
• **anonymous data storage and access approval (PHR, EHR)**
• **secure and anonymous payment module**
• **physician identity/license validity check**

**For physicians:**
• **offering services to patients**
• **physician-physician on-line consultation**
• **anonymous data storage and access approval (PHR, EHR)**
• **liability insurance**
• **secure and anonymous payment module**
• **physician identity/license validity check**

As you can see, the Medicohealth token is a true utility token as it provides its holders with the opportunity to use their MHP (with early contributor benefits!) in all segments of the ever-growing Medicohealth platform.

With great strides already having been made on the MHP Road Map in 2018, it is now when we are starting to see the Medicohealth token truly come into its own as a utility token for all of its loyal holders.

# 10. Team

*We have offered management services to big international clients, such as Syntellix, (Global Medical Supplier) Credite Mutuel Centre Est Europe (Bank), Baden Chemie (Global Chemistry Company), Mediclin, Paracelsus Kliniken (Chain of Hospitals), AOP Orphan Pharmaceuticals (Global Pharma Company), Government of the Republic of Cuba (Developing Medical Tourism), Enikam (Slovene Medical Cosmetic Company), Orange (Telecommunication Provider), Oxygen Forensic Software, GVA Launch Gurus (Venture Capital Found), Oetker Selection (International Chain of Luxury Hotels), Pioneer AG (Medical Supplier), Steripartner (Refurbisher of Medical Devices specialized on the DaVinci Robot), EMC – European Medical Center in Moscow (Chain of Private Hospitals)....and many others.*

**Milan Rajlic, Co-Founder and CEO**

Multi-faceted professional with over 20 years of experience living, studying and working in international environments (Europe, Ex-YU countries). Particular industry, energy and infrastructure experience in strategy and business development across consulting, consumer goods marketing... Professional objective of joining a values-driven organization, with potential to thrive and have maximum impact. Specific industries of interest: Industry, Technology, Infrastructure and Energy, Management Consulting – as well as International Organizations working at the nexus of the sectors. (SLO)

**Andrej Muzevic, Co-Founder**

Experienced Partner with a demonstrated history of working in the investment management industry. Skilled in Business Planning, Due Diligence, Strategic Planning, Business Development, and Venture Capital. Strong professional with a Master of Science (MSc) focused in Economics from Univerza v Ljubljani. (SLO)

**Marco Muhrer-Schwaiger, Consultant of the Management Board**
More than 15 years of experience in marketing, PA and PR, and business development. Since 8 years special focus on the healthcare industry. Frequently keynote speaker at international congresses, guest lecturer at various universities. Co Author and Co Publisher of the scientific book "Remeasurement of the Healthcare Industry". Winner of the Health Media Award. (AUT)

**Achim Schuetz, Chief Operating Officer**
Co Owner of VitaFlow d.o.o., CEO and Owner of Syscoach Consulting, CEO of private hospital chain in Germany. More than 25 years of experience in healthcare and insurance sector. Publisher and author of various scientific books. (GER)

**Dr. Rolf Porsche, Business Development Advisor**
He has a medical and business background. He started his career as a physician and scientist at the University of Ulm. During the last 20 years Rolf held leading positions in the Healthcare and Life Sciences practices at Arthur D. Little and IBM in Europe and the US. He has worked with most of the top ten Life Sciences companies, governments, major hospitals and health insurance companies and has supported successfully several start–ups.

Rolf has delivered more than 100 projects in Healthcare and Life Sciences organizations. His projects covered product launches, organizational change in R&D and Marketing, implementation of new technologies like social media or genomic technologies. He implemented the first disease management pilots and integrated service concepts in Europe. Rolf developed the strategic concept for a national healthcare information system, covering more than 70 million participants, and he established therapeutic / diagnostic concepts, e.g., in Diabetes. Rolf is CEO of PORSCHEHEALTH an international working advisory company executing strategic and realization support projects. In addition PORSCHEHEALTH supports companies in all kind of strategic development tasks and management. (GER)

**Dr. Zoran Milosevic, Chief Digital Health Officer**

An internationally recognised digital health expert with over 15 years experience at strategic and interoperability eHealth projects in Australia and USA, in variety of environments, spanning eHealth authorities, private health providers, and standard bodies. Member of the HL7 International Architecture Review Board.

Research leader in digital contracts and enterprise distributed systems, with significant track record achieved while working in applied research institutions and universities in Australia and UK. Entrepreneur activities in the translation of research into product design and development, as a founding partner in the Deontik Australia. A practitioner of data analytics, machine learning, AI and blockchain. Fellow of Australian Computer Society and Senior Member of IEEE. (AUS)

**Anja Music, CFO**

Young professional with more than 7 years experience in Banking and Treasury department, later as Senior Accountant in French bank which has given her strong analytical skills, understanding of business planning, financial reporting, accounting, business analysis, project management, problem solving, as well as coordination across departments. (SLO)

**Matjaz Torc, Chief Technology Officer**

Always keeping out of the box view when creating, so innovation and simplicity wherever possible. Analytical thinking on the other hand enables me to produce results and services with long term effect, checkpoints and repeatability. (SLO)

**Joze Hudina, Head of Blockchain Development**

He is a co-founder of more than 15 years old company that works in telecommunications industry. Almost 5 years ago he started to focus on blockchain technology and in this field he is a co-founder of Bitins Ltd, a company that develops solutions for Bitcoin mass adoption. He is also advisor for several blockchain projects. (SLO)

![medicohealth logo]

**Igor Muzevic, Senior Blockchain Strategist and Medical Advisor**
Investor and researcher of blockchain technology since 2013. Angel investor and external consultant to OriginTrail (First Purpose-built Protocol for Supply Chains Based on Blockchain). Founder and President of Trade Union of Slovenian Family doctors – PRAKTIK. UM. Member of an Expert council in the field of Family medicine at Ministry of Health of Slovenia representing the highest state expert body in the field of Family medicine. Former member of Strategic council for health in the Cabinet of Prime Minister of Slovenia. Skilled political negotiator holding a Master of Science (MSc) degree from Faculty of Economics, University of Ljubljana. Emeritus member of Medical Chamber of Slovenia, Family doctor of the year (2015). (SLO)

**Sandra Verdnik, Data Analyst**
After graduating from University of Maribor, she started to work in the field of finance. After several years of work for a US company as data analyst she recently went back to the field of finance as a key client manager at an international bank. (SLO)

**Jure Pirc, CCO**
IT professional with over 20 year of experience in information technologies. Jure is one of the most active cryptocurrency community managers in Slovenia and current president of Bitcoin association Slovenia. (SLO)

**Marko Wernig, CMO**
Self made marketing expert, sales analyst and NLP coach, negotiation shark and business director with a wide range of successful past projects. Crypto trader, investor and product developer. (SLO)

**Tristan Sneider, Senior Developer**
More than 4 years of experience in Web development and various programming languages, successfully launched different projects, currently developing Medicohealth Platform. (SLO)

### Nino Serec, Front End Developer
The young and enthusiastic Nino has a strong foundation and experience in mobile app and web development. He is also intrigued by the progress of artificial intelligence and plans to continue his career and studies in this direction. (SLO)

### Urška Faller, Culture Anthropologist, PR and PA
Experienced communicator and PR in public and private sector (diplomacy, politic and economy), content designer and project manager for project supported with EU or other grants on field of tourism, nature, environment, smart communities and anthropological science. (SLO)

### Oleg Batyrshin, Creative Director
Graphic designer with ability to successfully convert desired moods and messages into imagery. With more than 15 years of experience in both print and digital media. Has strong visual sense which applies in design for creating simple, beautiful and easy to understand concepts. (RUS)

### Tonja Gasperlin, Lead Graphic Designer
Designing everything from small projects to complete visual brand reinventions, the tireless artist believes in telling relatable stories through eye-watering graphics that are both impactful and at the same time easy on the eye. Holding a Bachelor's degree of Visual Communications from Faculty of Design, her graphic and art skills really blossomed while studying in Barcelona, Spain. (SLO)

### Namik Salievski, Social Community Manager
With his heavy work ethic and 8 years of experience in social marketing, web sales and online advertising, along with IT educational background, self-taught developer skills and profound interest in blockchain and crypto world, he is a perfect example of the go-to person in all matters where delicate and precise management of online communities is needed. (SLO)

**Kaja Wernig, Social Media Coordinator**

With more than 7 experience in sales, marketing and social media managment, her mind is always thinking of new and innovative ways to meet the needs of the costumer in areas and ways they havent even thought of. She is an expert in incorporating the soul and spirit of the best that humanity has to offer in all marketing and social campaigns. (SLO)

**Luka Lipar, Senior Content Creator**

Creatively explaining how things work is his hobby. Add some enthusiasm for social networks, combine it with a deep insight of how people think and what do they want, and you get the perfect combination for creating content that is interesting to adults and understandable by children. His experience include managing major social channels and leading teams of content creators. (SLO)

**Maša Križman, Social Media Editor**

A former Faculty of Design student, she has over 6 years experience in the sales and marketing industry. Used to micro and macro managing projects, creating social branding for companies from the ground up and implementing her ideas through visual communication and graphic design. A lover of challenging assignments where her knowledge can grow and evolve. (SLO)

**Miha Mastnak, Visual Effects Artist**

Visual effects artist with a Bachelor in Media Communications. Specialising in everything from Cinematic visual effects to Motion graphics. (SLO)

**Tomaž Jaklitsch, Senior Strategist**

More than 15 years of experience in the fields of business development, marketing, media and branding. He started his first creative group in 2001 and since then worked on creation and development of many successful brands, media solutions and public movements. He is also adviser for the foreign and domestic investors. (SLO)

### Romana Krejan, Healthcare Business Development / Research

Romana Krejan gained her working experiences as a consultant for companies specialized in market entry. She has experience gained in 100+ research and consulting projects in various sectors on European markets (of those 50+ exclusively in the pharmaceutical industry). Mrs. Krejan is an experienced moderator for in-depth interviews/focus groups with 100+ research done among physicians, pharmacist and end consumers. (SLO)

### Janko Novak, Key Account Manager Foreign Countries

Experienced Business Development Manager with a demonstrated history of working in the information technology and services industry. Skilled in Business Process, Intelligence Analysis, Legal Compliance, Electronic Payments, and Fraud Detection and Prevention. (SLO)

### Eva Strus, Digital Marketing Strategist

Eva is passionate about innovative digital communication strategies and inbound marketing with a track record of creating and implementing successful online marketing campaigns. She is proactive and self-directed person who is up-to-date with constantly evolving technologies and is committed to taking on challenging assignments. (SLO)

### Navas Edilson, Representative South and Latin America

He lives and works in São Paulo, a city located in the southeastern region of Brazil. Journalist and publicist, has worked in the last 25 years in prominent Brazilian advertising agencies such as RSVP, Jotacom and HSTK. He was recently appointed to the post of Community Manager for Enlte's South America, a newly created decentralised social network. Since mid-2017 he is a blockchain tech enthusiast. (BRA)

**Luka Podjed, Head of Legal Department**

A professional legal expert specialized in the fields of commercial and penal law. We aim at offering clients a broad range of legal services required both by commercial entities in order to facilitate unhindered business operations as well as by natural persons for their personal concerns. (SLO)

**Maruša Repnik, Compliance officer**

After finishing her studies in law, she collected her business experience working for international companies, helping them to set up their internal processes. Her latest project was the launch of the cryptocurency xaurum. (SLO)

# 11. Advisory board and ambassadors

**Dr. Henri Michael von Blanquet, MD, MHM, Medical Advisor**

He became a interim MD at the oncology private station at the Heinrich Heine University Düsseldorf. The next step in his career guided him to Lohfert & Lohfert AG as a Medical Consultant. Further he became Director at the M & M AG, partner at the convergence office for system advice at the healthcare industry, Business Development and M&A Manager at the Marseille hospitals in Hamburg, Project Management establishing the German Clinics Holding GmbH, Assistent to the CMO and CEO at the Emergency Hospital Berlin and Medical Director at Molecular Health AG. He is the founder of the international Think-Tank SUENJHAID and the Precision Medicine Alliance. (GER)

**Vadim Balashov, Financial Advisor**

25 years cross-border transactions and management, EY Partner/ Practice leader for Telecom and Technology.
Advised technology companies from early stages to IPO
Specializes in growth business, corporate governance and finance.
MD of GVA LaunchGurus Seed Fund. (RUS)

**Ulrich von Prittwitz,**

**Human Ressource Development Advisor**

- Founder and CEO of Gaffron and Prittwitz. He is the founder and CEO of Gaffron and Prittwitz. He also works as a recruitment consultant and specializes in systematic assessment and development. (GER)

**Prof. Dr. Thomas Jaeschke, IT Development Advisor**

Professer and IT entrepreneur.
He works as a medical and business information specialist. He teaches IT security as well as information and knowledge management at the FOM University of Economics and Management in Business Informatics. (GER)

**Simon Cocking, Cryptocurrency Advisor**

Senior Editor at Irish Tech News, Editor in Chief at CryptoCoinNews, and freelances for Sunday Business Post, Irish Times, Southern Star, IBM, G+D, and others. He is a top ranked member of the 'People of Blockchain' (currently ranked at #1 / 18,000). He is also a business mentor and advisor working with 70+ successful ICOs to date. He also been named many global Twitter influencer lists in the last 12 months. He is an accomplished public speaker at events including TEDx, Web Summit, Dublin Tech Summit, and overseas in Dubai, Singapore, Moscow, Tel Aviv, Madrid, Tbilisi, Riga, Porto, Dublin and Helsinki in the last 12 months. He has been based in Ireland for over 22 years and has cofounded or founded six successful companies. (IRL)

**Dumitru Fornea, Advisor for European Affairs**

Member of the European Committee. International Relations, National Trade Union Confederation MERIDIAN (CSN MERIDIAN) & member of EESC, Eesc, Universitatea Politehnica Bucuresti, Universitatea din Bucuresti, SNSPA. (ROU)

**Dr Katarina Bajec, Msc, Ophthalmologist, Medical Advisor** with more than 10 years of experience in General Ophthalmology, specialized for anterior segment eye diseases, with special emphasize on diagnosis and treatment of keratoconus.

Her special field of interest is Personalized Medicine in Ophthalmology, she is a pioneer for stem cell treatment of different conditions in Ophthalmology. She is founder and CEO at MediKat. Ltd, the first platform for Medical Business Intelligence, Innovations, Solutions, Strategy and Project Development. Member of Serbian and European Society for Cataract and Refractive Surgery. (SRB)

**Dr. Boris Simončič, Medical Advisor**

Dentist and Biotech entrepreneur, founder and Mirje Medical Center in Ljubljana, founder of Best Blood stamcell Therapie and Healthpassport. (SLO)

**Dr. Marko Bitenc, Medical Advisor**
Has surgery license since 1993. He completed two mandates as the president of the Medical Chamber of Slovenia and was also president of the EFMA/WHO (European Forum of Medical Associations). (SLO)

**Sebastian Baum, Healthcare Management Advisor**
Since 2012 he is the commercial director of St. Antonius Hospital in Eschweiler. Before he gained experience as Head of Time Management at the University Hospital of Cologne as well as Consultant for Healthcare at the KPMG AG. He is lecturer in the field of Hospital Management at the FOM University and the mibeg Institute of Medicine. He is a member of the AK Economics in Health Care of the Schmalenbach Society. (GER)

**Aarne Kujala, Executive MBA & MSc, Healthcare Management Advisor**
Mr. Aarne Kujala has an extensive experience in field of pharmaceuticals, healthcare, consulting and finance. For the last two years Mr. Kujala managed a portfolio of respiratory and pulmonary medicines worth €55M in GlaxoSmithKline. Aarne's passions include developing and innovating healthcare services as well as digital innovations serving patients better in a digitized modern society. (UK)

**Prof. dr. Djordje Bajec, PhD, Bariatric and General surgeon, Medical Advisor**
With more than 30 years of experience, and more then 20 years Leading Surgeon and CEO of Clinical Centar of Serbia, Belgrade, the biggest government Hospital. Now, he is full time employed as Leading Surgeon and Medical Advisor to CEO in Bel Medic, leading private hospital in Serbia. He is a founder and President of Serbian Society for Bariatric Surgery and Board member of European Society for Bariatric Surgery. (SRB)

**Prof. Dr. Hans Hermann Dirksen, Legal Advisor**
LIEBENSTEIN LAW - Kanzlei für Wirtschaftsrecht & Medizinrecht, Christian-Albrechts- Universität zu Kiel, Frankfurt am Main. (GER)

**Dr. Dr. Phillipp Plugmann, Medical & Strategy Advisor**
Member of Advisory Council of Innovation club AIF FTK GmbH, participant of a Part-Time DBA Programme, currently working on 2 books. Presented results of a multicentre study on the 12th and 14th International Open and User Innovation Conference, July 2014 and August 2016, Harvard Business School, Boston (USA), letter of acceptance by Prof Eric von Hippel and Nov 2015 in the 2nd World Open Innovation Conference, Silicon Valley, organized by Berkeley Haas School of Business. (GER)

**Luka Pregelj, Legal Advisor**
A Legal and Business Consultant at Lex Lucas Consulting - lean consulting firm, advising on blockchain projects on the matters of corporate law, compliance, tax law, regulation of emerging technologies, and global e-commerce.
Luka has advised on a dozen blockchain projects as legal advisor and crowdsale manager (in case of imusify.com). Before starting Lex Lucas Consulting, he has worked for CMS Law & Tax, where he mainly advised corporate clients on cross-border M&A transactions, issues of corporate law, and competition law. In 2016, he was engaged in drafting and preparation of the bill on alternative financial instruments and services, under consideration by a legislature. (SLO)

**Ivo Grlica, Legal Advisor**
Blockchain legal specialist, involved in research on legal and tax challenges of cryptocurrencies and distributed ledger (blockchain) technologies. He has published numerous articles on legal aspects of innovative digital business models, smart contracts and smart law. (SLO)

The project is also supported by the international Think Tank for health care industry – **SUENJHAID** – www.suenjhaid.org and the **Precision Medicine Alliance** - www.pma. org. Not only that two of the project founders are member of SUENJHAID, also it`s honorary president and an additional member are Nobel lauret award winner. Support is given in form of advisory and network, and help in implementing our project including the cryptocurrency.

# 12. Legal disclaimer

The ownership of Medicohealth tokens (MHP) does not represent any participation in Medicohealth capital nor any rights of payment, remuneration, profit distribution, or money reward of any kind.

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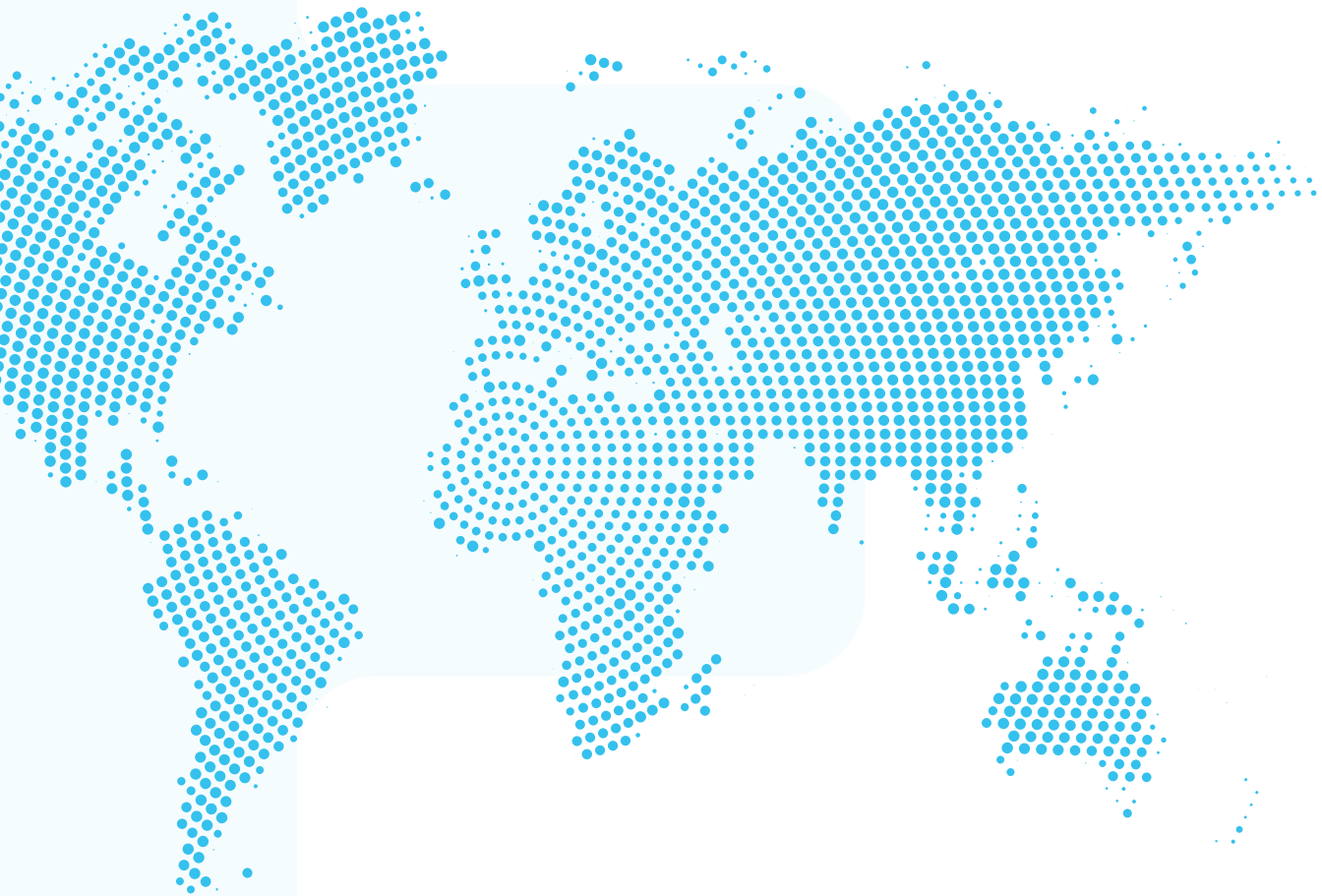
For any questions regarding token crowdsale or Medicohealth services please contact us via e-mail at the address **info@medicohealth.io.**

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