AIMEDIS - connecting people all over the world

[(patients) + (hospitals) + (doctors) + (blockchain) + (AI)]

AIMEDIS

WHITE PAPER V 2.2

a unique AI supported digital health ecosystem
secured by blockchain

03 July 2018
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Aimedis is a Netherlands-based company providing an innovative next-generation healthcare solution designed to connect patients to healthcare services and providers like doctors, hospitals and scientific research facilities.

While competitors exist in this space, Aimedis is the only operational platform to integrate latest blockchain technology alongside artificial intelligence (AI).

Aimedis is the only existing medical ecosystem combining professional healthcare knowledge with the swarm intelligence of patient communities. The Aimedis team has been working on multiple ehealth projects since 2009 including a solution for the pharmaceutical industry, but started its initial version of a working platform, codenamed “TheHealthNet”, focusing on the patient – doctor connection and data exchange in 2012. The system was tested successfully in the clinical environment, forming the foundation for the development of Aimedis.

Our experiences during this pilot time, combined with over 12 years of clinical experience in internal medicine and neurology of the founders are integral components of the ecosystem. An ecosystem, which benefits both the patients and professionals in the medical field.
We believe every human being deserves access to proper, safe and up-to-date medical treatment. To make this a reality, we integrated the needs of patients and professionals to create a platform that can store, transfer and validate all kinds of medical data, connect to medical devices and even provide remote supervision to medical professionals, institutions and other patients.

Our innovative solution also supports doctors through AI and smart, intuitive interfaces that achieve time and cost efficiency while increasing overall quality of care.

As delivery of healthcare continues to evolve and become more personalized, a supportive and intuitive solution is needed for providers, facilities and patients.

Increased life expectancy around the world leads to an immediate need for cost reduction and increased efficiency. As lesser developed nations that traditionally have little to no health care begin to access the internet for the first time, there is fresh opportunity to deliver care that gets results and improves lives.
As an estimated 3 to 5 Billion individuals in emerging countries without healthcare begin to acquire online access for the first time, electronic health technology becomes more critical than ever.

Providers, facilities, and agencies will need to both support the needs of these new consumers and focus on cost reduction and increasing efficiency.

The implementation of electronic health technology infrastructure will be a great opportunity in any part of the world where health care resources are scarce. While this technology will bring much-needed relief to growing nations, it can also be used to improve patient care in developed countries as well.

Technology can be employed to reduce emergency-room overcrowding by providing internet-based advice and triage services, especially during out-of-office hours, weekends and holidays.

It will also be used to offer remote care for patients who are undergoing treatment for chronic diseases like diabetes, asthma or heart diseases. Amedis is perfectly prepared and positioned to serve the needs of both developed and emerging markets.
Ideally situated in the heart of Europe, Aimedis has a vast network of doctors and supporters who will help establish Aimedis as a key player in the healthcare environment, delivering services to a growing community of empowered patients.

Aimedis is offering international coding of diagnoses and medication correspondent to WHO-standards. Our unique solution includes seamless integration into the existing health IT environment and support for medical standards like HIPAA compliance, IHE compatibility, ISO certification and HL7/FHIR connections. The Aimedis platform offers a complete eHealth ecosystem consisting of several and expandable modules.

The entire platform is based on our AIMChain blockchain secured data structure which secures all parts and information that is shared and accessed in Aimedis. The ecosystem will use artificial intelligence in several ways (see Artificial Intelligence Supported Therapy, Diagnosis and Research).

The Aimedis ecosystem consists of Aimedisocial + content (video and more), Aimedisafe, Aimeditourism (see Medical Tourism and Blockchain), Aimedis record + videochat + prescription + appointment + AIM professional connection to HIS, all available on web and mobile, multilingual and web responsive. This means Aimedis is not only a fully functional combination of a personal health record and a electronic medical record but it combines the HIPAA/IHE compliant EMR/PHR with a fully HIPAA compliant video bridge between doctors and patients, an electronic prescription module, an electronic appointment system, an electronic learning & teaching section, a medical video library, an AI backed big data evaluation, AI supported pharmaceutical treatments, a medical tourism platform and a social platform secured by our proprietary AIMChain blockchain to give patients security, 100% transparency and trust by securing each and every single transaction.

This finally gives patients not a dead data silo but a fully trustworthy solution to bring their healthcare to a new level and make them the owner and director of their private medical data.
Medical tourism is emerging all around the globe, with countries like Turkey, India, Thailand and even European nations competing to offer a wide range of specialized medical treatments. These offerings are ideal for patients who want quality and cost-effective medical care.

This trend towards medical tourism is driven by an increasing access to high-quality care and services in low-cost countries or lack of availability and affordability of treatments in a patient’s homeland. How is Aimedis strategically positioned to take advantage of this unique situation?

We not only establish the connection between patient and care provider, we compare prices and get the best deal for the patient, making it easier than ever to find the care needed. We also store and keep all the related information inside the patients’ records and connect the patients’ treating doctors before, during and after the intended procedures.

This practice ensures transparency for the patient inside the AIMChain by making the patients’ data incorruptible and 100% genuine. It also guarantees the integrity and security of the transaction and the procedure for the patient, enhancing both safety and results.

Using AIMGraph transparency patients using our medical tourism services can track data access and updates and so always stay updated about their records.
Drug treatments and prescriptions are still a significant element of the mutual trust between doctors and patients. Problems can occur when information is not complete or correct, resulting in errors with sometimes devastating consequences.

Patients that do not understand or incorrectly relay the medication they are taking risk severe reactions and consequences. Patients who forget directions or don’t comply with them also face risk and uncertain results. Even worse, an increasing amount of counterfeit and poorly manufactured medication has begun to infiltrate the market and harm unsuspecting patients.

Aimedis will solve all these pharmacy-related problems by combining AI-supported and blockchain-backed drug information. This solution covers all aspects of a prescription, including the correct dosage, automated and enhanced interaction checks, sales and distribution. Aimedibots will cross-check the prescribed medication to confirm it is ideal for the patient’s weight, age, sex, origin and many more parameters and newest trial results to further ensure success. AIMChain blockchain will track any medication from the point of origin until it is prescribed to an end user.

Aimedis will partner with a major chip producer to establish RFID/NFC attached AIMedisafe labels for medication; these protocols enhance transparency and make it easy to track a pharmaceutical from the manufacturing plant until it is taken by the patient.
VIDEO LIBRARY & SHARED CONTENT

The unique Aimedis video library will provide medical content for patients, therapists and doctors for enhanced training and follow up treatment purposes. This extensive content library is designed to be both educational and therapeutic.

In addition to training and educating both providers and patients, medical therapy videos can be used in patient care. In neurology, videos of patients who lost motoric functions while in acute stationary treatment are captured and then used to help patients continue exercises when they return home.

These videos are also used to offer real psychological support; patients are often encouraged by seeing documented evidence of their progress.

Aimedis also makes it easy for patients and care providers to produce, upload and share content, which is incentivized, so patients and caregivers can generate their own content and get rewarded for it.

AIMSOCIAL – DECENTRALIZED & INCENTIVISED MEDICAL SOCIAL NETWORKING

AIMSocial is a medical social media platform secured by blockchain technology; this creates a space where patients support each other to live healthier lives. Within this robust community, patients can share their experience with diseases, effects of treatments and all kinds of information about health issues, wellness, and nutrition.

That’s where Aimedis finally combines empiric medical data with perceived data by the community bringing healthcare professionals together with the swarm intelligence of patient groups to reach new levels of medical support and quality.

We know of a variety of chronic diseases where in a lot of health cases people benefit more from talking with and learning from other similarly affected people than they do from talking with doctors and nurses. They can share subjective experiences with therapy, drugs, and symptoms, as well as situations of everyday life with partners, family, and environment.

Learning to cope with a family member with dementia is a common challenge. After a diagnosis, caregivers begin looking for information and for others who have already dealt with the same experience for advice and knowledge. For those facing a harsh diagnosis or unexpected trauma and recovery, a community of peers becomes a lifeline to help deal with the condition and navigate new treatments and protocols.

The impact of health information delivered via mobile applications is vital, especially in regions with poor infrastructure. Many studies report significant drops in HIV-infections after people are informed about risks and prevention. Education and awareness can be enhanced by health professionals using the social media platform to reach out to people both near and far. Individuals that contribute useful information to others and create a community of follower will be incentivized. Building a community of responsible, supportive and caring people will be one of our major efforts.
The unique source of information containing academic medicine and the knowledge of patients will help expanding the view professionals have on patients. Yet the basis of professional suggestions in health care are generally based on scientifically defined protocols and the experience of medical professionals while the input of patients’ experiences still can’t be included adequately and integrated into therapy protocols. Our platform will allow to easily overview the experiences on specific medical strategies from a view of perceived value reflected by groups of patients and combine them with the classical parameters and recommendations. Artificial intelligence will, based on the results and parameters, generate completely new insights and will change certain ways of treatments dramatically.

Self-aid groups are a key element of today’s healthcare systems. They often support patients in a totally different way, as they allow patients to understand how other affected persons experience their disease and cope with it, which most of the time is something doctors or psychologists cannot achieve.

European surveys show that 8 in 10 persons believe self-aid groups are a very meaningful addition for healthcare and patients’ treatments – a fact which gives these groups an equal position next to hospital treatments, ambulantory and rehabilitative measures and makes them the 4th column of healthcare. AIMsocial will allow patients to rate all aspects, procedures and therapies concerning their conditions and to comment them, which is then saved and evaluated in a chronological order to compare it to other patients’ recordings inside the social medical network. Besides the gain of information patients will experience the crowd’s support and input as a strong assistance on their way, which then will result in a much better handling of their conditions, mentally and physically.

Besides Aimedis will generate a new source of information for scientific research to better diagnose and treat diseases by combining the crowd intelligence with latest healthcare insights and trials.

Imagine you trace a chronically ill patient’s condition over a certain period of time, observing her/his behaviour, nutrition, environment or motion patterns and combine that with medical and scientific insights and ecological factors. After that you compare this information with thousands of patients’ inputs. What you will get are groundbreaking and more precise perceptions which thus result in a new kind of medical care.

AIMSOCIAL – REDEFINING YOUR PERSPECTIVE ON HEALTHCARE

AIMSOCIAL – REDEFINING YOUR PERSPECTIVE ON HEALTHCARE
A.I. SUPPORTED THERAPY, DIAGNOSIS AND RESEARCH

Artificial intelligence (AI) will, and already is, revolutionizing the way we live, work and do business. Medicine is one of the major use cases for AI where it will improve diagnoses, therapies and research at a level, no human being can reach. Even today AI can diagnose CT and MRI images much better than the best medical professional.

In future, AI will be a major part of the way our medical ecosystem will enhance patients’ and doctors’ lives. Initially AI will support doctors when it comes to developing medication, recognizing possible drug interactions and optimizing dosage regarding sex, age, weight, diagnoses (e.g. kidney failure) and in a later stage pharmacogenetic predispositions (e.g. slow vs. rapid metabolizers).

AIMedibots will continually crawl the anonymous parts of our secured databases to gather new insights, e.g. actually unknown possible drug interactions or side effects regarding certain diagnoses and conditions. The larger our database the more significance the gathered information will have.

As we start our cooperation with several hospital chains in the near future, we will grow our database quickly and AI will have quite some work to do. In a later stage, Aimedis V3.0 project Excalibur, Aimedis will introduce AI supported diagnoses and therapies in cooperation with university hospitals.

REMOTE HEALTH CARE

In tests, the remote monitoring of chronically ill elderly patients has reduced their rate of hospital admission by about 40 percent. Initially, we are focusing on home care in patients with cardiovascular diseases, diabetes, dementia and high-risk pregnancy. With the ongoing progress in the development of wearables, we will expand our services of remote health monitoring coupled with video-based vitals monitoring supported by doctors and AI.

These services allow for early discharges, reduced regular visits to physicians and even faster intervention in case of unfortunate events. As the population ages and technology advances, wearables will continue to improve care and patient outcomes. In pregnant women alone, wearables have a significant impact on safety. During the final trimester in pregnancy a mother and her developing baby need to be monitored at regular intervals if possible from the comfort of the home. Our solution combines non-invasive connected wearable medical devices of partnering companies, with inbuilt algorithms for real-time patient vitals monitoring.

This approach ensures mobility, ubiquitous connectivity, a cloud-based clinical decision support system and an innovative business model to deliver affordable healthcare with timely detection and diagnosis anytime, anywhere.

Any alert or alarming condition along with annotated data is immediately reported to the physician on his/her mobile device. Doctors can access and view the patient’s data using their smartphones or tablets and can provide advice right away. eHealth solutions can be used for a fixed duration of clinical trials to monitor prescribed drug adherence and medical device usage. Along with the data from wearable medical devices, data from advanced devices like smart pills, smart pill dispensers, and biometric authentication devices can be used by care provider and payers to ensure adherence to schedule.

These results can be efficiently used across a) clinical trials, b) insurance claim processing and c) risk-based premiums where patients’ records are available during the risk assessment and premium calculation.
Aimedis is designed to support the work of professionals as well as the treatment of patients. Primarily, we target professionals in the health sector who are seeking a medical platform to interact with every stakeholder in the medical field considering the needs of data security and medical alignment. The use of Aimedis allows a seamless connection to a variety of hospital information systems in use and fits regulations like HIPAA, IHE, HL7.

This offers a considerable potential to make workflows more efficient and barriers to entering the market low. Moreover, hospitals and doctors can develop new revenue streams by using the platform, from offering video chat consultations to using the electronic prescription tool. This device offers blockchain secured signings for remote prescriptions, which can then be directly issued to pharmacies all around the world. Hospitals can also evaluate the progress and the success of patients; Aimedis will be equally consumer driven and therefore allow a continuous connection between the different parties.

Since medical markets do not work like other consumer or financial markets, it is not enough to have a good product that fills one need. A new medical product will not just be used because it makes sense or even helps people getting better treatments. It must also offer as many solutions in one program as possible to improve compliance and usability. By replacing multiple programs (e.g., Mysugr, doctor on demand, HealthVault, etc.) with a one-stop solution like Aimedis, efficiency is vastly increased, and patient outcomes are improved. A patient using the Aimedis system is also able to take pro-active control of their own care and play an active role in the management of their own health and wellbeing.

Aimedis AI-protocols will extract anonymized information for medical and pharmaceutical research. We have worked on developing and implementing digital solutions in the health market for several years, knowing that an approach considering only professional needs will fail - just as solutions for patients alone simply do not work. We have been confronted with patients using multiple apps to store blood sugar, body weight, psychological profiles etc. and doctors that refuse to spend time shifting from one app to the next to get an overview of a patient's health. It just makes sense to have all data on one platform and directly integrated into the health record accessible by both the patient and providers. In the opinion of hundreds of doctors and thousands of patients we spoke to, this is a solution that is long overdue for adoption.

Due to the vast application spectrum of health care platform businesses we present some of our ongoing business cases which we already offer in cooperation with hospitals to help understand in detail our market approach.

In general partner hospitals, caregivers, insurance and other companies must hold AIM token valued at at least 20.000 USD in a wallet. Based on that they can use the Aimedis services which will generate income by the participants.

1. Support of Patients after central nervous incidents like strokes with demand of long term treatment. The SRH hospital group offer long term after care for patients in form of continuous connection to the patient and the treating ambulatory institutions through video conferences, therapy videos which are taken in hospitals and afterwards as documentation of progress and adequate exercise implementation. This networking effect has proven to increase quality of treatment.

2. Pre-and after care of cardiological patients from the Netherlands which undergo coronary angiography in Germany. Due to long waiting lists in the Netherlands and free capacities in Germany patients seek treatment beyond the border giving hospitals in Germany additional revenue opportunities. Contact, appointment and data transfer will be offered by hospitals using Aimedis.
Inside the platform Amedis generates revenue, following a freemium model, while offering the possibility to buy additional medical services if required. On patients’ side revenue is generated from paid online video consultations like psychotherapy, online prescriptions and 24/7 availability of consulting doctors.

Resident doctors pay a fee for using video chat, the appointment system or the online prescription tool. Cooperating hospitals have already started to use the platform to support their patients before and even after stationary treatment at home or while being abroad. In that case revenues are generated by using paid services like the video chat platform, Amedis appointment system, the online prescription tool and data analysis on demand. Healthcare providers will offer these additional services via the Amedis platform, thus generating new revenue streams. Many countries currently change their regulations for telemedical care which results in cost coverage by health insurance companies.
HOW
AIMEDIS CLOSES THE GAP BETWEEN PATIENTS, DOCTORS AND HOSPITALS

<table>
<thead>
<tr>
<th>Benefits</th>
<th>How Aimedis Addresses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces wasted time and lost information</td>
<td>by eliminating incompatible systems and processes</td>
</tr>
<tr>
<td>Enhances the value of existing clinical data</td>
<td>through intelligent integration of non-medical and medical data.</td>
</tr>
<tr>
<td>Empowers the patient</td>
<td>by giving them a central role in the management of their healthcare</td>
</tr>
<tr>
<td>Improves medical outcomes</td>
<td>by seamlessly connecting patients and doctors, anytime and anywhere</td>
</tr>
<tr>
<td>Addresses the main weak points of the medical system</td>
<td>by always putting the patient first as a core central element</td>
</tr>
<tr>
<td>Offers a practical approach to simplifying the international health care system and fixing its defects</td>
<td>by enabling fast, reliable, and updated technology access to patients, doctors and hospitals worldwide</td>
</tr>
</tbody>
</table>

Leveraging ubiquitous technologies, Aimedis enables the convergence of existing, but fragmented systems, and creates the basis for healthcare 4.0.

What makes Aimedis unique is the fact that it prevents the proliferation of isolated applications by combining all medical interaction and information between patient and healthcare professionals. This includes medical records, video chats, prescriptions, appointments, educational materials, communications, record storage, artificial intelligence, big data mining and latest security measures including a proprietary blockchain.

The easy-to-use freemium based cloud solution is usable worldwide and can be easily adapted to any healthcare market.

On the professional side, Aimedis is plugged into healthcare IT systems, including HIS connection via HL7/FHIR, medical imaging standards like DICOM and robust compliance with IHE and HIPAA.

ISO 9001 and ISO 27001 certification provide ironclad assurance of security and reliability of Aimedis as a professional-grade medical IT solution.

With excellent connections to big healthcare players in Europe and Asia, including several major hospital groups, where Aimedis is actually being introduced and established an impressive professional network, and a distinguished advisory board, Aimedis is well positioned to become one of the key players in ehealth and mobile health.

The growth of mobile health businesses across the world and technology innovations in the healthcare sector prove the importance of Aimedis as a unique platform to integrate all medical interactions and information flows between the patient and healthcare professionals.
Why are Patients seeking health services? We've asked ourselves this question multiple times, and we believe the answer lies in these eight dimensions, which outline the importance of having health providers present in our daily lives.

PATIENTS’ GOALS

- Curing diseases
- Managing chronical illness
- Helping others to enjoy the benefits of good health
- Preventing illness
- Recovering from curable illness
- Coping with terminal illness
- Contribute to and be involved in the community
- Staying well
THE MOST IMPORTANT MECHANISMS FOR ACHIEVING THESE GOALS CAN BE SUMMARIZED AS:

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy lifestyle</td>
<td>Exercise, diet, and good hygiene are simple ways to stay healthy and avoid illness in the first place. Devices, programs and products that promote these habits are the most cost-effective mechanisms.</td>
</tr>
<tr>
<td>Regular health checkups</td>
<td>The earlier a disease, or the risk of disease, is detected, the easier it is to cure or prevent it. Periodic checkups by nurses and doctors are a critical early warning mechanism.</td>
</tr>
<tr>
<td>Preventive Measures</td>
<td>Vaccinations, dietary supplements, education and monitoring of vital signs can delay or prevent the onset of disease.</td>
</tr>
<tr>
<td>Primary care physicians</td>
<td>The local clinic, family doctor, or school/company medical office is the first level of medical service provider equipped to diagnose illnesses, and to suggest cures. This patient activates this mechanism when they have signs or suspicion that they may have a disease.</td>
</tr>
<tr>
<td>Hospitals and nursing homes</td>
<td>Treatment of serious diseases requires the specialized facilities of hospitals and nursing homes. These are expensive mechanisms and their use is justified only in the case of serious illness, chronic disease, or specialized medical needs such as gynecological procedures.</td>
</tr>
<tr>
<td>End-of-life and hospice care</td>
<td>Death is a fact of life and a large proportion of medical services are consumed in the last few months of life. Humane treatment near the end is a very important mechanism that can contribute to the quality of life of both the patient and their family members.</td>
</tr>
<tr>
<td>Medical charitable activities</td>
<td>Information and contributions to preeminent charities providing research, screening and diagnosis, treatment and prevention leads to the advancement of medicine and improvement of the overall quality of medical services and treatments.</td>
</tr>
</tbody>
</table>
Aimedis uses a dual blockchain design to support the data privacy requirements of a patient record system. The Ethereum blockchain is used for transactions that must be published. However, a private blockchain is used for transactions that cannot be published openly for patient data privacy purposes.
THE MOST IMPORTANT MECHANISMS FOR ACHIEVING THESE GOALS CAN BE SUMMARIZED AS:

| Doctor smart contract | Doctor / Hospital actions activate smart contracts that:  
| | 1) Send information to patient  
| | 2) Sends information to Aimedis  
| | 3) Generate log entries and save to AIMChain Database  
| | 4) Special smart contract for EMERGENCY ACCESS  

| Research and Pharma Smart Contract | Scientific / Pharmaceutical actions activate smart contracts that:  
| | 1) Send information to patient  
| | 2) Sends information to Aimedis  
| | 3) Generate log entries and save to AIMChain Database  
| | 4) Eventually activate payment process to patient, if desired, and address the Fiat / Crypto problem  

| Rights management transactions | The Patient sends rights management transactions with identification to the AIMChain when he/she sets up or changes the settings for their information privacy.  

| Payments and AIM token actions | The patient’s wallet receives payment in AIM Token via the public Ethereum chain, for granting access to their information.  

| Patients up-/download medical records with identification | Patient uploads data to a secure server which:  
| | 1) Is ISO 27001 & HIPAA compliant  
| | 2) Contains the patient’s name, address, and other personal information  
| | 3) Contains a secure database integrated with the private AIMChain  
| | The data includes:  
| | 1) Notes and entries  
| | 2) Images  
| | 3) Letters  
| | 4) Findings  
| | 5) PDFs  
| | 6) Tracker logs  
| | This data is then encrypted and saved in the secure database. At the same time a transaction record is saved to the AIMChain including Identification, IP and date/time.  

| Patients up-/download anonymized medical records | Patient retrieves from the secure server, the data described in the row above. This data is then decrypted with the patient’s authorization recorded in the private AIMChain. At the same time a transaction record is saved to the AIMChain including identification, IP, and date/time. |
| Doctors/hospitals up-/download anonymized medical records | Doctors/hospitals retrieve from the secure server the data described above. This data is then decrypted with the doctors’ authorization recorded in the private AIMChain. Doctors/Hospitals uploads data to the secure server, which is then encrypted and saved in the secure database. Authorization for the above upload and retrieval is provided to the Doctor/hospital under the rights management access authorized by the patient. At the same time a transaction record is saved to the AIMChain including identification, IP and date/time. |
| Researchers/pharma extract anonymized medical records | Scientific researchers and pharmaceutical companies can retrieve ANONYMIZED data that is generated on demand by the Aimedis artificial intelligence data crawler engine. At the same time a transaction record is saved to the AIMChain including identification, IP and date/time. |

The Aimedis solution starts with the patient's natural health management mechanisms and combines them with the following technology elements to help them satisfy their health needs.
AIMEDIS’ TECHNOLOGY TO FIT PATIENTS’ AND PROFESSIONALS’ NEEDS

- Bitcoin and other currency blockchains
- Private blockchains – data rights management, HIPAA compliance mechanisms
- Interfaces with industry-wide systems
- Interfaces with health monitoring devices and appliances
- Secure databases
- Smart contract & dual blockchain model
- Artificial intelligence
- Interfaces with industry-wide systems
**HOW AIMEDIS BENEFITS THE PATIENT**

**Our solution is unique because it: Integrates into the patient’s life**

Modern life is connected to the internet via smartphones, computers, wearable devices and IoT-connected appliances. The Aimedis solution must have „apps“, „drivers“, „clients“, „bots“, whatever the buzzword-du-jour is for pieces of software that run in the devices that are active near the patient. This is where we capture raw data that reflects their state of health or illness.

Mobile phone apps and wearables like FitBit or Apple Health are the obvious first point of contact to capture basic information like vital statistics and drug prescriptions. But other channels like the social media forums they visit or the web searches they do to research health and wellness topics are equally important to understand what motivates them.

A person researching childbirth issues is motivated by different health concerns than one looking up experimental cancer treatments. The Aimedis solution should seek permissioned access to the patient's social media and other online footprints so that it can profile their medical needs. While this may seem like a hurdle to people steeped in the medical privacy culture of HIPAA, it is amazing how much information today's social-media savvy users are willing to share with legitimate companies asking for such access.

**Offers the patient tangible health benefits**

The term „Electronic Health Records“ often provokes a strong allergic reaction among patients, to say nothing of doctors and nurses, who have nightmares about filling out 18 page forms of useless information that they just told the doctor's secretary at the counter!

After all, how many times does our phone, address, or insurance number change between doctor visits? And surely the childhood vaccinations we had did not change between the time we visited the dentist and the dermatologist!

It's becoming apparent that EHR's MUST move from the 1980's software model of feeding dead data into highly structured databases, to capturing useable health information that helps the patient, the nurse, the doctor, and the social worker understand what the patient needs now, based on their medical history. The records must benefit the patient in a way that incentivizes them to contribute to expanding their electronic health profile.

There will be patients who honestly do not believe that the benefits of this solution are worth the effort of using it. Their decision should be respected and they should not be pressured into using it. After all, it is their health and we cannot tell them that we know more than them about solving their health problems.

**Allows patients to control their data entirely**

Most EHR's today are controlled by big government bodies, hospital chains, and insurance companies. You can be sure, none of these entities have the patient's interest as their top priority. They are protecting the politicians, investors, and bureaucrats who run these organizations.

Aimedis will clearly demonstrate that it is not controlled by or associated with any of these entities. The health record must belong to the patient, and patient alone. Of course, there are common sense variations like family members being authorized to assist in the case of dementia or inability to consent.

**Records patient health status on blockchain ledgers**

Evidence-based medicine works best when there is reliable factual data available about patients' medical conditions. Corporate-controlled EHR systems have a built-in bias either to conceal certain facts or to highlight others, in order to justify their treatment decisions. Aimedis captures every piece of data collected, with the patient's permission, and record it on a blockchain ledger, so that it cannot be altered later. No rewriting of patients' medical history!
Ensures total patient privacy

Okay, so how do we put every episode of a patient's heart palpitations on the public blockchain, but protect their privacy at the same time? Well that is simple. We do not publish the actual observations. Those are recorded in confidential databases. What is published is a hash of the test result, FitBit log, radiology report, diagnoses, etc.

When the patient chooses to release the actual data to a medical service provider, or to a researcher, they authorize a smart contract action that allows access to the confidential database records. The private key/public key mechanism that underlies blockchains confirms that the data released is actually what was recorded at the time of the event, and has not been altered.

In effect, we use a public ledger to record facts close to the time they arise, similar to a detective recording evidence at a crime scene before any conclusions have been made. But the decision on releasing the facts, and who to release to, is made later by parties who have a legitimate right to do so.

Supports medical economy and tourism through monetary incentives

Regardless of our high-minded objective of putting the patient in charge of their health data, patients, doctors, nurses, hospitals and insurers operate in the real world, where services and products have to be paid for. Health and medical services are the largest spending item in most developed societies. The Aimedis smart contract(s) will optimize the purchase of medical services through effective use of the patient's record in making purchase decisions.

For instance: Traditional insurance company centered health records often ration medical services to suit rigid supply/demand constraints in their limited provider networks. This leads to strange market distortions that make little economic sense. One example is Canadian national health insurance, which sometimes causes shortages of certain medical services, long wait lists, and subsequent travel of Canadians to the US, where free market pricing allows for greater supply right across the border. But then, many American patients find the free market prices for dental services too high, and cross the border to Mexico to obtain similar services in a cheaper free market!

Such „medical tourism“ is a natural escape valve that patients and service providers seek to counter the monopoly power of established institutions. The Aimedis smart contract and blockchain structures must formally recognize these market anomalies and help patients seek the best value for their medical budget by exploiting them.

Since information is economic power, and Aimedis gives the patient control over it, the patient will be able to offer access to their medical record to service providers in different legal jurisdictions. The providers can then compete on a level playing field to offer services relevant to the patient’s needs.

Honors and records patients’ wishes and intentions

In addition to factual observations, patients can also choose to register their desires for medical treatment. Aimedis will provide simple app functions to record advance directives, wishes about treatment when the outcomes are expected to be very poor, organ donations, organ/blood receipt, and other issues involving difficult medical ethics questions.

Recording such directives on a tamperproof blockchain can give doctors and nurses great confidence that they are treating a patient according to his/her wishes in cases when the patient is incapable of providing informed consent.

Patients often delegate such decisions to family members and close friends. Multi-signature smart contracts can be used to implement consensus or voting by loved ones to authorize invasive procedures or end-of-life decisions.

Stores original information on professional decisions

When a patient uses medical or health services, there are often one or more analyses, diagnoses, or recommendations to address their health-related issues. These may lead to actions such as medication, therapy, surgery, diet, lifestyle, and other responses.

These activities are the backbone of a health record, and capturing them accurately and timely is critical for the existence of the Aimedis platform.

The blockchain is the best place to record the encounter between the patient and medical service provider, diagnosis/analysis, suggested plans, and actual execution of these plans. Unlike most EHR’s where the medical institution or insurer controls this important database, we must ensure that the patient owns access to the data, and uses smart contract actions to share the data with doctors, nurses, therapists, pharmacists, and insurance companies.
Grants access to patient in advancing the state of medicine

Many patients seek not only to benefit from medical technology and services, but also to contribute to the advancement of science and delivery of health services. Whether they donate blood or organs, volunteer at the local hospital, participate in drug trials, or raise funds for medical charities, patients play a critical role in giving back to society.

Much of this altruistic activity involves sharing personal health data such as test results, genetic profiles, and family medical records. The Aimedis smart contracts will provide mechanisms where the patient can approve sharing of their medical data for non-profit activities, execute monetary transactions such as contributions to medical charities, and possibly receive compensation for drug trial participation where it is ethically appropriate.

One possible mechanism is to set up a subscription program using a blockchain. Patients can consent to „publish“ their data in anonymized form, where their name and identification numbers are masked, but their medical data is accurate.

Researchers and medical professionals can buy „subscriptions“ to this information. The smart contracts will be designed to permit the patient to either donate their medical data anonymously or be compensated for it.

Smart contract use cases in the Aimedis ecosystem:
The Ethereum blockchain has two important features that can be critical in implementing elements of the Aimedis solution. The first is the ERC20 token, which is a tradeable instrument based on the Ether cryptocurrency. Transactions among patients, service providers, regulators, and others can use the Aimedis token as an accounting unit.

Second, the value of the token is greatly enhanced by the fact that the Ethereum blockchain supports fully programmable contracts, or object-oriented software components, that execute when the token is exchanged between parties. Before Ether, no currency, fiat or crypto, has ever had this kind of intelligence built into it. The token’s „smart“ behaviour can be leveraged in many ways, including the use cases below.

### Use Case 1: Social Media Interaction

<table>
<thead>
<tr>
<th>Function</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SocialDataAccessRequest</td>
<td></td>
</tr>
<tr>
<td>SocialDataAccessApproval</td>
<td></td>
</tr>
<tr>
<td>Approve: „Yes/No“</td>
<td></td>
</tr>
</tbody>
</table>

The use of social login and oAuth authentication lets people leverage their login credentials with major providers like Facebook and Google to access many smaller web sites without creating new user IDs. Aimedis can create a smart contract which stores the patient’s user identifiers at Facebook, Google, Twitter, etc., in encrypted form in the contract’s database.

A service provider can then request access to this data by calling a SocialDataAccessRequest function and sending some ether to the contract. The patient can then approve or deny the request by calling a SocialDataAccessApproval function with the „Approve“ parameter set to Yes/No.

If denied, the Ether is refunded to the sending contract. If approved, appropriate codes are sent to the requester to facilitate access to social media profiles and history. The requester then has permissioned access to the patient’s social history for delivery of health services.
Use Case 2: Patient Record Access

Function / Example:
- SocialDataAccessRequest
- SocialDataAccessApproval
- Approve: „Yes/No“

Aimedis will maintain a large amount of patient medical history in its proprietary database.

A service provider can request access to this data by calling a MedicalDataAccessRequest function and sending some Ether to the contract as a user fee. The patent can then approve or deny the request by calling a MedicalDataAccessApproval function with the „Approve“ parameter sent to Yes/No.

If denied, the Ether is refunded to the sending contract. If approved, appropriate codes are sent to the requester to facilitate access to medical profile and history. The requester then has permissioned access to the patient’s records in the Aimedis database for use in delivery of their health services, or for medical research.

When the service provider accesses the actual data, they will use separate smart contract functions for different datasets. A variety of subrequests will be defined, with separate pricing for each sub use case, and predefined specifications for what each report contains. Examples:

- MedicalDataAccessRequest_3Yearsummary
- MedicalDataAccessRequest_5YearDiagnosisHistory
- MedicalDataAccessRequest_RadiologyReportForSpecificTest
- MedicalDataAccessRequest_PharmacyPrescriptionHistory

To facilitate high-volume use of this information, application programming interfaces (API's) will be created so that the information can be transmitted over established medical industry networking protocols, and in compliance with appropriate security standards.

Use Case 3: Medical Service Provider Action History

Function / Example:
- MedicalActionRequest
- MedicalActionReview
- MedicalActionApproval
- MedicalActionRejection

Doctors, nurses, therapists, and other medical professionals will record their observations, diagnoses, recommendations, and other notes in the Aimedis database, with hash codes recorded on the blockchain. The service providers will execute these actions by invoking the smart contract functions listed above.

The use of these structured action requests, their review by senior professionals, and approval/rejection, all recorded on a blockchain, and available for audit by authorized personnel will ensure the highest quality of actions by the patient’s medical team.
### Use Case 4: Laboratory and Specialized Procedure Records

Function
- TestProcedureRequest
- TestProcedureResults
- TestMethodology
- TestResultAnalysis
- TestProcedureRecommendation

Example:

Diagnostic tests, laboratory procedures, and specialized actions like radiographic readings will be recorded on the blockchain by calling the smart contract functions listed above.

The external or internal laboratory facility will record these results independently, using their cryptographic signatures, thereby ensuring the integrity of the results.

### Use Case 5: Medical Service Provider Credentials

Function
- ProviderCertificationFAILURE
- ProviderCertificationConfirmed

Example:

Doctors, nurses, therapists, and other medical professionals will have their professional certifications reviewed regularly. Any lapses or expirations will be recorded on the blockchain with smart contract function `ProviderCertificationFAILURE`, which will lead to immediate disqualification from serving the patient, until the certification is restored to current status.

Professionals whose certifications are current will have this fact recorded on the blockchain, with the specifics of their qualifications, and expiration dates, with the help of smart contract function `ProviderCertificationConfirmed`.

These quality control measures will make effective use of the blockchain's public nature to weed out unqualified practitioners from the pool of professionals serving our patients.

### Use Case 6: Telemedicine Delivery Support

Function
- RemoteProviderDeliveryRecord
- RemoteExaminationFacilityRecord
- RemoteProviderSocialTestimonialsRetrieve
- RemoteProviderSocialTestimonialsRecord

Example:

One of the biggest unfulfilled promises of modern technology is the remote delivery of medical care. Today's high speed communications, digitized records, ubiquitous video and audio delivery anywhere people live, all make it possible in theory to connect a patient anywhere to a matched doctor, therapist, nurse, or pharmacist who is available in a different location.

Why is it then, that remote, or telemedicine is still a niche offering? Why is one dentist's practice burdened with a long list of patients waiting for routine examinations, while equally qualified dentists in other locations are trying to fill their appointment calendars? Hi-resolution video channels and satellite examination rooms with local nursing staff should allow a lot of examination, diagnosis, and treatment to occur remotely. Why is this not happening?
One reason patients and doctors do not trust remote medicine is the lack of trust in service providers or support staff with whom they have no personal experience. A disembodied face, voice, or medical office on a computer screen does not project the warm feeling of trust that many patients need from their doctor. A doctor may not trust a medical technician in a remote clinic to prepare a patient as much as he/she does their own local staff. This trust gap is the perfect justification for using smart contracts to facilitate telemedicine delivery. “Trustless” interaction is the main reason people trust blockchain transactions where they routinely transfer large amounts of money to people they have never met. Any activity that is recorded on a widely used blockchain carries the assurance that it was recorded at a given time, by a given party, and has not been tampered with after that. We will use these Telemedicine smart contract functions to enhance trust between patients and their medical providers:

**RemoteProviderDeliveryRecord**

Based on data accumulated during past remote sessions, this function will provide the patient summary and detailed information on the past history of the doctor or nurse in treating remote patients. It will include not only medical certification information, but also reviews recorded by previous patients. This will help the patient decide how much trust they can place in the provider’s skills.

**RemoteExaminationFacilityRecord**

Clinics, community/school health offices, and other locations close to the patient, where they go to seek remote medical care will have information about their facilities, staffing, and previous experience recorded on the blockchain. Review and ratings by previous patients will also be available so that both the doctor and the patient can make an informed decision.

**RemoteProviderSocialTestimonialsRetrieve**

Let’s face it, we all like to hear the opinions of our trusted friends, relatives and colleagues, when it comes to seeking medical treatment from a new nurse or doctor! Sure, a medical practitioner may have the best medical degrees, but if that favorite uncle of ours complained about their cold bedside manner or rushed examination, we may want to move on to a better provider! This smart contract function leverages the social media graph shared by the patient (please see use case 1 above) to collate and present opinions recorded by peers about the service provider.

**RemoteProviderSocialTestimonialsRecord**

This is the other side of the testimonial function. A patient with a good experience at a remote doctor’s office can share their opinion with their social network. Equally important, they can warn their friends about a poor experience.
Aimedis was founded in 2016 by the practicing physicians Michael J. Kaldasch and Ben El Idrissi, who have been working in Internal Medicine and Neurology for over 11 years.

The idea to the project was born during their times in ER and ICU while searching for vital patient medical history all the time. 2012 they initiated the research project “TheHealthNet” which was clinically tested until end of 2015. Based on their experiences in this project, Aimedis was initiated in 2016.

Aimedis board consists of merited medical experts who support Aimedis with their network, their knowhow and their intensive help. Many of the board members are active clinical physicians in leading positions.

**Dr. Michael J. Kaldasch** is medical doctor, the CEO and cofounder of Aimedis. He studied medicine and graduated in the Heinrich-Heine-University in Duesseldorf. He has 12 years of clinical experience in internal medicine. Besides he has been working as a drug safety officer in a CRO.

**Dr. Ben El Idrissi** is medical doctor, the COO and cofounder of Aimedis. He studied and graduated in medicine in the Heinrich-Heine-University in Dusseldorf. He has also 12 years of clinical experience in neurology and internal medicine and has experiences in the pharmaceutical industry as a clinical monitoring officer.

**Dr. Lazaros Fountoukidis** is (CMO) chief medical officer and medical doctor in psychiatry and forensic psychiatry.

**Sebastian Wehkamp (M.A.)** is Aimedis’ chief design officer and creative director. He is a film director, serial entrepreneur and the creative mind of Aimedis.

**Sankar Ganesha** is (CTO) the chief technical officer of Aimedis. He has 18 years of IT expertise in multiple domains including healthcare, banking, logistics and service industries. He is specialized in data protection especially in countries of EMEA. He is well experienced in cloud services, payment structures, datacenter management, IT infrastructure management, project management, solution/service delivery and IoT.
Roxana Nasoi (M.Sc.) is Aimedis’ (CCO) chief communication officer, is the best at connecting people, and growing communities. Marketing and Analytics have been part of her professional development since early college days. She has a bachelor and masters in Psychology, and 7 years of experience in research.

Catherine Angcaya is the chief financial officer (CFO). She holds a diploma in economics and a Master of Law (LL.M.). She is a serial entrepreneur in the health and food industry and is focused on market development strategies for Europe and Asia.

Daria Borisenko (B.A.) is responsible for the business development in Russian speaking countries. She is also an experienced social media marketer.

Benjamin Bergmann is chief security officer of Aimedis. He is SCRUM master, full stack developer, IT security and data protection specialist and is also responsible for all certification processes.

Amer Mufti is the lead blockchain developer of Aimedis and head of America operations based in Mountain View, Silicon Valley. He is a Virginia Tech graduate. In over 20 years of software development at Fortune 50 companies like Citigroup, Merrill Lynch, and Goldman Sachs, he trained his skills in delivering reliable and performant software. His job history has been 70% long term projects with major Wall Street firms, involving real-time transaction engines and industrial strength database applications. The other 30% involved projects for smaller, entrepreneurial companies and public sector entities.

Lin Wan (M.Sc.) is the ICO and development tech leader of Aimedis. He has got a master’s degree in computer science and has been working for major companies around the globe.

BingFeng Liu (B.Sc.) is full stack developer, server administrator and has a bachelor’s degree in computer software engineering. Before working with Aimedis, he was responsible for further blockchain projects and big data solutions.
Zhu Gang (B.Sc.) is a full stack senior developer, has a bachelor’s degree in computer science and is responsible for the mobile applications and implementation of API's. Before working with Aimedis he has been working for a large Chinese company.

ZiLong Sun (B.Sc.) is full stack mobile developer, also responsible for the mobile applications and blockchain development. He holds a bachelor’s degree in computer science and has been working in several big projects before joining the Aimedis team.

Markus Moench (M.Sc., B.Sc.) is full stack developer and has a wide range of experiences working for big project before he joined the Aimedis team. He is cofounder of LearnX. Markus holds a master’s degree in Chinese-European Economics and Business Studies and a bachelor’s degree in industrial engineering.

Dr. Yang Chul Boering is medical doctor in cardiology. He has a high understanding in hospital processes, IT and its integration into the healthcare workflow. His focus is the implementation of Aimedis into the existing medical IT and cardiology focused aspects of the project.

Dr. Stefan Krieg is physicist and assistant professor in theoretical physics in the nuclear research center in Juelich, Germany. One of his specialties is high performance computing. He is head of deep learning and the AI development.
THE ADVISORY BOARD

Aimedis’ board consists of well know and merited specialists in their field of activity. They support Aimedis in hospitals, universities and in international cooperations and are a key factor in Aimedis’ activities in the medical environment.

**Prof. Dr. Volker Hoemberg** is a leading neurologist in the SRH hospital group. Since 2003 he is Executive Director of the World Federation for Neuro-Rehabilitation (WFNR) and the European Federation of Neurorehabilitation Societies (EFNRS). Besides he is member of the board of trustees of the Hannelore-Kohl foundation and of the German Stroke foundation.

**Prof. dr. Maximilian Mehdorn** was head physician of the department of neurosurgery in the University hospital of Kiel for over 25 years. He is still actively practicing in Kiel and is founder of the Mehdorn foundation and co-founder and chairman of the Gisela-Hagemann foundation.

**Prof. Dr. Hartmut Gülker** was head physician in cardiology in the Helios hospital group. Besides he held the chair for cardiology of the university hospital of Witten and is still active as advisor and practicing physician. He advisor in major multinational medical projects.

**Prof. Dr. Hubertus Heuer** is head physician in cardiology, holds a diploma in physics and is medical and technical advisor for medical IT and technology projects.

**Prof. Dr. Georg Sabin** is head physician in cardiology and was multiple times among Germany’s top rated cardiologists. He is advisor in multiple industrial, medical, insurance and biotech companies.

**Prof. Dr. Thomas Druyen** is considered one of the most renowned researchers on Ethical Wealth and the Culture of Wealth in the German-speaking world. He holds the only chair in Europe for Vergleichende Vermögenskultur (Comparative Culture of Wealth) at the Sigmund Freud University Vienna. In 2009 he was appointed Director of the newly established Institute for the Science of Ethical Wealth at the Sigmund Freud University.
Prof. Dr. Bernhard Breil is health IT specialist and professor at the university in Krefeld. He is author of national and international publications in medical informatics and holder of the Johann-Peter-Süssmilch medal. Prof. Breil supports Aimedis when it comes to integration into the existing medical IT infrastructure and compliance in medical standards.

Prof. Dr. Michael Philippi is former CEO of the Sana hospital group which with him became Germany’s third biggest hospital chain, has over 32,000 employees and a yearly turnover of over 2,4 billion Euros, treating more than 2,2 million patients annually. He was also Vice president of the German hospital society. He supports Aimedis with his great knowhow and network.

Prof. Simon Choi is an international lawyer, qualified to practice law in England & Wales, and in Hong Kong, China. Simon graduated from the law schools' of Peking University, the University of London and the University of Hong Kong respectively. Simon has advised more than 10 ICO projects globally and contributes to Aimedis by providing an in-depth knowledge of international law, as well as advising and reviewing new blockchain regulations in various jurisdictions. With more than 25 years of experience in international trade, investment, finance, and M&A, he is an asset for Aimedis ensuring the highest degree of compliance and adherence to all relevant government policies towards blockchain technology.

Prof. Dr. Timo Schinkoethe is biologist, computer scientist and the founder of Cankado, a successful and sophisticated platform to connect and treat cancer patients. He has a doctor in medicine and is holder of several awards and is member of the board of PRIO and DKG, is chairman of the task force for ehealth in the German society for hematology and oncology (DGHO), member of the commission of telemedicine in the German society for internal medicine and member of the American society for clinical oncology (ASCO).

Rui Dong is an Angel Investor and Blockchain Advisor, who started his career flipping burgers at Dairy Queen. A decade later he has built a stellar career in the FinTech world, co-founded a Bitcoin consulting company and is currently a key advisor at the Blockchain Association of Canada. On top of that, Rui is a frequent writer and speaker, where he focuses on the FinTech industry from the perspective of an investor. Rui’s focus is on evergreen rather than what’s hot, and on fundamentals & technologies rather than price analysis. His motto is that we are all connected in a way: what we read, see and hear always nudges our lives into a new direction.
Global healthcare expenditure is set to grow from over US$7.2 trillion in 2015 to around $9.17 trillion by 2020. The health industry is facing radical changes, challenges and opportunities.

US and Europe are challenged by the need to cut down health expenditures through protocolization and standardization while the challenges in emerging markets are to deliver care effectively at significantly lower cost while improving access and increasing quality.

- The overall health care sector still has a huge potential for growth due to population and income growth in emerging markets as well as aging populations.
- Innovation driven pharmaceutical and medical technology companies show declining productivity in the area of research and development and fight with high costs and limited ROI.
- Focus on innovation will switch from the product arena to the delivery of healthcare (overall patient satisfaction, efficiency and clinical outcomes)
- Companies must be flexible to quickly adapt to changing business models in the market.

Drivers of Profit

- The main profit drivers for the coming years will be a growth in consumer awareness and engagement as well as standardization or protocolization of care
- Highest volume growth will be in contract research, manufacturing and sales and healthcare IT as pharmaceutical companies outsource more functions and demand for data accelerates

The healthcare market is one of the biggest worldwide and is growing rapidly.

The total health expenditures per capita especially in the industrial countries are rising each year and show the importance of new solutions to improve, reduce costs of and prepare healthcare systems around the world for future competitions. The national healthcare expenditures also climb year by year and the end is not in sight.

Aimedis will address these problems and offer its products to target the main segments of the future healthcare markets. As Germany is by far the biggest healthcare market in Europe Aimedis has first started in Germany, which is the perfect entry market due to the founders’ widespread network of contacts. In step 2 Aimedis will position itself to enter the Asian market and has chosen Thailand for an entry point as Asian healthcare markets grow by around 12 percent annually and will outperform the European healthcare markets in 2025. (source “Vision 2025 – Future of healthcare – Frost & Sullivan)
The following statistics show the healthcare expenditures in Europe.

![Figure 4.1: Health expenditures Europe – source OECD & Wikipedia](image1)

<table>
<thead>
<tr>
<th>Million EUR</th>
<th>EUR per inhabitant</th>
<th>PPPs per inhabitant</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>41,711</td>
<td>3,722</td>
<td>3,352</td>
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<tr>
<td>Bulgaria</td>
<td>5,940</td>
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<td>Czechia</td>
<td>11,841</td>
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<td>Denmark</td>
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<tr>
<td>Germany</td>
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(*) Definition differs.
Source: Eurostat (online data code: mhl_shaf11_lf)

![Figure 4.2: Health expenditure per capita – source OECD & Wikipedia](image2)

- The above shown expenditures are related to expenses in the public health sector while they still don't illustrate the expenditures when it comes to fitness, sports, nutrition, apps or privately paid prevention programs, wellness or OTC medication.
The market shows a wide range of customers with different potentials of spending money for Amedis, but on the bottom line every patient is a potential customer.

eHealth is growing rapidly and will become one of the most important areas of healthcare worldwide.

Referring to actual surveys, the population in general shows growing readiness to pay for health apps and medical devices.
But also on the professional side there is a big demand for eHealth & telehealth solutions. The actual situation is desperate as there is still no reliable way of data exchange and some hospital groups try to establish their own data exchange path with bad results. Paired with difficult data security and safety issues in the past and only actually changing laws it is a long way to integrate eHealth in the professional health care market. Aimedis already has started to implement version 1.0 of its software into major hospital groups in Germany and has the technical base and knowledge to connect all the players in the healthcare market including existing relations with hospital information systems. Other statistics also show the clear tendencies in worldwide healthcare systems. Telemedicine will continue its consistent and strong growth in the next years.

But also new technologies as the blockchain and cryptocurrencies are on the rise, with patients, doctors and healthcare providers being increasingly able to profit from this new way of data security, liability and transparency.
A lot of data security issues and leaks arising in healthcare systems all over the world show the importance of combining blockchain related solutions with the latest database security and encryption measures. Another big market is the AI market, which, even now, improves medical diagnostics and patients' safety by optimizing clinical diagnostics in radiology and neuroradiology. Artificial intelligence is a major step into 3rd millennium medical treatment and will change the way patients will be treated, trials evaluated and new ways of therapies researched and applied.
The healthcare market worldwide is facing severe and deep changes that must be faced and challenged – eHealth applications offer a great opportunity here.

The main problems are:

**Increasingly ageing population which results in a higher number of chronically ill persons, which cause the highest costs in the healthcare systems worldwide**

**Figure 1**: Percentage of the Population With Chronic Diseases, 1995-2030

![Percentage of the Population With Chronic Diseases, 1995-2030](image)


**Figure 13**: Chronically ill people in percent projected until 2030 - source Projections of chronic illness and cost inflation, RAND

**Figure 14**: Increasing life expectancy - source Statista

**Figure 15**: Example of diseases with incr. age – source Statista
In the last few decades, chronic diseases have become the leading cause of mortality in the industrial countries and a major burden of illness. Some of the major chronic diseases are shown below in the distribution of the leading death causes in the example of the United States:

![Distribution of the 10 leading causes of death in the United States in 2015](image)

Regarding Germany e.g. there are more than 30 million chronically ill people with an average of 33 doctor visits per year based on statistics, presented by the BARMER health insurance company.

Approximately 80% of doctor visits are not medically related or urgent and can easily be solved via telecare solutions like Aimedis. The global economic impact of increasing lifespans resulting in increased incidence and duration of chronic diseases is enormous and will double in the next years. This development will result in an increasing user group for Aimedis' services.
Fragmented market environment which still shows up the problems of structure, technology and processes

From the three main cost drivers structure/environment, technology and process (management and procedures) two will be directly influenced by us.

Increasing personnel shortage in the healthcare system, resulting in a lowering of treatment quality.

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**Figure 17:** Market environment

**Figure 18:** Development of offer and demand of certain healthcare pro's projected to 2025 –source statistisches Bundesamt
INSUFFICIENTLY CONNECTED PARTICIPANTS

Up to now, the participants in the healthcare systems worldwide are not connected the way they should and could be. In Germany e.g. each hospital group uses its own HIS, which is neither connected to other hospital groups nor to the practices in the ambulantory sector. Patients are not able to see or influence their healthcare records in any way. And this is only for Germany, as we still haven't discussed a border crossing connection with other countries, which, in time of globalization and travelling people, will be a key feature of future healthcare systems. It’s also important when it comes to medical tourism, which is a growing and very promising market.

Figure 19: Top global medical tourism destinations based on number of tourists in 2013 (in 1,000s) source - Statista

Inadequate technological infrastructure, too often based on outdated technology and proprietary systems

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Increasing numbers of patients who are overstrained when it comes to major health issues

Until now people have started using Dr. Google to find help as it gets more and more difficult to schedule medical appointments. This in part leads to uncertainties and fear and to rising amounts of people in overrun emergency rooms.

Increasing responsibility of the state and rising expectations of the population

With the actual infrastructure this will lead to decreasing quality and dissatisfaction and misses the aim of the frequently demanded empowered patient.
Aimedis already has a product in operation that offers a full range of telemedical services to combine all user relevant tools for patients, hospitals and practices and connect them with each other and all the major players in the healthcare industry.

Figure 20: Who is Aimedis connecting?
What are the advantages for patients, doctors and hospitals?

- Optimized pre- and aftercare
- Patients are actively involved in treatment and outcome results
- Better compliance
- Platform for international patients and medical tourism
- Marketing possibilities (own area, logos, content etc.)
- Reduction of loss of information
- Time saving
- Avoiding duplicate examinations
- Compatible with any IT infrastructure, connectable via HL7 to any HIS
- Minor investment to establish the system within no time

Aimedis is a safe platform and can be integrated into actual health care systems because of

- AIMChain dual blockchain model to maximize transparency and confirmability
- SSL certificates
- 256 bit AES encrypted database
- IHE and HiPAA compatibility
- Physical separation of medical data and patients' personal data
- End 2 end encryption of any communication
- ISO certified servers
- Being an ISO 9001 and ISO 27001 certified company

Aimedis is competitive and offers the following functionalities as a holistic solution:

![Functionalities Diagram](image-url)
The data exchange happens flawlessly via HL7 to ensure complete transfer of discharge letters, radiologic files (e.g. DICOM), laboratory results or findings like endoscopic examinations. Aimedis offers:

- HL7, FHIR in progress, DICOM, PACS server, HIS and HIPAA compliance
- clear view on any relevant data and simple usability
- individual standard values depending on age, sex, habits, medication, place of residence etc.
- combination of smart devices like Apple Watch, Runtastic, Withings etc. to compile patient gathered information with clinical data and diagnoses.

In addition to that Aimedis offers the possibility to exchange online prescriptions with pharmacies and other medical facilities, both new and/or follow-up prescriptions.

The software also shows pharmacological interactions to doctors to support their work and increase safety and trust.

**A major part of Aimedis is the video chat option including second opinion. Aimedis offers:**

- online psychotherapy and coaching, videochat mit doctors 24/7
- end 2 end encrypted connections, IHE & HIPAA compatible
- video advisory only 3 clicks away
- second opinion using the portal

The videochat offers up to 4 chat partners at the same time. A good example is a patient from abroad who is connected to the treating hospital e.g. in Germany, to his family doctor e.g. in Saudi Arabia and a translator.

**Further advantages of Aimedis are:**

![Figure 22: Further advantages](image-url)
In general Aimedis is very customizable to adapt to new features and functionalities introduced to the platform, in the future and SDK will be released. As Aimedis already has partners, a customization of a special module for cardiology is already in development and offers the following benefits:

- Individual consultations and integration of remote cardiological devices like ECG and blood pressure monitors connected to Aimedis
- Patients can create a follow up journal
- Video aftercare integrating the private practices, the treating doctors e.g. UAE and the relatives
- Integrating psychologists into the treatment e.g. to cover up psychocardiology
- Pacemaker identification card online

Aimedis has very moderate requirements to every existing hardware. No extra expenses have to be done.

**Technical requirements:**

- Average PC with actual browser like Chrome, Firefox or Opera
- Android/iOS smartphones or tablets
- Internet connection (broadband for best results)

**Personal requirements**

- Employees who are dedicated to new technologies

The customer journey for the patient is very simple. Patients can either register via PC, smartphone or tablet while using the responsive web app or native mobile apps for iOS and Android or register through the hospital:

- Patient enters the hospital
- Patient signs declaration of consent and gets a mail with login data
- Via the profile the patient can now enter their account via any mobile device
- Private practices with connection to Aimedis are shown within the system
- Actual hospital is automatically inserted into the right management system of the patients records
Hospitals and doctors can also create an account after having verified their professional status. The basic functionalities and the registration are simple entry to the platform, especially in Germany. For hospitals it’s simple to integrate Aimedis into their daily business:

- Care management creates new patient account with 3 clicks, gets a patient ID which is updated in the patient’s records
- During the stay doctors can cross-enter the information into the system
- After patients’ discharge easy export of discharge letters, laboratory results and radiologic findings into the systems via HL7 bridge or PDF export
- Optional follow up via video chat

A patient’s care manager can use the system for QC and active connection to practices or doctors abroad.
**AIMEDIS ROADMAP**

2012 – 2015 TheHealthNet / IhrArzt24 research project with over 10,000 patients

*Figure 23: Roadmap until 2020*
AIMEDIS TOKEN (AIM) –
ICO STRUCTURE & DISTRIBUTION

Issuance & ICO structure

- Token type: ERC20 based token on Ethereum public blockchain
- Maximum supply: 600,000,000 tokens
- Available for purchase: 300,000,000 tokens
- Price per token: 0.12 USD = 1 AIM
- Emission rate: No new coins will be minted, created or mined after the ICO
- Pre-ICO sale period: Q2 2018
- 25% bonus during pre-ICO period (20% discount)
- Main ICO sale period: Q3 2018
- Token can be used to access services inside the platform and services in the AIMedisafe backed online drugstore with discounts
- Token will be used to reward participants in terms of sharing usefully voted content in the AIMsocial medical social network
- Researchers will incentivize patients for participating in trials via the token
- Every professional institution (hospitals, scientific researchers) using the Aimedis portal will have to hold at least AIM tokens worth 20,000 USD at any time
- Token issuance during presale and ICO via https://ico.aimedis.com, which will issue the tokens directly after the ICO

Team members, advisory board and supporters must hold their tokens for at least 12 months, after which only 25% of them can sold, after 24 months only the next 25% can be sold, after 36 months the next 25% and after 48 months the last 25%.

Contributors with equal or more than 25ETH in tokens must hold 90% of their tokens for at least 6 months, 10% of the tokens can be sold freely. Those investors will get a tokens bonus if they hold their tokens for at least 12 months.

Legal surveillance by Wenger & Vieli attorneys at law, Zürich & Zug, Switzerland
1. The AIM token is not mined and the amount is fixed to 600,000,000 tokens

2. Token can be used to access services inside the platform with discounts

Hospitals and caregivers that hold the AIM token can access medical services like video chat, appointment modules, prescription modules and more services at a reduced price via the platform. Patients can access services that are not covered by their insurance company at a reduced price via the platform. Insurance companies can get reduced prices for services inside the platform for their insured patients. All participants can get services via the AIMedisafe backed online pharmacy.

3. Token will be used to reward participants in terms of sharing usefully voted content in the AIMsocial medical social network

Patients can interact inside the social medical network freely. If a patient uploads useful content like videos / texts / images / content or creates and operates an Aimedis self-help group, other patients can upvote these actions which directly incentivises this patient by our token. If applicable Aimedis will issue a second token (AIS) which will be fixed in a 1:10 ratio to the AIM token.

4. Researchers will incentivize patients for participating in trials via the token

5. 20% of Aimedis revenue will directly flow into the AIMsocial fund, which will back the AIMsocial platform and will always make sure the AIMsocial system has enough tokens.

6. The token enables the user to contribute to content creators via upvote + direct contribution
AIMEDIS TOKEN (AIM) –
TOKEN DISTRIBUTION &
USE OF REVENUE

Use of money raised during ICO
- 57% Development
- 16% Operations
- 13% Marketing
- 8% Reserves
- 6% Legal

Token allocation
- 50% ICO (presale & ICO)
- 20% Community & marketing
- 20% Team, board & supporters
- 5% Legal Reserve
- 5% Reserved token

Figure 23: AIM token distribution