VAM



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VITALUM

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The Intelligence Layer for Next-Gen Healthcare

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1. ABSTRACT

Introducing our groundbreaking medical project that harnesses the power of Artificial Intelligence and Blockchain to revolutionize the healthcare industry. Our platform not only streamlines medical processes, enhances diagnosis accuracy, and secures patient data through decentralized technologies, but also includes a unique staking feature to reduce medical expenses. By pooling resources through staking, our users can access cheaper medical care while still enjoying the benefits of personalized care and optimized treatment plans enabled by AI algorithms. Built on the secure and transparent framework of blockchain, our platform ensures the highest level of data privacy and security. Join us as we pioneer the future of healthcare with cutting-edge technologies and affordable access.

Vitalum will address many of these issues and make dental services and treatments more affordable and convenient for people worldwide, harnessing the power of blockchain technology. Without the possibility of counterfeiting, no risk of identity theft, and quick settlement of transactions, blockchain and digital asset technologies are a superior option for the dentistry industry as a whole.

Vitalum is a utility token that can be used to pay for regular dental and cosmetic services. It also has a straightforward discount incentives system to entice customers, retailers, and practitioners. In order to make Vitalum easily spendable, the Vitalum card will be offered to users. In addition to taking advantage of the benefits that come with the card, Vitalum card owners are also able to freely use it at any point of sale where a Visa card is accepted.

As Vitalum is based on existing, proven blockchain technology, any income generated by the ecosystem will primarily be used to fund industry innovation, organizational development, related IT support, and promotional activities. Furthermore, Vitalum has a real-life practical use, meaning that it can be used immediately for the purchase of items at a discount on the online e-commerce platform/shop at https://implexmedicalshop.com/.

Overall, Vitalum will be a utility token of the dental healthcare ecosystem. A cloud-hosted, web-based, and smartphone application (App) will facilitate easy-to-understand and straightforward access to the platform.

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2. CURRENT PROBLEMS IN
The Global Dental Industry



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2.1. Geographical Discrepancies in Dental Care

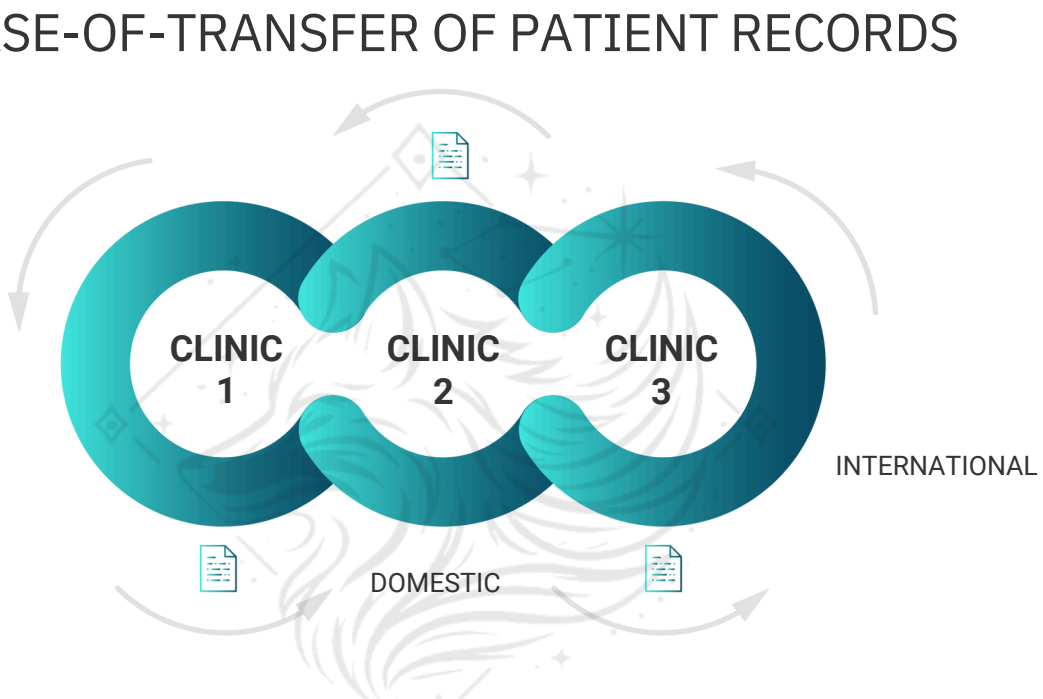
The worldwide dentistry industry is dealing with significant difficulties that are limiting the ability of dentists to provide high-quality care to their patients and preventing patients from receiving dental treatment and dental hygiene.
Due to the high cost of dental services, particularly in Western countries, the rate of dental tourism to more cost-effective locations is becoming commonplace. Patients from the U.S. fly to Mexico, Australians to Southeast Asia, and Middle Eastern patients to India and England. Cheap airfares and more accommodation options have made this even more accessible in modern times.
*"In the **UK**, a full mouth (all on 4+) of dental implants at a private clinic will cost you between **£7,000 and £28,000**. Head to **Poland** for the same treatment, and it costs an average of **£4,000 to £9,000.**" "For single tooth implants, you'll pay around **£2,000** in the **UK** compared to just **£550** in **Poland.**"*
Research shows that healthcare quality is directly linked to a country's prosperity levels: the more prosperous the country, the more expensive medical services are. The dental industry is no exception to this rule. Considering this prosperity imbalance, we aim to restore balance and ensure that dental care is not just a benefit for the higher socioeconomic class.
In developing countries, financially capable patients are more concerned with finding practitioners who can deliver high-quality services and instead engage in reverse dental tourism by going to Western countries to seek care.
Additionally, in less developed nations, there is another issue; since income levels are lower, going to the dentist is often prohibitively expensive.
Geographical location plays a significant role in the access to medical care. "According to the American Student Dental Association, geography is one of the most common barriers to accessing dental care. There are huge disparities when it comes to levels of oral health care for rural populations compared with urban populations." This geographical discrepancy is not limited to rural and remote areas but also applies to less developed countries.
How is this substantial discrepancy possible unless there is a severe supply chain issue and/or there are insufficient systems in place to guarantee that dentists with extensive training are accessible to serve patients from all socioeconomic levels and remote areas?
Therefore, there is a situation where patients are confused as to where to go for different types of dental treatment. Our project seeks to stop this confusion once and for all by utilizing blockchain's power to provide transparency. By reducing the complexity of the supply chain and the involvement of intermediaries, we will ensure dental treatment becomes cheaper for patients who are less financially capable.

[1] Amanda Napitu. (2021, August 26). Dental implants in Poland: Costs, reviews of Poland dentists. Dentaly.org. Retrieved June 16, 2022, from https://www.dentaly.org/en/dental-implants-abroad/dental-implants-poland/

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2.2. The Problem for Patients

Patients who cannot afford dental treatments seek care elsewhere, which may include traveling abroad, as discussed above. When patients choose to visit a practitioner abroad, they confront additional hurdles, such as maintaining a smooth continuity of care, transferring their data, or even having certain aspects of their therapy performed locally and other, more difficult operations performed elsewhere. There is no easy protocol in place that permits patients to continue receiving therapy in a nation other than the one in which they initiated it.



Blockchain technology enables this more readily, affordably, and quickly than any other available technique. Simple appointment scheduling across borders is both time-consuming and inconvenient, so an app that streamlines the connection between patients and clinics would be excellent. In the future, we hope to reach a point where patients will always have access to their medical documents and full control over them.

On the other hand, patients who can afford dental treatments turn to Health Insurance Providers (HIPs) to have dental care covered; however, medical and dental insurance is prohibitively costly and continues to rise in price year after year.

Dental and medical insurance policies have restrictions and expiration dates, and as a result, funds earmarked for treatment often lapse from year to year. Many patients are unaware of this serious problem.

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2.3. The Problem for Dentists

High dental treatment costs are intertwined with the high costs of operation and significant capital investment in setting up a dental clinic.
The advent of new technology means that dentists need to continually purchase and reinvest in new technology, which adds to the costs of running a dental clinic. These costs are related to the multiple cost structures involved between the manufacturer and the dental clinic owner.
Some examples include management costs, operational costs, and transactional costs with financial intermediaries, including banking institutions and health insurance providers. All these elements generate a high-cost base, resulting in the perception that dentistry is relatively expensive.

2.4. The Problem for Manufacturers

Currently, manufacturers cannot sell their products on a level playing field. Due to the intervention of intermediary supply chain companies, they are limited in their access to markets on a global scale. Some suppliers tie manufacturers into exclusivity agreements and prevent free trade from occurring. Hence, manufacturers have been looking for an alternative to sourcing materials from overseas.
Furthermore, suppliers face difficulties with the supply chain's inefficiency and the need to meet the complexity of different regulatory frameworks.

2.5. Large-Scale Inefficiencies

2.5.1. “Double-Spending”

This constitutes a significant problem on a global scale, particularly in Western countries, where there is increased "double spending" (not to be confused with the double-spend concept of blockchain) of patient dollars on dental and medical care through government taxation and paying for health insurance plans



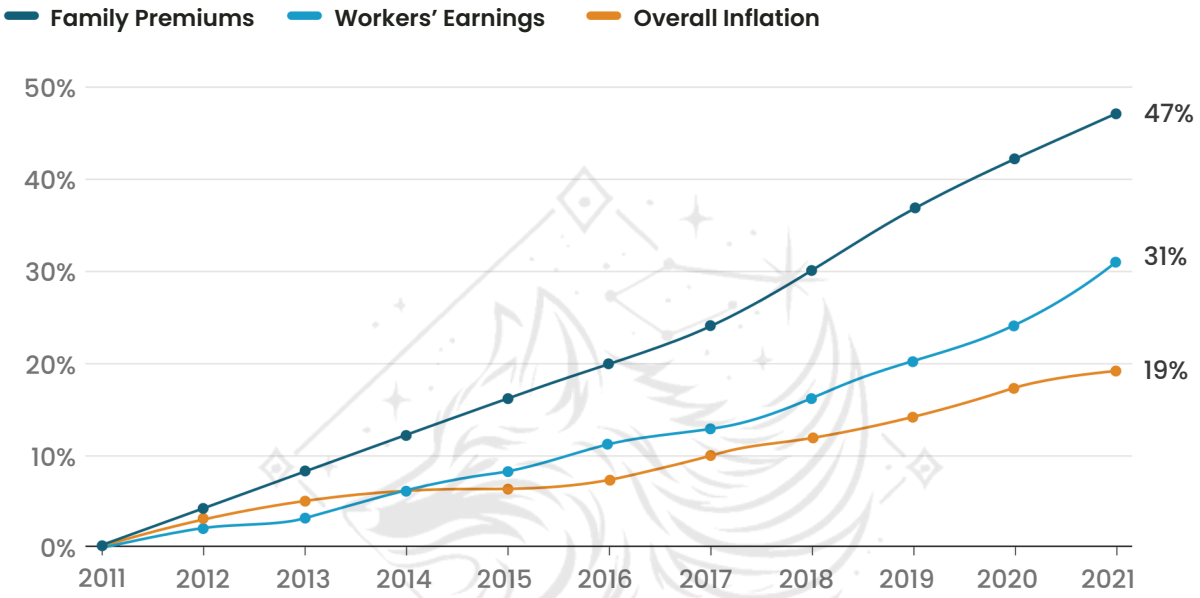
Ultimately, large-scale inefficiencies mean that many patients globally are paying for dental care indirectly through taxation, for dental care subsidies indirectly through health insurance, and for dental treatment with their own money.

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2.5.2. Current Health Insurance Model

There appears to be no limit to the ceiling on the increasing price of health insurance. As a result, health insurance providers (HIPs) are most likely protecting their profit margins as the cost of health services increases. In 2021, the average annual premium for family coverage rose 4% to $22,000, which is considerable for an average family in the U.S. 4

Family Premiums Have Risen Faster than Wages and Inflation



Source: Kaiser Fammily Foundation and the U.S. Bureau of Labor Statistics.

2.5.3. Tightening of Credit Conditions

Due to the impact of the Global Financial Crisis (GFC) and the tightening of banking regulations, financing for the establishment of new dental clinics is more challenging in modern times. Blockchain technology has the potential to enable the formation of untapped credit and financing channels. Consequently, we will foster the expansion of the dentistry sector, especially in underserved regions and nations.

3) Probasco, J. (2022, March 9). Why do healthcare costs keep rising? Investopedia. Retrieved June 16, 2022, from https://www.investopedia.com/insurance/why-do-healthcare-costs-keep-rising/

4) Stephen Miller, C. E. B. S. (2021, November 17). Average family premiums top $22,000, up 4% in 2021. SHRM. Retrieved June 16, 2022, from https://www.shrm.org/resourcesandtools/hr-topics/benefits/pages/average-family-premiums-up-4-percent-in-2021.aspx

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3. THE VITALUM SOLUTION:
Facilitating Global Access To Dental Care



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3.1. How Vitalum Will Help Improve the Dental Market

Moving forward, the Vitalum token serves as the utility (functional) token of the VAM medical platform. The token will increase in value due to its utilization, based on its demand as a better transactional medium for an industry plagued with high costs due to multiple intermediaries and third-party involvement. We cannot think of a better niche within the healthcare industry than the dental industry where blockchain can improve the status quo. There are almost always intermediaries preventing direct transactions between two parties (e.g., payments for treatment are often made via insurance companies and, in Western and developed countries, between governments and private enterprises through subsidies and rebates for dental treatment for low

3.2. Core Objectives

1. **Dentists who utilize Vitalum will have access to software that helps them** operate their businesses more effectively, helps patients find the clinic easily, and reduces the cost of delivery of care, allowing patients to benefit from lower dental fees
2. **Patients will have increased access to dentists globally and easier access overall.**
3. The increased affordability of going to the dentist will mean an **overall increase in dental spending globally.**
4. Transparency regarding "point-of-origin" (provenance) tracking will be made available for **the first time in the history of the industry.**
5. Patients will have increased **privacy controls** over their data and how it can be used and shared. They will have the option to select and share their data with different practitioners as needed for their treatments.
6. Increased accuracy of patient record-keeping.

3.3. The Blockchain Protocol

As described, transactions and exchanges of dental goods and services can occur freely within the ecosystem with minimal involvement, except for when significant scale disputes may arise. Once again, this is unlikely due to the nature of smart contracts defining the present conditions of a contract before it takes place. There is no need for settlement lawyers, accountants, notaries, or agents for almost all transactions.
Blockchain is becoming rapidly adapted for use in the fintech industry because it is:

- Decentralized: It is not owned by a single entity.
- Cryptographically secure: Data is stored securely.

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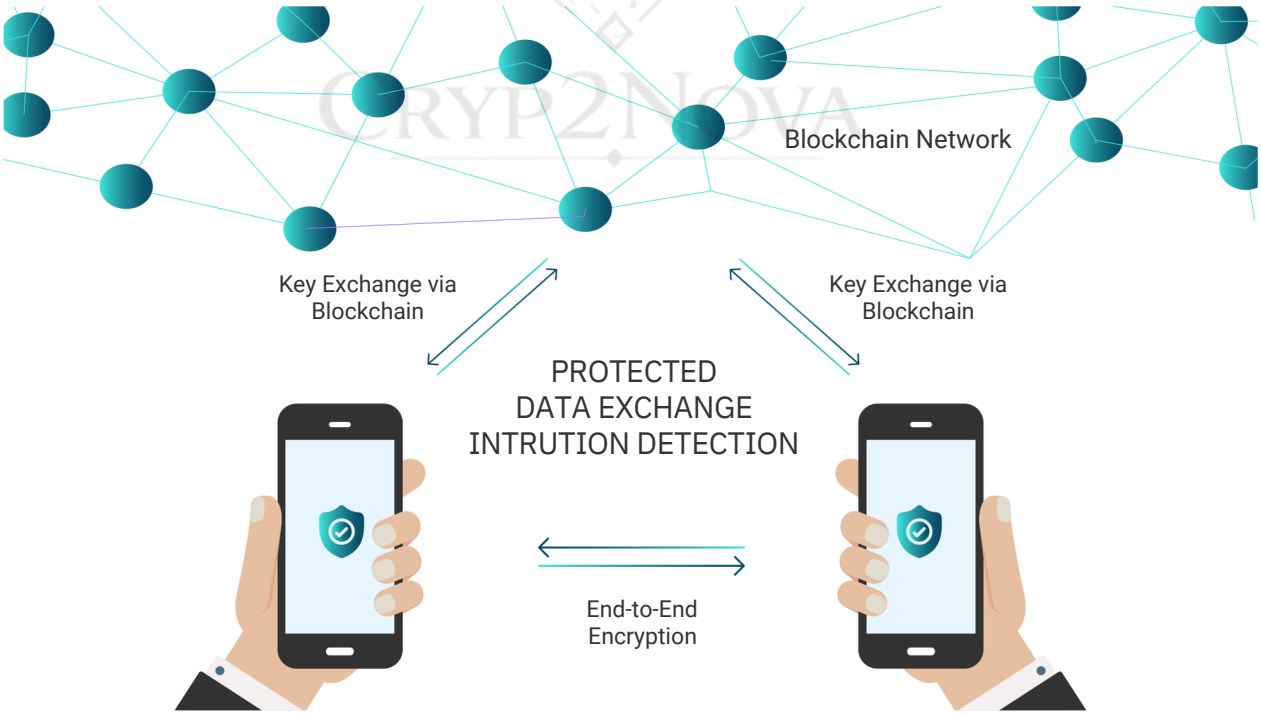
- Immutable: No one can tamper with the information on the blockchain.
- Faster and safer: It is more efficient than existing centralized payment methods.
- Transparent: No one has access to the data unless granted, and the transactions are traceable.

Therefore, it can also be used for the highly fragmented dental market, which includes various parties such as clinics, suppliers, dental health insurance providers, financial institutions, and manufacturers.

Dental records are currently maintained on a range of different systems and platforms, often resulting in clinical record inaccuracies. Due to the record's lineage, we can always trace back everything. Overall, everything is cryptographically secure, as only a hash is stored on the blockchain, with the data kept on a private server.

Conversely, the blockchain is not designed for storing data. Instead, we store a reference to that data, which we can pass along and choose which portions to share with selected individuals. Thus, although blockchain is not ideal for data storage, we are preserving a reference to the data on the blockchain rather than the data itself.

Furthermore, a paramount feature of the blockchain is interoperability, which provides a common infrastructure for sharing and transmitting data. This allows patients to digitally sign access to their records for one hospital to send to another hospital. The receiver can verify the authenticity, and the patient can choose what information they have access to, giving the patient overarching control over their data.



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Furthermore, there is a way to solve problems of poor connectivity, performance, and reliability within the dental and medical industry. The solution involves blockchain-based apps that connect users and providers directly. All these properties can be successfully used to overcome the current limitations of dental and medical software. Digital currencies are an excellent tool for fast transactions. Currently, digital currency payment solutions allow sellers to carry out transactions much cheaper and quicker than traditional payment systems. Another essential advantage is cross-border transactions. Traditional remittances are outdated, very slow (money transfers from one country to another may take days or even weeks), and expensive. Digital currencies are cheaper and facilitate almost instant global money transfers. This is especially convenient for patients who need unexpected dental treatment while traveling abroad.

3.4. Why Should the Dental Industry Switch to VAM?

The current monetary economic system does not cover the basic needs of individuals and makes it almost impossible to keep up with inflation. VAM aims to reduce the pressure from inflation and increase productivity for the medical community and patients.

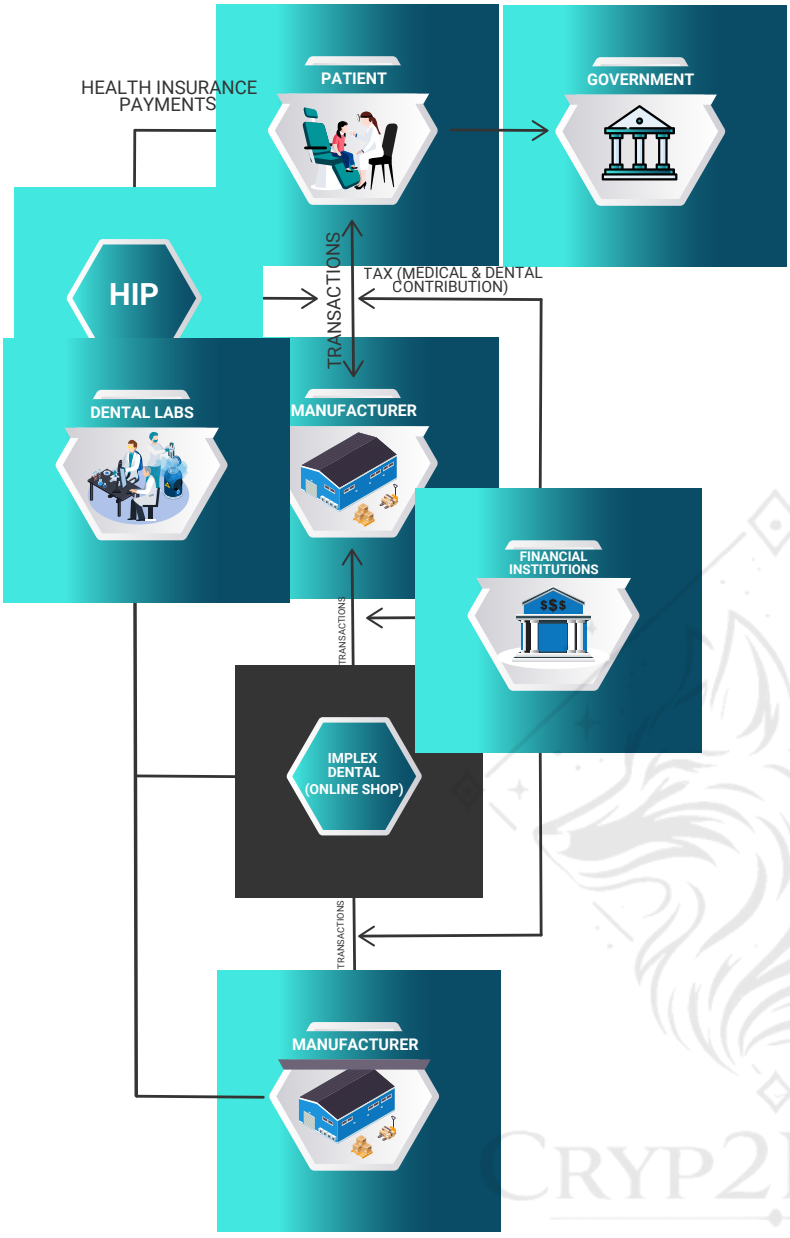
When a dentist purchases Vitalum, they have access to discounted dental supplies, and patients have access to affordable dental services. Increased adoption of the token will result in a rise in its value.

Critical characteristics of VAM include:

- Faster transaction speed and lower commissions compared to fiat solutions.
- 24x7x365 guaranteed uptime. The distributed nature of the network means there is very little chance of any downtime.
- Straightforward cross-border transactions. Using Vitalum, you will not pay additional fees for conducting cross-border transactions, which are carried out almost instantly.
- Vitalum is a sustainable digital asset, requiring minimal computing power and energy to be used. Vitalum is a BSC chain token based on “proof-of-stake” (POS) technology and not the energy-intensive “proof-of-work” (POW) technology.
- Vitalum fully guarantees transactions. The buyer receives the same amount of legal protection as they would when transacting with PayPal, Visa, Mastercard, iDeal, or SOFORT. As long as the coin is used for its stated purpose (the purchase of dental, cosmetic, and some medical services), the user is guaranteed that their money is entirely secure.

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3.4.1. Helpful Features for Patients



The app will facilitate access to online dental services 24/7, all year round. It will provide patients with medical consultation and advice in their native language at any time and place, regardless of geographical location, working hours, holidays, or other factors. Patients will be able to search for practices located close to where they live, including in remote villages. The app allows users to book and reschedule appointments online. Prior to scheduling an offline appointment, patients may arrange an initial teledentistry consultation with a dentist in their native language (where available). Additionally, the Vitalum app will be able to encrypt patient data (3-layer SSL) to ensure secure transfer and voluntary provision to third parties, such as pharmacies and HIPs (if required). The app will make it easier for patients to find available appointments within the ecosystem, even when overseas. Vitalum offers patients an estimate of the treatment cost in advance to prevent unpleasant surprises. This eliminates one of the most pernicious issues in healthcare: uncertainty over the cost of a dental appointment.

3.4.2. Helpful Features for Dentists

Online reviews have surely become a significant factor in determining the quality of any service or product. However, fraudulent and biased reviews have cast doubt on the quality of services or goods provided by certain suppliers or service providers. As a consequence, people's trust in such reviews is declining. Vitalum will address this issue by only allowing patient-identified reviews. These reviews will be securely verified through the implemented blockchain technology. With our app, dentists can be confident that only those who received treatment can comment on their experience. In addition, the Vitalum network will include a specialized marketplace where dental professionals can order materials and equipment. As previously discussed, the marketplace will facilitate an Affiliate Marketing (drop-shipping) model.

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The blockchain will provide an irrevocable document source regarding material quality, the supplier's sustainability practices, and work processes for all products used for patients, ensuring provenance (point of origin). Vitalum will offer access to training by facilitating dental professional webinars and online workshops. During the webinars, experts will cover a wide array of topics, including clinical errors of judgment, recommended materials and equipment usage, and how to present and perform complicated treatment plans to patients in the clearest manner possible. Furthermore, the Vitalum app will aggregate industry-relevant news and events on one platform.

3.4.3. Efficiency for Dental Clinics

By using the Vitalum network, significant savings are realized for dental clinics, as no such platform exists yet. At this stage, we estimate a high improvement rate in the cost base for dental practices, translating to an increase in net profit. Additionally, Vitalum (VAM) makes manufacturing more accessible for dentists and creates discounts for patients.

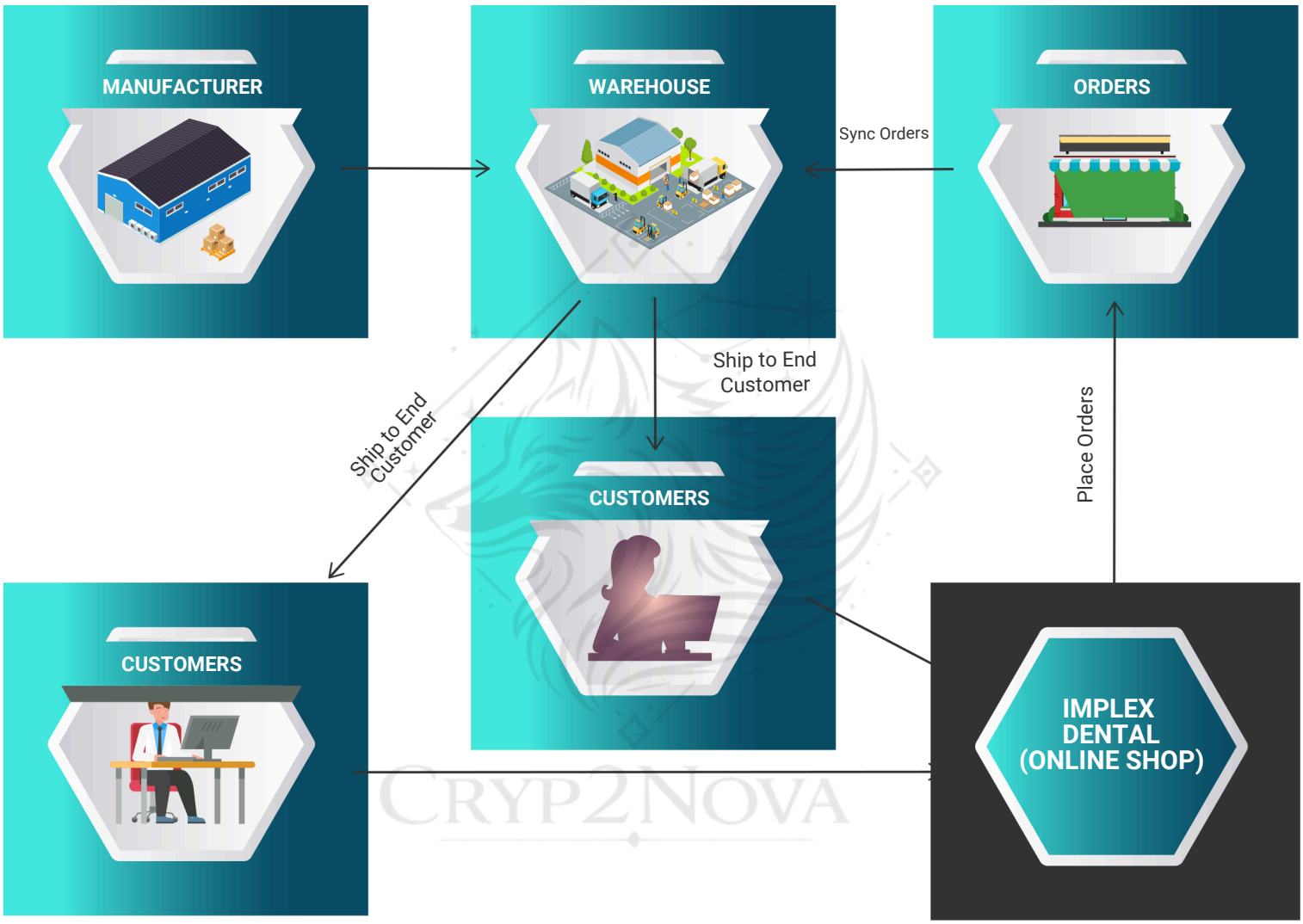
3.4.4. Cash-Back Incentives

Patients are incentivized to use Vitalum and dental clinics in the network because of a 3% discount or cash-back incentive scheme. The discounts are accessible within the patient's digital wallet immediately and can either be used for further services or cashed out in fiat currency.
If customers opt to cash out to a fiat currency such as EUR or USD, the cashback will be given in Vitalum tokens. If they want fiat money, they may exchange it using the platform, and credit will be instantly provided to their wallet as Vitalum tokens.

3.4.5. Manufacturer Engagement

Manufacturers may initially be skeptical of the new system; however, they are seeking an alternative to traditional supply chain channels to sell directly to businesses. They can maintain profit margins on the sale of goods while also placing their goods on a platform as long as they meet stringent quality control mechanisms. We are currently engaged with manufacturers worldwide who are eager to join the platform upon its impending launch. With Vitalum and an online website for B2C (business to consumer) sales of their products, manufacturers have another safer alternative for medical professionals than the existing system. Additionally, manufacturers can engage with affiliate marketers for dropshipping as an alternative and more efficient manner for delivering heavy medical machinery and medical software.

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Manufacturer Engagement

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4. VITALUM
Products



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4.1. Vitalum Staking

Cryptocurrencies based on Proof-of-Stake allow users to participate in validating transactions by committing a certain amount of coins to the VAM wallet on our platform and receiving rewards. This process is referred to as staking.
Vitalum is based on BSC, which has noticeably lower gas fees than Ethereum. Due to these low gas fees, there are no fees for staking money into and from the wallet. This enables patients to transfer money without incurring any fees, stake it whenever they desire, and receive incentives from it. Additionally, users may withdraw the investment plus the incentive when they need medical care or to make a purchase.
There are different staking packages that offer various incentives depending on the length of the staking agreement. To begin staking, participants should follow the steps below:
1. Sign up with the Vitalum dashboard
2. Start staking with a deposit of Vitalum
3. Withdraw at the desired time and stop staking
Participants may always cancel the staking agreement and spend the funds for other expenditures such as rent, petrol, and other living expenses by utilizing credit cards. This gives participants autonomy and control over their money, ensuring that they are always protected and able to utilize it for non-medical reasons if necessary. In the case of early termination of the staking contract, the amount of staking reward received by the participants will not be as stated in the agreement since the contract period is not completed; however, no extra fees need to be paid for early termination.

4.2. Vitalum Card

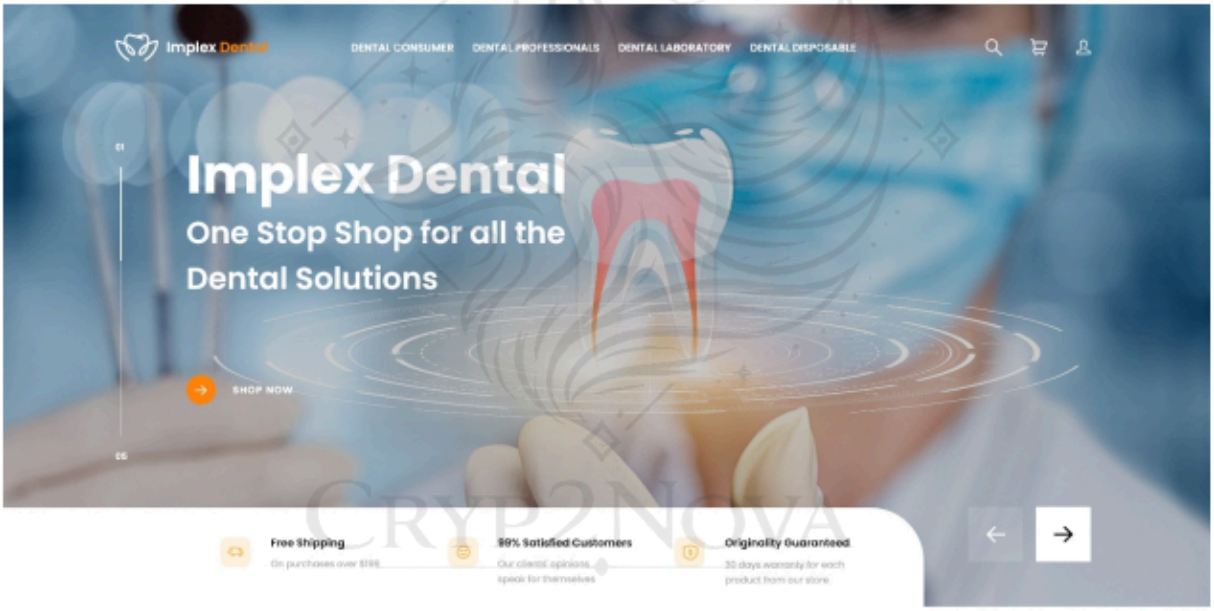
The Vitalum card is a prepaid card that can be topped up through bank transfer, cryptocurrencies, and other cards. This card can be used anywhere a Visa card is accepted, and users receive cash-back with every purchase they make. Owners of the Vitalum card can take advantage of many other benefits, including dental, medical, and travel insurance, access to numerous facilities worldwide, membership to exclusive clubs, and subscriptions to various applications.
One of the most distinct and beneficial features of the Vitalum card is the insurance package that comes along with it. The insurance feature includes two distinct types of insurance; dental/medical and travel insurance. Owners of the Vitalum card will have access to both types of insurance regardless of their location.
Moreover, users of the Vitalum card are able to send money to anyone they wish, without the need for the recipients to have an Vitalum account.
The process of applying for the card is straightforward and includes the following ste ps:
1. Sign up with Vitalum
2. Start staking without any required minimum amount

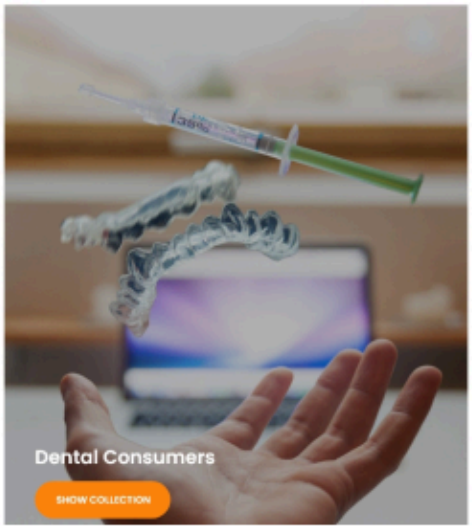
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3. Withdraw at the desired time
It is worth mentioning that once the card holder decides to stop staking and withdraws all the staked amount, access to all the exclusive features will also be stopped.

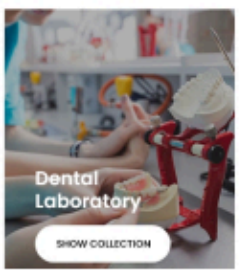
4.3. Online Shop

Overall, a crucial component of this initiative is the concurrent creation of an online store with dentistry supplies, materials, and tools that can be purchased using VAM or Implex. Our app will include the function of a simple-to-use digital wallet. The wallet will be able to track your coins and also be used for transferring the token. This online store/e-commerce gateway enables the ecosystem's transactions to be processed more quickly. Increased transactions and usage will enhance the value of the utility token, i.e., VAM. With enough transactions, the ecosystem's size will expand, creating further opportunities for investment, commerce, and corporate organizations. The webshop will be launched shortly, and any interested individuals are invited to view the online shop at:
https://implexmedicalshop.com/











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5.1. Telehealth and Telemedicine

5.1.1. What is Telehealth? Numerous facets of human existence, including health and medicine, have seen
an increase in the influence of technology. Telehealth is a paradigm that refers to the combination of medicine and technology to provide access to dentistry and other medical services and information. It has significantly enhanced and streamlined the delivery of medical assistance and information to the public.
As well as improving the delivery of medical support and information, telehealth has made it simpler to get second opinions on diagnoses online. Everything can be recorded and traced, therefore, there is no possibility of fraud, and you can always trace everything back to its source.
Technologies such as the internet, mobile phones, and computers make it much easier for individuals who need medical care or information to access these needs. Access to medical care has always been an issue in many parts of the world, especially in rural areas with limited access to medical facilities, doctors and equipment.
So far, Telehealth has had and will continue to influence access by enabling patients and physicians in these locations to access various types of medical treatment and information. Along with increasing access to medical services for patients with restricted mobility or access, telehealth offers the ability to improve communication between all persons and their healthcare professionals.
On top of providing better access, telehealth can significantly decrease the cost of providing medical care to patients. During the Covid-19 pandemic, the importance of this topic was brought to the attention of many healthcare providers and patients, since it was not possible for them to meet in person most of the time.

5.1.2. What is Telemedicine, and How is it Different from Telehealth?
While the terms telehealth and telemedicine are sometimes used interchangeably, they do have different meanings. Telemedicine is a subset of telehealth and refers exclusively to clinical services delivered over long distances. In contrast, telehealth encompasses a broader range of services, both clinical and non-clinical, such as medical education, webinars, meetings between doctors and other healthcare professionals, and health promotion..

5.1.3. How is Telehealth Beneficial? There are many ways in which telehealth can benefit practitioners and patients,
some of which are mentioned below:
Having online and virtual appointments
Allowing doctors to communicate with each other remotely, share medical data, and come to mutual decisions and solutions
Making it easier for patients in remote areas to access online health and medical services
Reducing the cost of providing medical help and information
Allowing healthcare providers to monitor patients throughout their treatment or healing process

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5.1.4. Telehealth, Telemedicine and Vitalum

To address the concerns described above, Vitalum enables equitable and straightforward access to dental services and information for patients and dental professionals worldwide via the use of technology and blockchain power. Through this app, patients can book online appointments, communicate with their dentists online, get second opinions from other practitioners, and safely share their dental health information with their dentists. Furthermore, it als allows dentists to communicate with each other, share patient data if needed (with the patient's permission), and access advanced education in their field. Vitalum is not limited to telemedicine since it also serves as a platform for sharing information and education for dental professionals in many different forms, such as webinars. Therefore, the Vitalum app serves a wide range of

5.2. The Core Application

5.2.1. Integration The Vitalum app integrates with existing platforms and payment portals and
provides payment options for digital currencies with added discounts. The app facilitates the conversion of fiat currencies such as USD and Euro to VAM and vice versa in a seamless and simple manner. Stakeholders, i.e., patients and dentists belonging to the partner network, will be able to interact with the app at all times. To use the app, KYC/AML verification of a credit card or bank account is

5.2.2. Practice Level Functionality

The app facilitates telemedicine appointments (which will be a feature in a later version of the application) while allowing only trusted and verified reviews from patients who have received treatment. It is impossible to leave reviews if no service or treatment has been received.
It will also allow for the creation of e-invoices and the receipt of payments through standard payment gateways (Visa, Mastercard, PayPal, wire transfer, iDeal) or directly through VAM or via our in-platform currency.
Another important function of this app is the secure method of transferring patient records utilizing either proprietary software or partnering with existing providers, which will encourage and facilitate paperless administration.

5.2.3. Supply Chain Integration

As for supply chain integration, the app allows fast and low-fee settlement processes in fiat or Vitalum platform currency (VAM), while enabling faster and lower-fee cross-border settlements in the case of dental tourism.

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5.3. Artificial Intelligence

The dental industry is constantly evolving, and the use of Artificial Intelligence (AI) is becoming increasingly prevalent in this field. Early detection and diagnosis of dental diseases are crucial for effective treatment and preventing more serious oral health issues. Unfortunately, traditional methods of diagnosis often rely on visual inspections by a dentist and may not catch diseases in their early stages. This is where our proposed dental disease detection software comes in. Using the latest advances in artificial intelligence and intra-oral images, our software aims to assist dentists and other practitioners in the early detection of dental diseases, improving patient outcomes and the efficiency of dental care. We aim to revolutionize the dental industry by utilizing data in a "collective brain" to provide instant consultations to patients.

5.3.1. Functions For Patients

The objective of this proposal is to develop a system that utilizes AI to analyze photos of teeth and provide instant consultations to patients. The system will also provide information on different treatment options, including cost and duration. The system will be designed to work as follows: Patients will take a photo of their teeth and upload it to the secure cloud- based collective brain. The AI system will analyze the photo and identify any issues, such as bleeding gums or misaligned teeth. Based on the analysis, the system will provide information on different treatment options, including cost and duration. The system will also provide before and after images of the treatment options to give patients a better understanding of what to expect. Patients can take a photo of their teeth and receive an instant consultation prior to their visit to a dental practice. The system will provide a number of benefits to both patients and dentists. Patients will be able to get instant consultations and a better understanding of their dental issues, which will help them make more informed decisions about their treatment options. Dentists will also benefit from the system, as it will help them provide more accurate and efficient consultations to patients. By utilizing photos in a "collective brain," the system has the potential to improve the patient experience and provide dentists with more accurate and efficient consultations. No software currently offers this capability. **Key Features:** Automatic Detection of Dental Issues: The system can detect certain dental issues such as deep fissures, white fillings, black fillings, calculus, stains, decay, cavities, molars, amalgam fillings, impactions, or ortho mini screws. These detections would be made by the patient taking a picture of their mouth, with the AI highlighting the detected issues. Predictive Analysis: Building on the detected dental issues, the AI would then provide recommendations for preventative measures.
Treatment Planning: Once predictive analysis has recommended preventative measures, the collective brain would advise on different possible treatment

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options and even provide details of nearby registered dentists on the Vitalum network, including costs and duration.

5.3.2. Benefits for Patients Early Detection: By using the software at home, patients can take intra-oral images and have them analyzed by the software before visiting the dentist. This can allow for early detection of dental diseases and prompt treatment before they become severe. Time and Cost Savings: By catching dental diseases in their early stages, patients can avoid unnecessary visits to the dentist, saving both time and money. Empowerment: By having the ability to take intra-oral images and analyze them at home, patients are empowered to take control of their oral health and become more engaged in their treatment process. Remote Monitoring: The software can be used in tele-dentistry, where patients can take intra-oral images at home and send them to the dentist for analysis. Dentists can then remotely monitor the patient's oral health and provide guidance and recommendations for treatment if necessary. This is especially beneficial for patients in remote or underserved areas, as well as for patients with mobility issues, providing them with greater access to care. Increased Accessibility to Dental Care: By using the software at home, patients can potentially have oral problems detected early, reducing the need for complex and costly treatments and surgeries, making dental care more accessible to all. Improved Communication: The software allows for an efficient exchange of information between patients and dental practitioners, leading to improved communication and collaboration in the treatment process, ultimately improving patient outcomes 5.3.3. Functions For Dentists Our proposed solution is a dental disease detection software that uses artificial intelligence (AI) and intra-oral images to assist dentists and other practitioners in the early detection and diagnosis of dental diseases. The software utilizes various types of intra-oral images such as X-rays and digital photographs, running them through AI algorithms for image analysis and disease detection. These images are pre-processed and augmented to improve the performance of the AI algorithms and increase the accuracy of the diagnosis. The software architecture is designed to be user-friendly and efficient, ensuring easy adaptability. Software Features and Functionality The software is trained on a large dataset of images and evaluated using various metrics to ensure high performance and accuracy. It is designed to work with different types of dental diseases, such as cavities, periodontitis, and other oral conditions. In addition to providing diagnoses, the software also

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Benefits of the Proposed Solution

Efficiency and Accuracy: On average, analyzing a CBCT (Cone-beam computed tomography) scan can take up to 30 minutes for a specialist in oral radiology. This incurs costs for the practice and delays in providing patients with accurate diagnoses and treatment recommendations. Vitalum's AI system significantly streamlines this process, generating radiological findings for 2D images within 10 seconds and for CBCT images within 4-6 minutes. This quick screening tool for common dental findings allows dental professionals to spend more time discussing treatment plans with patients, providing more accurate and faster diagnoses.

OPG, X-Ray, and CBCT Inputs: The system can create detailed dental charts that show the location and severity of dental issues by uploading an OPG file. The AI can create a dental chart while recognizing missing teeth, highlighting healthy, previously treated, and unhealthy teeth along with AI-generated findings. Detection of dental diseases can also be performed on intraoral X-rays. The AI diagnosis for dentists includes understanding CBCT and representing each tooth in a multiplanar view, showing possible detected dental issues.

Use Cases

Early Detection of Dental Caries: The software uses AI algorithms to analyze intra-oral images such as X-rays or digital photographs to detect early signs of dental caries (cavities) before they are visible to the naked eye. This allows dentists to take early preventive measures and prevent the progression of the disease.

Periodontal Disease Diagnosis: The software analyzes images of the gums to detect early signs of periodontal disease, such as inflammation or bone loss, before symptoms become severe. This allows for earlier intervention and improved treatment outcomes.

Oral Cancer Detection: The software can be trained to detect signs of oral cancer in intra-oral images, such as abnormal growths or discoloration, assisting practitioners in the early diagnosis and treatment of this potentially life-threatening disease.

Facilitating Orthodontic Treatment Planning: The software can analyze intra-oral images to help dentists plan the treatment of malocclusions and make adjustments to the treatment plan based on the patient's condition.

Improved Efficiency and Convenience: The proposed software helps dental practitioners diagnose diseases more efficiently and accurately by providing detailed visual aids and image analyses. This enables practitioners to make more informed decisions, save time and resources, and improve patient outcomes.

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Remote Monitoring: The software can be used in tele-dentistry, allowing patients to take intra-oral images at home and send them to the dentist for analysis. Dentists can then remotely monitor the patient's oral health and provide guidance and recommendations for treatment if necessary. This is especially beneficial for patients in remote or underserved areas.

Report Generation: Our proposed AI system not only provides quick and accurate radiological findings but also generates comprehensive reports in PDF format. These reports make it more convenient for dental professionals to share diagnoses and treatment recommendations with patients, ultimately increasing patient acceptance. The PDF reports are well-explained and easy to understand, helping patients better grasp their diagnosis and recommended treatment options. This will lead to higher acceptance of treatment plans and improved patient outcomes. Additionally, these reports can be easily shared with other healthcare providers or insurance companies, streamlining the treatment process and saving time.

5.4. Education and Training

Vitalum will transform the delivery of education and training to dentists globally. Traditional education models, such as university programs, may struggle to keep pace with the rapid technological advancements in the dental industry. Vitalum provides an accessible platform for dental education through webinars and online training, ensuring high-quality education is available to professionals worldwide.

Educators and professionals can provide and receive online courses and webinars via the Vitalum application. The use of AR glasses and other AI gadgets will facilitate online education and learning, making it more interactive and effective.

5.5. Web 3.0 Based Digital Identities and Verified Credentials

Secure Document Management with Blockchain

Numerous documents belonging to organizations or individuals require protection, privacy, and authentication verification. Vitalum employs Verifiable Credentials (VC), a blockchain-based cryptography-enabled technology, to instantly verify and make any document tamper-proof. Decentralized identity management enables users to create and manage their own digital identities independently of a particular service provider. Web 3.0 emphasizes ownership, allowing people to genuinely own their valuable IDs and documents and regain control over their data on the Vitalum platform.
Blockchain and Web 3.0 Integration

Blockchain technology is a key element of Web 3.0, which is based on decentralization. The blockchain network foundation allows for open, decentralized, and secure transactions. Vitalum enhances the Web 3.0

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ecosystem by leveraging Decentralized Identity and Verifiable Credentials (VC) technology, helping users understand true ownership of their data. Vitalum makes users' documents, certificates, and credentials digital, tamper-proof, and instantaneously verifiable. With this technology, people can genuinely own their most critical papers and reclaim control over their data.

Virtual Reality and Decentralized Identity

On the Vitalum platform, Web 3.0 enables users to access medical events and dental expeditions virtually, without the need for physical presence. Vitalum will issue certificates to participants who take part in webinars and educational programs on this platform. These certificates, stored as Verifiable Credentials (VCs) in a digital identity wallet, are secure, self-owned, and reliable. Users can take charge of, store, and manage their identities and data via decentralized identity systems, controlling how, when, and with whom they disclose their data.

Verifiable Credentials and Digital Identity

Verifiable Credentials are cryptographically signed digital documents that can be quickly verified and validated based on the identity and reliability of the issuer. VCs can demonstrate your identity, skills, and accomplishments, ensuring that the file was not altered or falsified. These certificates can be traced back to the issuer, held in the holder's wallet, and verified by any party requiring certification, such as employers and educational institutions.

By integrating these advanced technologies, Vitalum aims to revolutionize dental healthcare, education, and document management, ensuring secure, efficient, and accessible solutions for all stakeholders involved.

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6. VITALUM
Features & Functionalities



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6.1. Implex Protocol: Better Than Insurance

6.1.1. Independent

Implex Protocol aims to address the shortcomings of the current medical and dental insurance systems, such as high costs, expiration dates, and limited coverage options. Implex offers two different plans to provide more flexibility and benefits to patients.

Prepaid Plan with a 3% Discount:

Patients can load their accounts with funds to use for dental services at a discounted rate. This plan eliminates the need for traditional insurance companies, which often require higher premiums for greater coverage options and impose penalties for delays in payment.
Moreover, with Implex, unlike regular insurance, there are no insurance companies selling policies for only a limited amount of choices when it comes to coverage.
To get more alternatives and greater coverage with traditional insurance, larger premiums must be paid in comparison to ordinary insurance plans, which may be costly to those who may need it. In addition, if a delay occurs, a penalty must be paid.

6.1.2. No Monthly Payments

Patients are not required to make regular monthly payments. They can skip payments if they do not need or cannot afford them. When planning for a specific service, such as dental implants, they can add money to their wallets as needed or save up over time. Saving money in this method enables idividuals to save more money since they have the option of staking and earning rewards. This permits them to save the required amount more quickly since the incentive is also added to their savings.

6.1.3. No Medical Debt to Doctors

Implex benefits dentists by ensuring that services are only provided when the patient has sufficient funds in their wallet. This eliminates the need for billing and follow-up payments, reducing administrative work and preventing patients from accruing medical debt.

6.1.4. No Geographical Limitations

Having access to dental and medical insurance and services in different areas of the world is a major issue of the current insurance system. Traditional insurance plans often have geographical restrictions, limiting coverage to certain areas or countries. Implex allows patients to access treatments worldwide, mitigating this issue and providing greater flexibility.

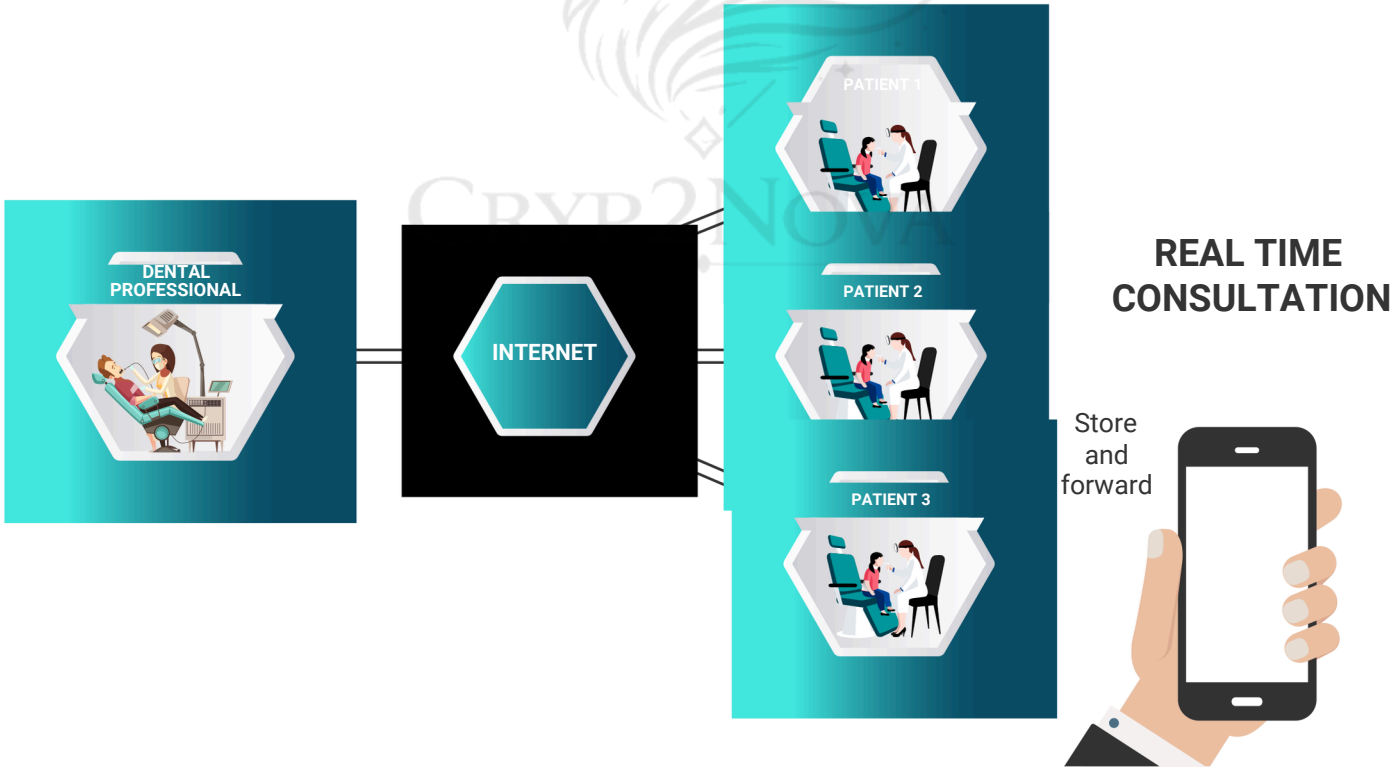
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6.1.5. No Expiry Date

One of the significant flaws of the traditional insurance system is that at the end of each year, patients lose the opportunity to use whatever is left from their insurance money, and the remaining amount is not transferable to the following year. Therefore, they lose the money if they don't get the chance to fully use it within one year. Furthermore, many patients are unaware of this fact and wind up losing their money at the end of the year without realizing they can no longer utilize it. However, with Implex, there are no temporal constraints, and the proceeds may be spent at any time.

6.1.6. No Waiting Time

With most dental and medical insurances, in some cases, patients have to be on waiting lists for several months to get access to the services they need, which are covered by their insurance. This waiting time can be even longer in some instances. Unlike traditional insurance, where patients need to be in long queues, with Implex, they do not have to waste any time waiting to receive their desired service or treatment online. This access is given through our telemedicine platform. The Vitalum platform will include an extended network of collaborators and service providers in the near future, and through these collaborations, online consultations on different topics can be provided at all times with no waiting time. This telemedicine function can be extended to further medical fields as well. All of these communications between medical professionals and patients are done through AI. AI is able to collect and keep information based on these online interactions and improves its functions based on the collected data. In the near future, we might even reach a point where AI for online and telemedicine services can replace medical professionals.



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6.1.7. All-Inclusive

There are limitations to the kinds of services the insurance plan covers with normal insurance systems, depending on the patient's type of insurance plan. For instance, some treatments are often not covered by the standard plan and can only be covered if the patient has supplemental insurance. Even with supplemental insurance, there are limitations at times. For example, if the patient has a history of certain medical conditions, they cannot make use of this type of insurance. With Implex, there are no restrictions regarding who and what services will be covered, and all patients can use it for any service they want regardless of their medical background and needs.

These services include, but are not limited to, preventive oral examinations such as cleanings, adult/child fluoride, sealants (permanent molars only), bitewing images, and full mouth series images; basic treatment, such as metal porcelain crowns, incision and drainage of abscess, uncomplicated extractions, denture repairs, surgical removal of erupted tooth, surgical removal of impacted tooth (soft tissue), root canal therapy of anterior teeth/bicuspid teeth, scaling and root planing, gingivectomy, space maintainers, amalgam (silver) fillings, composite fillings (anterior teeth only), general anesthesia/intravenous sedation; and major treatment, such as root canal therapy of molar teeth, osseous surgery, surgical removal of impacted tooth (partial bony/full bony), crown build-ups, implants, inlays, onlays, crowns, crown lengthening, full and partial dentures, and pontics.

All aforementioned reasons make the Implex protocol a revolutionary, unique, and beneficial innovation. To use this function, patients need to swap their tokens, which will be equivalent to the value of USD or EUR at any present moment. Therefore, it has real value anytime they decide to exchange it. There will be a button on the Vitalum App that will allow patients to make this swap easily, quickly, and safely by leading them to the Implex website: ***www.****Vitalum****.io*** The second plan is similar to the first one in most ways, except for the fact that a

fixed amount is automatically deducted from the patient's account. This amount can be used at any point in time for the desired dental treatments with a higher discount than the first plan. Another benefit of this plan is the possibility to use all the paid monthly amounts with no deadline in case there is a need for dental treatments, meaning the patients can use all of the money they paid even years after for their desired treatment. However, if the patients fail to pay the monthly amount, the plan is canceled, and the contract is no longer valid. The cancellation is made possible through the use of SBT smart contracts. In addition to making it possible for us to retract the contract in case of payment failure, SBTs are non-movable, which means they cannot be transferred by anyone other than the provider of the contract.

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6.2. A possible Alternative to Pension Funds

Inflation is an inevitable component of all economies, regardless of time or location. With inflation continuing to rise, conventional pension plans are no longer relevant since the rate of inflation is far quicker than the wages of dentists, or anybody else for that matter. Pensions are never calculated with inflation; therefore, the money that dentists or other workers save will not be considered when they actually want to use it because of inflation.

So, what is a possible solution? Staking money and having complete control over it. Staking in our system gives the participants an opportunity to be ahead of inflation. With Vitalum, the participants gain up to 8.5% annual Percentage Yield (APY), which is higher than the approximate 7.4% inflation in Europe or most likely the inflation rate in any other country across the globe. Therefore, they avoid being left behind and earn income as well. Vitalum allows the participants to have complete control and make an income through this new pension scheme. Through this scheme, we want people to be able to maintain the quality of life they wish to have against inflation.

A concern that may arise regarding this plan is the method in which we plan on keeping up with inflation. In order to do this, we have a package that consists of multiple activities that lead to the constant increase of the value of our token. The first activity is the investment in our MDU program in which the participants in the project get a 6.5% yearly incentive and earn rewards and help new mobile dental businesses to take off. The other activity which contributes to the increase in our value is investing in fungible dental clinics tokenized to numerous small ownership stakes, making it possible for everyone to have a small share in these clinics.

Dentists and many other individuals spend their whole careers putting money into their pension plans, in return for promises that are not even kept in many cases. Pension fund plans are long-term commitments, which cannot be terminated without consequences. Not only does terminating them cause great financial loss, but recommitting to a plan and making a new contract also costs a lot more than most individuals can afford. Therefore, it can be said that people have no control over the money they work their whole life for and no freedom to choose what they want to do with it.

However, even if the dentists or other employees keep their commitment to their pension plan, they will have no guarantee of receiving pension payments in the future that keep pace with the high rate of inflation despite all the years of working and paying for it.

For the first time, Vitalum offers an alternative to traditional pension funds, one which does not involve any corporations but instead aims to give freedom of choice and control back to the people. This project is made with the sole purpose of solving the problems of a flawed pension system. By using Vitalum, dentists and other individuals have the freedom to freeze and unfreeze their money as they please and without having to pay hefty amounts of money for withdrawal or making a new contract 24/7. They are in full control, and they can decide how and when they want to step out, with no need to seek permission from any organizations or third parties. Through having this freedom, people can make any investments they want with their money, at any time and any place.

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With the emergence of the Covid-19 pandemic and its impact on the economy and unemployment rate, the need for such a life-altering pension plan significantly increased. After the pandemic crisis, great amounts of debt have been taken on by governments, leading to financial repression. One form of financial repression is accessing captive funds such as pension funds. Pension funds are an appealing target due to the aging of the worldwide population and therefore increase in their assets. In the long term, this problem could lead to reduced retirement income, therefore making pension funds less than desirable. We believe this project can bring positive change to the lives of many people and allow them to freely invest and enjoy the money that they work their whole life towards.

6.3. Just In Time (JIT) Inventory and Stock Control

With the ability to accurately track inventory and stock, we can formulate just-in-time (JIT) systems and processes, so there is minimal inventory storage. Stock control will be automated and simplified, hence dental clinics only need to use as much as they need. Dental clinics, supply centers, and manufacturers currently have huge amounts of under-utilized and underused inventory.
A similar argument may be made for the enormous quantities of equipment and consumables in storage, underused, and unnecessary. In due course, the Vitalum project will witness an improvement in these inefficiencies, resulting in creating "capital" inside the system that was previously unavailable to it. This will only increase the number of resources available to treat more patients at a higher level of quality in the future.
Through such systems, both manufacturers and clinics are able to keep track of their inventory, the number of items, and their expiry dates. In this way, clinics will have data on when they are running out of certain products or if certain products are reaching their expiry date. This data is also beneficial for manufacturers as it will give them a good estimate of the demand and will therefore help them predict the amount of production needed.

6.4. Improved Patient Data Recording and Privacy

Past statistics reveal that one in five patient records are not accurately matched even within the same health care system. Blockchain allows the accurate and irrevocable storage of patient records and data. Furthermore, the P2P nature of the ledger allows the viewing of records to be tracked so patient privacy and confidentiality can be maintained, i.e. no one can look at your record for any other purpose except for the implicit reason of improving your dental or medical health

5) McMahon, T. (2022, May 21). Worldwide inflation by country. InflationData.com. Retrieved June 13, 2022, from https://inflationdata.com/articles/2022/05/21/worldwide-inflation-by-country-2022/

6) Enhanced patient matching is critical to achieving full promise of Digital Health Records. The Pew Charitable Trusts. (2018, October). Retrieved June 16, 2022, from https://www.pewtrusts.org/en/research-and-analysis/reports/2018/10/02/enhanced-patient-matching-critical-to-achieving-full-promise-of-digital-health-records

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6.5. Privacy Protocol and Self-Sovereign Identities (SSI):

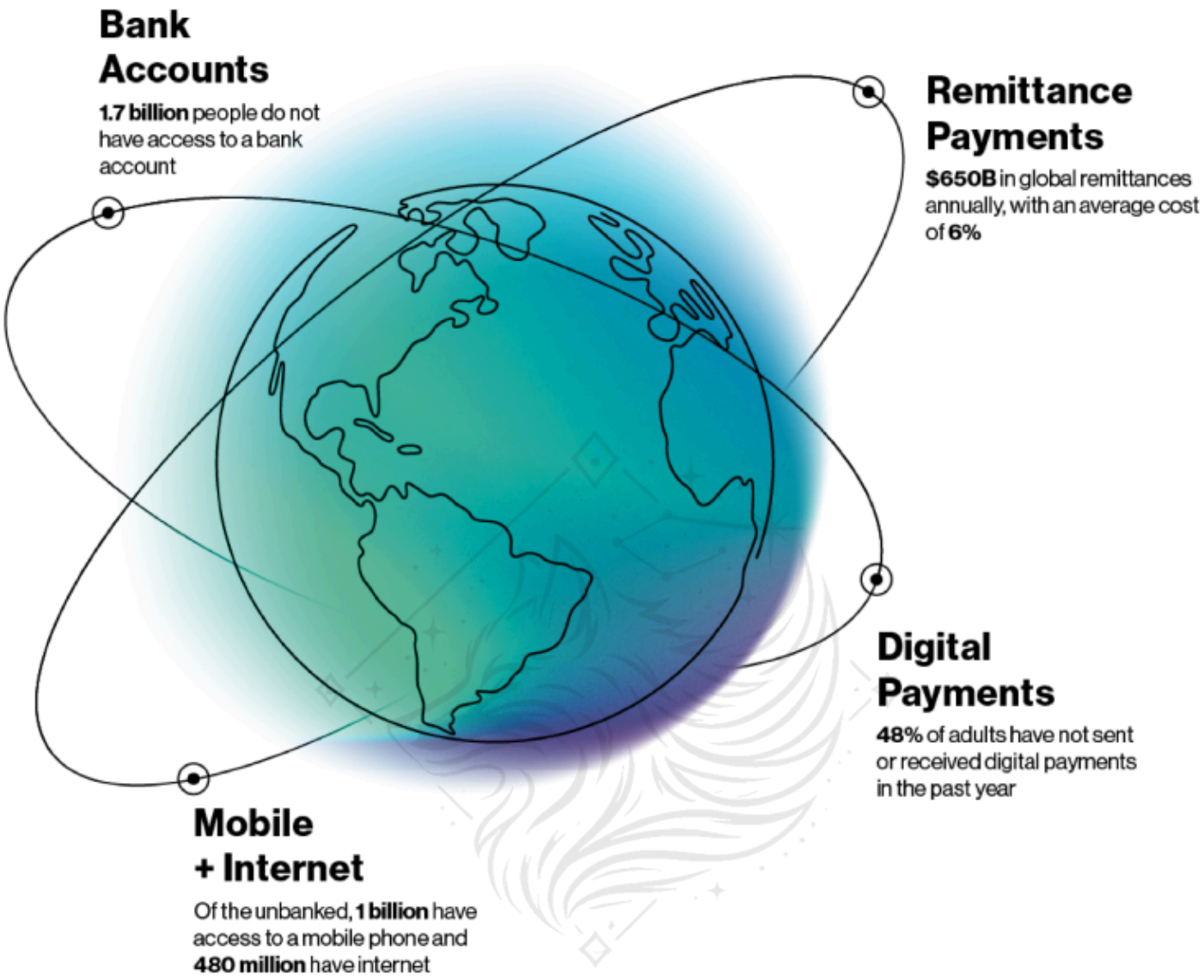
The main idea of our privacy protocol is based on Self-sovereign identities (SSI), which means that every user is given a digital identity which they can manage without the involvement of third parties or central entities. Each self-sovereign identity can issue claims on another identity, an organization, a person, or a system. There are multiple characteristics of SSI that allow users to have control over their digital identity:

- SSI Credentials can not be tampered with.
- Peer-to-peer exchange of credentials, without the Self-Sovereign Identity system provider having any knowledge of what is being exchanged.
- They are private, meaning that the ID owner is in control of what personal data they share and who they share it with; they even have the freedom to choose which part of their data they want to share
- No downtime
- No geographical limitations, SSIs can be verified anywhere and anytime.
- Personal data is not stored in centralized servers, which means it is much less likely and much more difficult to get hacked.

6.6. Defi lending and Smart Contracts

Another innovative development of the blockchain is DeFi or Decentralized Finance lending, which is an ecosystem of financial peer-to-peer decentralized applications built on blockchain. Vitalum aims to leverage the innovation provided by DeFi lending platforms because owners of cryptocurrencies are able to lend their crypto assets from anywhere in the world and receive interest in return. To get the loan, the borrower must make an initial deposit on the DeFi lending platform.
Unlike traditional centralized financial systems, DeFi lending functions without third parties or intermediaries such as banks. Moreover, it is not controlled or accessed by any central authority or third party. A smart contract is put in place to facilitate the execution of the contract, hence the lack of need for third parties and intermediaries. Smart contracts are basically computer codes on a blockchain that store, validate, and execute the rules and terms of a contract.
Accordingly, Vitalum implementation of smart contracts mitigates the risks inherent in lending and borrowing on DeFi platforms. As with any loan, the borrower must submit collateral, which is then frozen and not returned until the loan is repaid in full, including interest.
We will make use of SBT (Soul bound Token) smart contracts. What distinguishes SBT smart contracts is the fact that they can be retracted from the client in case the payment does not go through.
DeFi lending will be made possible through the Vitalum App, which means the presence of third parties, high amounts of tax, and lengthy procedures associated with normal lending systems will be eliminated.

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Blockchain technology eliminates the need for a third party to facilitate digital money transfers. Since its inception, additional technological development has enabled the use of "smart contracts" to quantify transactions and predefine deal criteria, thereby preventing anybody from backing out of the negotiated "contract" without exchanging any compensation. The world of Web 3.0 is moving towards becoming multichain, and numerous products are being designed and built to facilitate this transition. Ethereum is the main infrastructure for DeFi lending mainly due to its safety and privacy features. However, there are some problems regarding Ethereum, the main one being high gas prices. As a result, many projects have moved towards multi-chain platforms, which means they are able to rely on Ethereum's ecosystem without having the problem of high gas fees. Unlike Ethereum, multichain ecosystems do not impose gas fees on every single transaction. Therefore, they have more competitive costs compared to the Ethereum ecosystem. That is why Vitalum chose the BSC which will be discussed further in the paper.

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With the advancements of interoperable blockchains, investors in the DeFi ecosystem can exchange assets across different chains while having safe and flexible access to a multitude of DeFi protocols and liquidity.
For a project of this scale, we are not only cognizant of the ability to significantly improve the efficiency of the business model of dental and medical care, but we believe that we should facilitate access to dental and medical care for populations that were unable to afford it previously.
We believe that we can facilitate very low-interest microfinance and P2P lending for the financing needs of both:

1. Dentists and medical professionals interested in purchasing equipment and/or setting up fixed and mobile clinics.

2. Patients who are unable to afford basic level dental treatment.

This type of finance is currently available in the traditional markets but is very expensive. Through the P2P lending function of Vitalum, the patients and medical professionals keep all of their digital capital and the benefits of their digital assets without having to sell them, while still enjoying their crypto wealth. Therefore, our clients are provided with the opportunity to access instant cash while still holding their crypto assets.
In an ecosystem of this scale and scope, financing rates do not need to be more than 2-3%, and the business model would be based on the volume of loans rather than the quantity of the loans. Hence, we discussed microfinance and P2P lending for dentists and patients. However, we believe that we can facilitate the development of altruistic or philanthropic drives to facilitate dental care at very-low interest (VLI) rates.
The ultimate aim is to generate a new accessible platform for people who were previously unable to get dental treatment, particularly in developing countries. The sheer number of such transactions would, without a doubt, help to strengthen the ecosystem and allow the provision of dental services to people everywhere.

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6.7. Dentist Partner Network Effect

Dentists and medical professionals joining the Vitalum marketplace can showcase their business, establishing another source of new patients who can afford payment within an alternative system and collecting genuine and trusted reviews from their actual verified patients linked to individual profiles. M&E discounts will be available to dentists who are part of the network. As previously stated, eliminating intermediate cost structures allows dental operations to become more profitable. M&E vendors must have regulatory clearances and independent quality control processes in place before being included in the marketplace. We are committed to guaranteeing that substandard items do not get through border checkpoints without being subjected to stringent quality control procedures. Direct shipping of products to participating clinics improves the supply chain's efficiency and the delivery of supplies and equipment.

6.8. Supply Chain Improvement

Quality Assurance (QA), Quality Control (QC) and Guarantees on Materials and Equipment:
Blockchain technology can be integrated with existing product and goods tracking mechanisms, which will provide proof-of-origin (provenance) to guarantee that dental laboratories can track dental materials, equipment, and even raw material consignments for dental laboratories in the Vitalum network. We only ship products that are sourced ethically and obtained through fair-trade relationships. Quality control can be assured with ISO certification, FDA approval certificates, and other types of documents being stored and linked to the product. Track and trace can be provided, and provenance can be followed up on the Vitalum platform.
On explicit request, this information may be made irrefutable, transparent, and publicly accessible to patients and authorities such as regulatory organizations. The same software tool that will be used to monitor Vitalum's movement around the ecosystem will be used to track items.
Improved material control methods will also be established via the use of blockchain technology, which will be used to monitor which materials were used on which patient at what time. This also can be tracked through the App, which will help with solving issues such as allergies to different materials.

6.9. Secure remote Transaction Ability

In the beginning, the Vitalum token was planned to be based on Ethereum, but with the fast blooming of BSC and its advantages over Ethereum, it was decided to be based on BSC. BSC has been highly successful due to the following qualities:

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Affordable transactions - The significant reduction in the fees associated with on-chain and off-chain activities is without a doubt the deciding element that motivates developers and consumers to switch from Ethereum and other smart blockchains to then BSC. When there is a lot of traffic on the Ethereum network, the cost of the identical transaction on Ethereum may be nearly a thousand times higher than the cost on the BSC Blockchain. In addition, the cost of a gallon of petrol on BSC is quite consistent. Since the genesis block, the typical transaction cost has remained constant at about 0.15 bitcoins. On the other hand, Ethereum sees significant swings in gas price, with spikes reaching over $100 for a typical transaction during peak periods of network congestion. These spikes may last for several hours. The cheap cost of transactions on BSC is this chain's greatest strength.

Bridging - makes token movement simpler and more convenient - Developers have created many cross-chain bridges so that users of the BSC Blockchain may effortlessly transfer tokens from one blockchain network to another. Over 40 different coins are now supported by the BSC Bridge. This makes it possible for users to easily transfer assets like USDT, ETH, and a wide variety of other tokens to and from the BSC Blockchain.

6.10. Increased Speed and Reduced Cost of Transactions

It is rare in business to have a situation where processes are fast and cheap. Blockchain is unique in that the technology doesn’t need intermediary institutions or clearing houses, or even hard devices such as EFTPOS machines to facilitate transactions. This results in “frictionless” payments and transactions, thus increasing the speed and reducing commissions absorbed on transactions. Blockchain also allows the ability to remove the need for reconciling transactions, further saving time and reducing the risk of human error.

There are already BSC-based payment solutions that facilitate transactions five times cheaper and much faster than traditional payment systems; however, Vitalum will be restricted for use within the dental and medical ecosystem. The system has a guaranteed 24/7 uptime due to its P2P network structure. Furthermore, the utility token enables cross-border or international transactions for dental treatment with minimal cost.

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6.11.Incentivisation to Participate

There are already BSC -based payment solutions that facilitate transactions tfivmee s cheaper and much faster than traditional payment systems; however, Vitalum will be restricted for use within the dental and medical ecosystem. The system has a guaranteed 24/7 uptime due to its P2P network structure. Furthermore, the utility token enables cross-border or international transactions for dental treatment with minimal cost.

Ultimately, the dental industry will be no different than any other medical sector. Thus, significant incentive schemes will be presented initially to entice individuals suspicious about cryptocurrencies and blockchain to interact with the site. Our financial modeling demonstrates an estimated increase of approximately 2096 in profitability for digitally focused dental service providers and dental laboratories. This will be accomplished via cost savings associated with material buying and laboratory use. Patients will be rewarded for their participation with a 3% discount on dental care at their preferred providers. The dentists they currently see will not have any membership fees or obstacles to participating, so adoption should increase faster than existing tokens. Dental materials and equipment manufacturers will eventually have an easily accessible platform, thereby superseding traditional supply chain systems. Affiliate marketing and dropshipping will be facilitated in the ecosystem, thus creating new sources of income for "solopreneurs" and acquiring more employees.

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As a result of the successful launch of Vitalum, a new industry of new entrepreneurs will emerge, generating income prospects for those who are in desperate need of them. Individual entrepreneurs may register as Affiliate Marketers in the ecosystem and ease the procurement of products by developing reliable connections with suppliers due to the prospective change to the supply chain system. Suppliers operating in international marketplaces with limited language abilities may choose to partner with an affiliate who is more fluent in the language and culture of the target export nations.
At first glance, this may seem to be a return to third parties. However, the crucial distinction is that these are people, not giant organizations with increasing expenses and profit objectives. Each person is free to pick who they want to work with or not cooperate with on the Vitalum network

6.12. Building a Massive Online Ecosystem (MOE)

1. The Dental and Medical Industry is its own micro-industry with a high number of daily transactions.
2. Bringing together dentists, suppliers and patients onto one network is inevitable. However, we intend to create significant value on our specific platform to differentiate from other blockchain projects.
3. We understand the needs of dentists and business owners.
One of the unique aspects of this project is that we will build a massive online ecosystem (MOE). In contrast to massive online platforms (MOPs), we seek to build an online community dedicated to the dental industry and medical tourism, which will benefit the stakeholders directly engaged with the platform via the App.

Although massive online platforms successfully connect many individuals, we believe that Vitalum will incentivize stakeholders who have a real commercial interest to run their businesses more profitably and sustainably. By facilitating access to a software application that integrates many of the existing requirements of dentists, it improves efficiency across the network participants. Finally, imagine that the dentistry business had a centralized environment for education and training. This would simplify the process of visiting different

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7. Tokenomics



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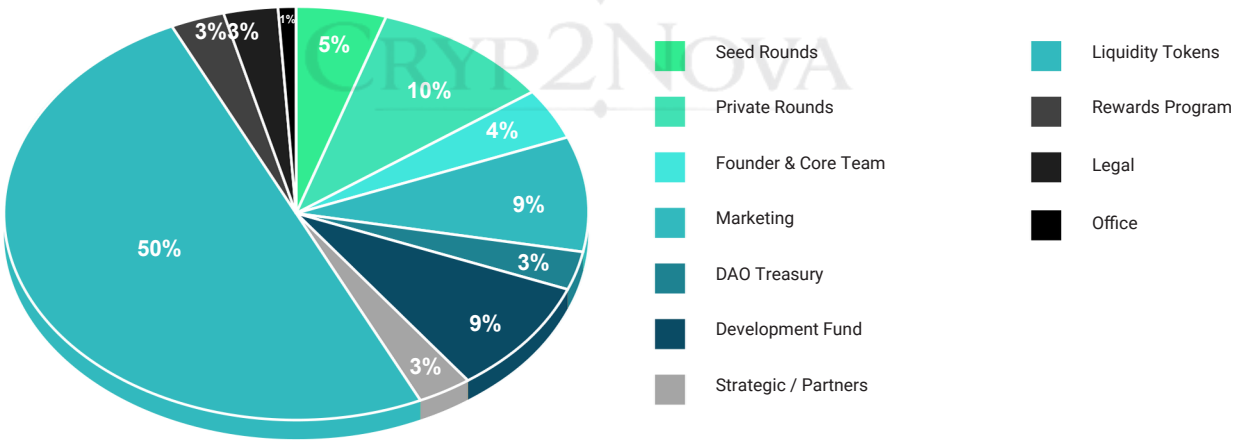
7.1 Token Allocation and Budget Allocation

TOTAL SUPPLY 1:,000,000,000

Components	In Tokens	In %	Initial Unlock at TGE %	In Tokens	Cliff / Lockup post TGE (months)	Vesting (Months)
Seed Round	50,000,000	5.00%	5.00%	2,500,000	6	2
Private Round	100,000,000	10.00%	5.00%	5,000,000	6	4
Founder & Core Team	50,000,000	5.00%	9.00%	4,500,000	6	24
Marketing	90,000,000	9.00%	9.00%	8,100,000	1	36
DAO Treasury	30,000,000	3.00%	5.00%	1,500,000	1	36
Development Fund	80,000,000	8.00%	5.00%	4,000,000	1	36
Strategic / Partners	30,000,000	3.00%	5.00%	1,500,000	1	2
Liquidity tokens	500,000,000	50.00%	5.00%	25,000,000	1	4
Rewards Program	30,000,000	3.00%	4.00%	1,200,000	0	36
Legal	30,000,000	3.00%	3.00%	900,000	0	24
Office	10,000,000	1.00%	3.00%	300,000	0	4
						8
	1,000,000,000	100.00%	5.45%	54 ,500,000		4
						8

Other Config:

✓ Can Burn ✓ Can Pause ✓ Can Blacklist



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In 2020, the global dental market size was estimated at US$ 371.4 billion, and it is expected to reach US$ 698.8 billion by 2030, with a CAGR of 6.4% during the forecast period.
Furthermore, the global dental implants market is projected to grow at a CAGR of 10.2% from 2022 to 2027, reaching a total of $8.69 billion by 2027.
The world's population's aging is the critical factor that drives the demand for quality healthcare services. ***"Worldwide, the current number of persons aged 65 years and older worldwide is approximately 750 million. That number is expected to more than double over the next three decades, reaching 1.5 billion older persons by 2050. As a result, the world's proportion of older persons is projected to increase from 10 to 16 %, or about one of every six people in the world will be in the age group 65 years and older."*** 9
Oral healthcare will see a large increase in demand as we age and retain more teeth due to improved general dental health. As we age and lose teeth, the need for modern tooth replacement techniques such as dental implants and regenerative stem cell therapy will also rise dramatically. Additionally, we observe emerging nations' economic prosperity and a higher understanding of the critical nature of oral health than in the past. Dental services will continue to expand in popularity and demand worldwide.
We will embark on a comprehensive market penetration strategy. We will employ various marketing tactics to ensure we reach every group of potential customers, network members, and investors. Here is what we will do:
Engage the global dental community: VAM's distinctive characteristics will be showcased globally at dentistry and healthcare trade fairs. As early adopters, we will provide instructive material for dentists. Although this initiative does not need experienced blockchain investors, their involvement will help expedite the platform's adoption. There are over 1.6 million dentists worldwide, and each one of them has a compelling incentive to invest in or work with us.
Use innovative marketing tactics: We have developed a plethora of onboarding strategies for dentists. One example is constituted by the provision of pre-loaded credit or debit cards with commonly used cryptocurrencies to try in the online store for themselves to ascertain the validity of the concept. Further concepts are more private and confidential, beyond the scope of this whitepaper but involve B2C marketing utilizing the pre-existing relationships between dentists and their trusted patients.

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7) Dental Services Market (by procedure type: Cosmetic dentistry and Non-Cosmetic Dentistry; by service: General Dentistry, Oral Surgery, Orthodontics & Prosthodontics, and others; by end user: Dental clinics and hospitals) - global industry analysis, size, share, growth, trends, regional outlook, and forecast 2021 - 2030. Precedence Research. (n.d.). Retrieved June 16, 2022, from https://www.precedenceresearch.com/dental-services-market

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Airdrop campaigns and referrals: Airdrop campaigns will be launched with the purpose of growing the Vitalum community, attracting participants, and growing exposure to Vitalum. The campaign participants will receive free Vitalum tokens in their Vitalum wallet with higher interest rates or higher limits for loans. However, being a participant in these campaigns requires the participants to meet certain conditions. These conditions will be communicated through different channels of communication. Moreover, the receivers of these tokens are able to use them immediately. In addition to the airdrop campaigns, referral benefits will be used to attract more participants. Through the referral program, the participants who refer new clients to Vitalum will have better interest rates, thus encouraging the expansion of our clientele.

Costs will be incurred for research, development, and stimulation for future adoption. These are key elements of our project development approach. However, other expenses will emerge like legal services, operating costs, and business partnership development. We believe that our tokenomics model and the technologically advanced nature of the project will attract investors.

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9) Dental Services Market (by procedure type: Cosmetic dentistry and Non-Cosmetic Dentistry; by service: General Dentistry, Oral Surgery, Orthodontics & Prosthodontics, and others; by end user: Dental clinics and hospitals) - global industry analysis, size, share, growth, trends, regional outlook, and forecast 2021 - 2030. Precedence Research. (n.d.). Retrieved June 16, 2022, from https://www.precedenceresearch.com/dental-services-market

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9. Company



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9.1. Business Model

The whole premise of building an ecosystem through which dental goods and services transactions can occur in a transparent, frictionless, and P2P manner is not without its cost. Additionally, it is necessary to consider the network's infrastructure, including both hardware and software. Furthermore, anticipated governmental regulatory fees and minimal staffing costs, particularly for the service company required to ensure the smooth operation of the network of participants. Ongoing fees will be related to improving the App, online portal, and ongoing system upgrades. Network security and cybersecurity will be essential components of ensuring the system's integrity. The primary source of value of Vitalum will be a result of the volume of daily transactions going through the network. Access to the App will be free for the patient, dental and medical clinics, medical professionals, and suppliers. The initial costs of development are accounted for in the initial fundraising. However, the App will have other aspects that will significantly benefit dentists. By using the Training and Education aspect of the website, they will have access to community-generated education content and webinars. This aspect of the website will require maintenance and data storage costs. Besides, this will need to be suitable for video streaming. Nevertheless, the advantages of accessing this platform will outweigh the costs of the software subscriptions. Dentists and medical professionals will have access to worldwide sources of knowledge for teaching their employees, and for their own personal growth and continuous education. Subscription fees will only be charged for software that will be updated on a regular basis. On top of that, these fees will also be re-invested into the platform in the same proportion as commission fees.

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9.2. Organizational Setup

An administrative service company in Amsterdam based on an established company in Dubai, will manage all Vitalum-related transactions and ensure needed resources are available for ensuring that commitments are adhered to, liabilities are limited, insurance against token loss is provided whilst providing initial online support for new users to the platform. The service company forms the backbone and security for the Vitalum network.

Vitalum Company, an established company in Panama, will hold all crypto and fiat related accounts. The reason for this is to avoid operational difficulties that are common in some other, less predictable jurisdictions.

The company will manage the income from the Vitalum project and profits from investments. This entity will mostly be hosted and administered by local accountants and a local legal office.

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Operational tasks are outsourced through service agreements to Vitalum company or other third parties, based on whichever option is more economical.
A supervisory board of three persons, later to be extended to a five-person board, decides upon strategic issues, approves procedures, regulations, and guidelines for administering the funds, and will make the final decision on investments.
0900 Dentist cooperation unlimited includes 0900 Implant Ltd., 0900 Implant Academy Ltd.
Investment participation and franchising agreements should be established in the first years. These companies publish their financial figures annually, following Dutch law.
Mehdi Hashemi, the founder of the Vitalum project, 0900 Dentist unlimited, and 0900 Implant Academy in the center of Amsterdam has worked in dentistry for over 30 years and has extensive experience. This is the entity and key person that will execute Vitalum business mission: to increase the use and popularity of the token worldwide and create the management and reporting environment for a self-propelling growth infrastructure.
The website, back-office functionality, and related apps will be developed step by step, starting with the roll-out of the payments and exchange platform immediately after launching the token on the first exchange. Also, we plan to expand our team in the future by inviting new individuals. We will use tokens received as DevFee commission to pay salaries to the new team members.

9.3. Charitable Collaborations with The Government

The Vitalum project will be engaged with multiple corporations, including the government. We would like to work side by side with government regulatory bodies in order to provide services and assistance to those who need it. One example of such collaborations is the Regenboog group based in Amsterdam, which aims to help those in difficult situations get back on their feet and integrate into society. We are currently working with this group with the purpose of making a positive change in the lives of those in need, and we plan on expanding this collaborative assistance further with time.

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10. GDPR

Vitalum is fully committed to complying with the General Data Protection Regulation (GDPR) across the European Union. VAM will adhere to these regulations in
This means that their entirety. Vitalum will only collect data that is necessary for its intended
purpose, and it will handle the personal data of users with accountability, confidentiality, and integrity. Users will have full control over their data and can choose to stop sharing or storing it at any time.
Under GDPR requirements, Vitalum will ensure that the collection and sharing of all personal data, including names, addresses, biometrics, photos, and any other personal information, will only occur with the explicit permission of the users. Vitalum wil I not share the data of patients and other



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VItalum Will be easily traded between digital currencies of the participants' choice. However, to interact and obtain the benefits of the ecosystem, one must purchase Vitalum at some stage. Thus, Vitalum is a utility token.
Transparency is ensured between token exchanges and tracked with permanent records of transactions within the platform, so fraudulent activity can be monitored and reported, especially in the case of any malicious activity aimed at manipulating the token supply
The purpose of this white paper is to introduce the Vitalum project and Vitalum to potential buyers in connection with a crowdsale campaign and to provide them with a basis for conducting their analysis before participating in this sale by purchasing coins. The information in this document may not be exhaustive and should not be viewed as an offer to conduct any contractual relationship. This document is for informational and illustrative purposes only
All the data used in the document is collected from open sources. Estimates and financial information contained in the white paper could be prone to numerous and significant risks (whether known or unknown) and uncertainties that the Vitalum project cannot prevent or influence_ This could cause events or results listed in this text to differ from those projected by estimates and mentioned forecasts. Technical information presented in the white paper has not been subject to independent audit or analysis or expert review by any professional advisers.
This white paper should not be viewed as investment advice or as a recommendation regarding any particular security or course of action. There is no guarantee that the Vitalum project will achieve the projected results under uncertain market conditions.
Vitalum Token is a utility token. This product is a digital asset and has not been registered under the Securities Act, the securities laws of any state of the I-Jnited States, or the securities laws of any other country, including the securities laws of any jurisdiction in which a potential token holder is a resident And has been established with the approval of legal attorneys in Panama. Vitalum Tokens cannot be used for any purposes other than those provided in the white paper, including, but not limited to, any investment, speculation, or other financial goals.
Vitalum cannot be used for any other purposes than those listed in the white paper, particularly for investment, speculation, and other financial transactions.
The Vitalum is not intended for sale or use in jurisdictions where the sale or use of digital tokens may be prohibited.
Vitalum is not an investment product but a tool for accessing medical services at a discounted price when needed. The Vitalum project team is not promising any future profit or gain from the purchase of coins. The project's crowdsale is not a public offering of securities and should not be subject to corresponding

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However, as governments all over the world are continuously working on regulation and best practices for cryptocurrencies in the future, Vitalum may be subject to such regulation. This may cause additional complexities in the course of the project's realization. Using Vitalum may, for example, be subject to local taxation, income or capital gain taxes, and other forms of tax.

There may also be errors and security vulnerabilities in the source code of the software used in the Vitalum system, which may, under certain circumstances, lead to multiple problems, including a reduced ability to access purchased coins, reduced usage of coins, or losing control of the Vitalum in a buyer's account.

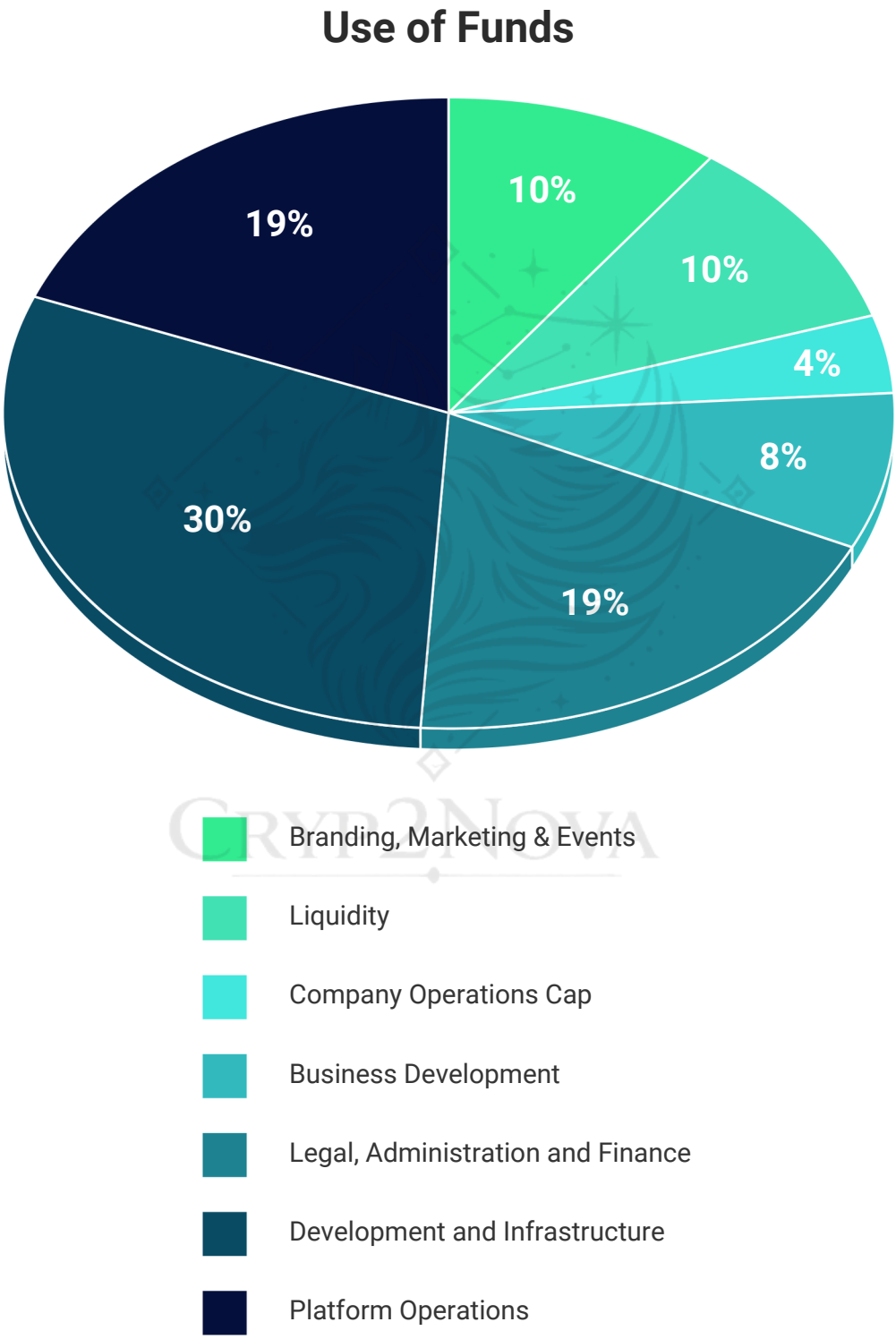
In the event of the realization of any of the risks mentioned above, the Vitalum project team won't be able to solve any of the problems, remedy the complications, offer refunds, or offer compensation for lost assets.

No part of this document may be reproduced in any manner, in whole or in part, without the prior written permission of the Vitalum project team. Transparency is ensured between token exchanges and tracked with permanent records of transactions within the platform, so fraudulent activity can be monitored and reported, especially in the case of any malicious activity aimed at manipulating the token supply.

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Allocation of Funding

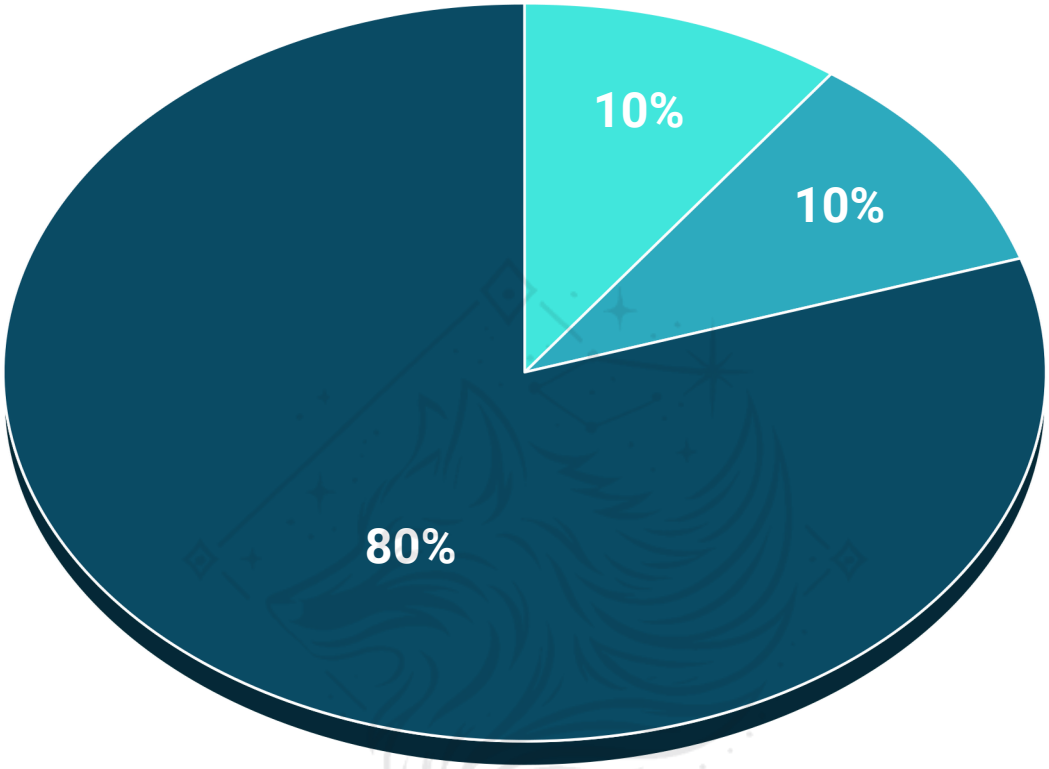


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13. DISTRIBUTION OF PROFITS
And Saved Capital



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Wages / Salaries

Maintenance Costs

Reinvestment into Massive Online Ecosystem

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14. FUTURE WORK:
Regenerative Medicine And Stem Cell Therapy



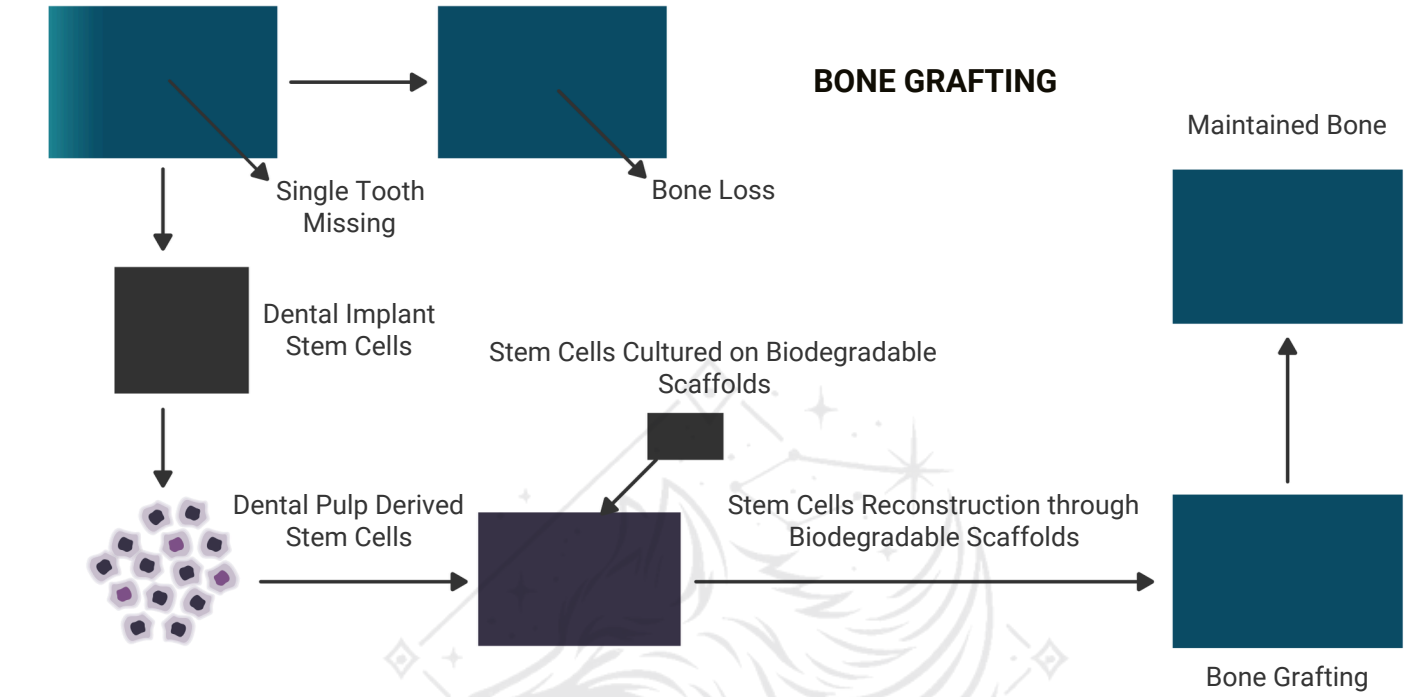
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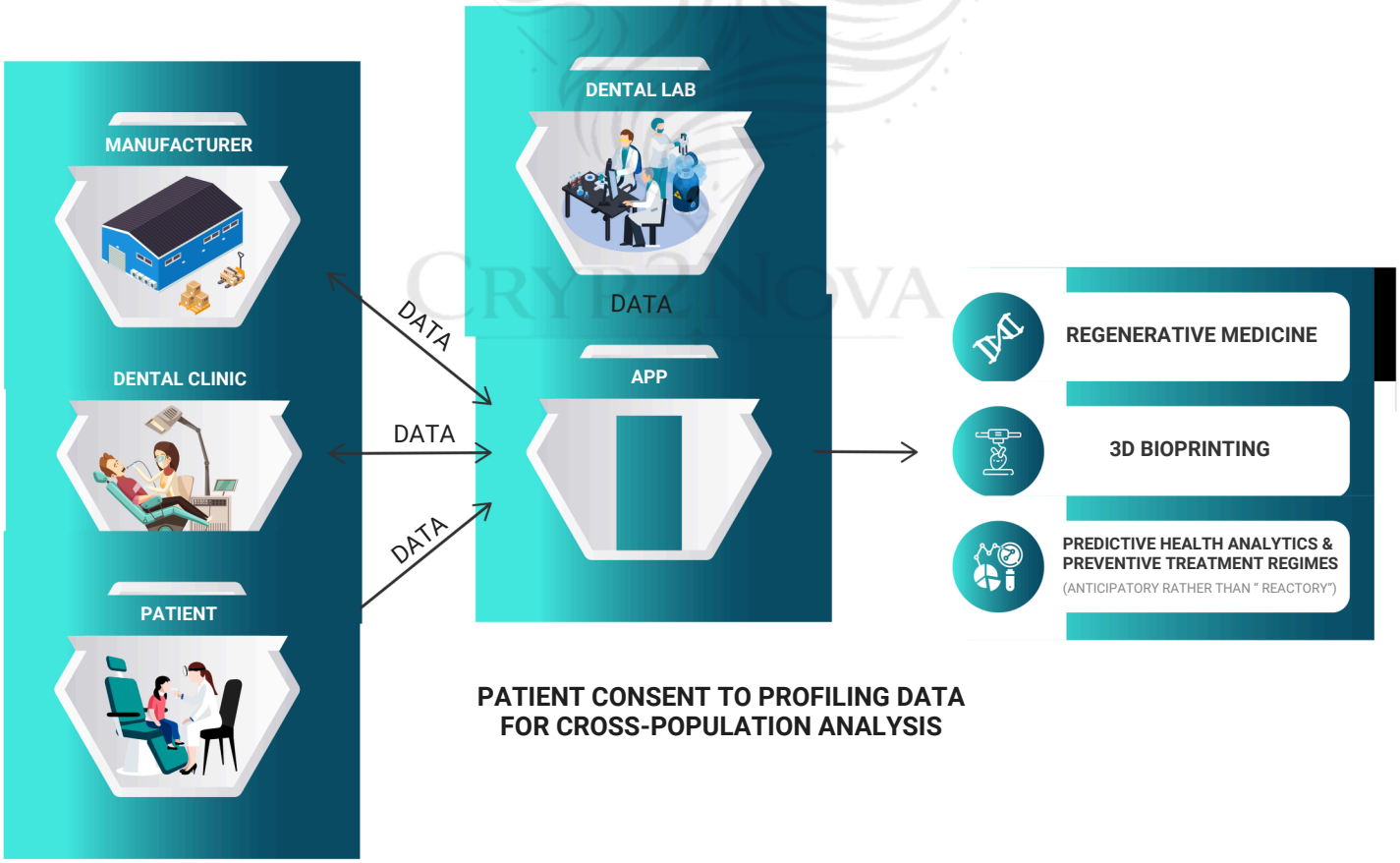
One of the objectives of this initiative is to encourage the adoption of innovative technology in the dentistry and healthcare industry. One such example is regenerative medicine and cellular treatments, which are increasingly taking center stage in the medical world on a daily basis. Eventually, these developments will have a transformative effect on the dentistry business.
Stem cell therapy (STC) will soon be one of the top global regenerative medicines, with an estimated market size of $21.3 billion by 2025. While implants and false teeth can solve many dental problems, they come with many downsides. These procedures can be replaced through stem cell therapy by allowing patients to regrow missing teeth.
Stem cells from the patient themselves may be used to regenerate tooth (dental) components. Due to the fact that they come from the patient themselves, the likelihood of rejection is highly unlikely. The costs will be reduced as the technology improves.
Vitalum will bring academics, research institutions, and clinicians closer together on one platform to push forward the industry collectively.
Evidence-based medicine will be encouraged, and Professor Forouzanfar of the Global Society for Skeletal Regeneration (GGSR) will act as a trusted advisor in this project. GSSR is a non-profit organization that unites researchers, clinicians, and companies working on improving the availability of regenerative medicine for all patients, including those in less developed (LD) countries.
Dr. Behrouz Zandieh will also be acting as an advisor for this project. He does research in regenerative medicine, bone and cartilage tissue engineering, stem cell therapy, and bio-materials. He is a senior scientist at the Academic Center for Dentistry in Amsterdam (ACTA).
Our belief is that STC will remove some of the disadvantages of current treatment methods, including the artificial replacement of dysfunctional anatomic components of the body.

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STEM CELL TREATMENT





PATIENT CONSENT TO PROFILING DATA FOR CROSS-POPULATION ANALYSIS

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We are a group of driven professionals from diverse backgrounds who are united for one cause: to improve the patient's condition. We believe in freedom and equality for all people worldwide, regardless of their geographical location, economic situation, race, or ethnicity. We are realizing more and more that the current dental and healthcare system is not satisfactorily designed to serve the needs of the patients and dental practitioners. As a result, gross inequalities are resulting in a significant burden of expenses which are creating time pressures for dentists while at the same time, reducing the quality of care that is provided to the patients. This project is the result of many years of hard work with the sole purpose of giving back control to the people. For the benefit of both medical service providers and patients, we hope we can help make this change happen in our field of work. Vitalum *is not a project about cryptocurrency or even blockchain. This project is about re-establishing our fundamental right as people to accessible and affordable dental care. This whitepaper will highlight clearly to anyone willing to hear that there are enough resources currently available to adequately service the oral healthcare needs of every person on the planet. Dental care is not a privilege of higher function or status; it is an inalienable human right. Our vision is global, and our desire to create something meaningful in the dental industry is genuine. Blockchain science will enable a permanent and lasting positive effect on dental healthcare and its delivery to patients. In the future, blockchain has the potential to disrupt the entire healthcare sector. For now, the dental industry needs improvement in its efficiency. We invite you to read our* Vitalum *whitepaper with an open mind and don't ask how, ask when... Sincerely, The* Vitalum *Team*

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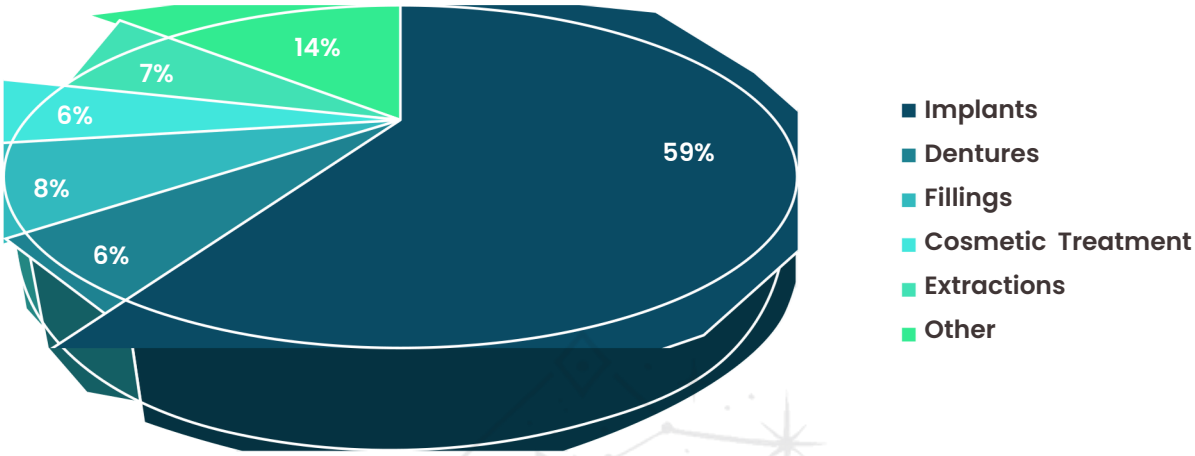
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17. Appendix



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