



UBRICOIN

**Blockchain Technology for Global Health
Ensuring Universal Health Access for You and
Your Loved Ones**

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Ustawi Biomedical Research Innovation and Industrial Centers of Africa

We are a life science and health production (LSHP) organization. We sponsor investments in

- life science comprising pharmaceuticals and medical devices,
- fully integrated health production by building sustainable one health communities involving people co-operating in a retail network combined with health delivery system, and
- specialized real estate for life science and global health production.

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IMPORTANT NOTICE

The purpose of this whitepaper is to present a summary of Ubricooin (UBN) as a utility token for producing health and for building incentives for excellence in education. The information set forth in this document may be changed for any reason, may not be exhaustive and does not imply any elements of a contractual relationship. Although Ubricooin holders have a claim to the coin and access to the Ubrica ecosystem, they are not entitled to any dividends or other revenue. The distribution of UBN coin is governed by the distribution program described in Chapter 10 of this document. The price of the UBN will largely be controlled by the action of its users. The owners of UBN are granted an opportunity to contribute to the larger systems facilitating excellence in education and production of health. This third edition of Whitepaper's sole purpose is to provide relevant and reasonable information to you in order for you to determine whether to take part in Ubrica Project by acquiring UBN.

VERSION 2.2

This version contains material revisions of previous versions dated September 1, 2018, and December 1, 2018. The revisions are occasioned by deeper understanding of use of blockchain in global health space, and the implication of token economy in a lifescience and health ecosystem. The second version contained in-depth explanation of the token economy created by UBN, and about how UBN will work as a utility token. The third version remodels the distribution of UBN by giving out the coin to a target user population, instead selling it to random people in the world. Giving away UBN in this manner obviates that need to conduct an initial coin offering. UBN is already money and does not need to be sold for money. As a utility token, we just need to give individuals in an ecosystem who would be future users of the coin. We distributed two billion UBN units for to future users of the Ubrica ecosystem. By creating a large user community in a concentrated target population, UBN will gain value spontaneously in the market, and will spread organically to other populations in the world.



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1. INTRODUCTION

We developed Ubricoin on blockchain to serve as a platform devoted to improving quality of health for all. Ubricoin will help achieve universal health, and therefore global health. We will use Ubricoin to develop health industry and create market intelligence through a cryptocurrency reward system that will inspire positive contribution to health improvement around the world. We will use a smart review system to reward consumers for positive health behavior. Educators at all levels of education, researchers, and practitioners at all levels will receive rewards for excellence, quality of work, and positive contribution to society.

We believe in a future where everybody has access to best health products and services. We believe in great health that is easily accessible and affordable to all. We believe in a future of universal health access. We expect that Ubricoin will improve health related quality of life (QOL) and quality adjusted life years (QALY). In addition, we believe that Ubricoin will reduce the enormous burden of disease (BoD), particularly in the developing world, and eliminate years of life lost (YLL) due to disease.

1.1. Blockchain

Blockchain is a time-stamped set of immutable records managed by many independent computers owned by many people, and distributed all over the world. Each record is tied together with many other records to form a block. Each block is secured and bound to each other using cryptographic code.



The blockchain has no central authority. As a shared, open and immutable ledger, the information in the blockchain is open for anyone and everyone to see. Hence, anything built on the blockchain is by its very nature transparent.

The blockchain is a simple yet ingenious way of passing information from A to B in a fully automated and safe manner; it carries no or negligible transaction cost. A transaction is verified by millions of computers distributed around the net. The verified transaction is added to a chain which is added to a block. This creates a unique record with a unique history. Altering a single transaction would alter the entire chain, and it would be rejected by the chain. This makes it impossible to alter information on the chain. Ubricoïn uses this security model for monetary transactions, but it can be deployed in many other ways.

One of the problems that blockchain will solve is that of money transfer. Today, if a person A in United States wants to send money to person B in Kenya, he/she has to go to a trusted third party, say a bank. Person A in United States will deposit the money with the trusted third party, who in turn will identify and validate person B in Kenya. The trusted third party will then move the money to person B, after taking a fee (Figure 1). The process may take three or more days, sometimes a week.



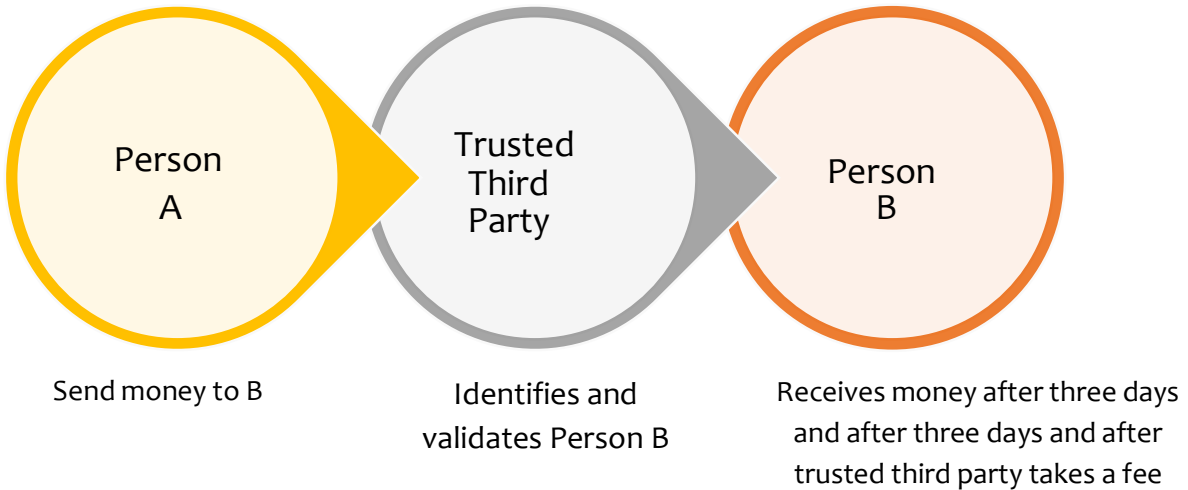


FIGURE 1. TRADITIONAL METHOD OF MOVING MONEY

Blockchain enables **transfer of money without trusted third party, without delay and without fees** (Figure 2). Blockchain enables people to move money directly to one another. Nakamoto (2008) referred to this method as peer-to-peer.

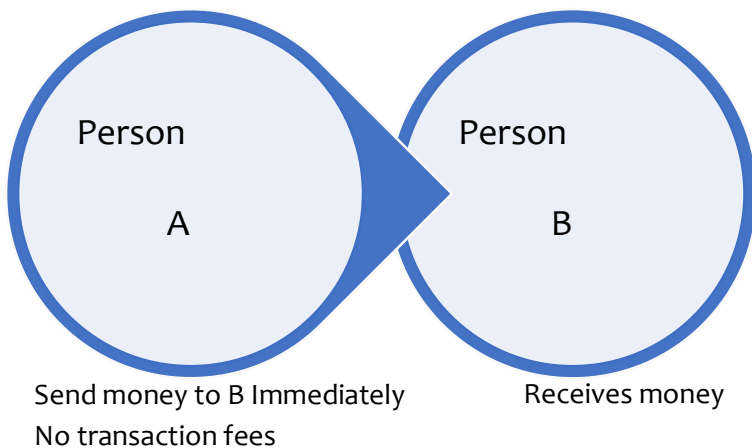


FIGURE 2. MOVING MONEY ON THE BLOCKCHAIN



In a nutshell, blockchain moves money faster than three days. Indeed, it moves money immediately. Moving money on blockchain is cheaper; there is no third party collecting fees.

1.1.1. How the Blockchain Works

How does the blockchain address this money transfer problem? For the blockchain to work, it relies on three major process: (a) open ledger, (b) distributed ledger, and (c) miners.

1.1.1.2. Open Ledger

Blockchain is a public ledger. The chain of transactions done on blockchain are open for everyone to see. Everyone in the network can see where the money is, where it is going, and where it has come from. The open ledger shows how much money each of the actors has in his or her wallet, and everyone can decide whether a transaction is valid or not. If a transaction is not valid, it is not added to the open ledger. It is rejected and does not become part of the chain.

1.1.1.3. Distributed Ledger

Blockchain's goal is to get rid of centralized ledger. Blockchain takes the centralized ledger and distributes it across all actors. We call all these actors, nodes; each person in the network is running the software application on his or her computer or mobile device. In a network of four actors A, B, C, and D, actor A's application downloads and continually updates a copy of the ledger, so does actor B, and so does actor C, and so does actor D. Each of the four has the same copy of the ledger updated continuously. Anyone else who joins the network will have the same copy of the ledger. The ledger is distributed across a network of nodes.



To avoid problems, all the copies of the ledger in the network must remain synchronized. All participants in the network must see the same copy. This leads to the third principle of the blockchain: *miners*.

1.1.1.4. Miners

Now we have an open ledger that everyone can see. The ledger is distributed across multiple nodes. The question becomes, how in a distributed ledger can nodes understand and synchronize the ledger among themselves.

Miners are special nodes which can hold the ledger. The miners compete among themselves to validate transactions and put them on the ledger. The first miner who will validate the transaction will get a financial reward, for example a Bitcoin.

In order to be the first to take the transaction and put it on the ledger, a miner needs to do two things:

- **Validate the new transaction.** This is easy, the ledger is open and anyone can immediately calculate whether the sender has the funds in order to make the transfer.
- **Find a special key** that will enable to take the present transaction, add to the previous transaction, and lock it. In order to find this key, the miner needs to invest **computational power and time** because the search for the key is random. The miner is repeatedly guessing new key, until he/she finds the key that matches the random puzzle. The first miner to do that will get financial reward. This economic incentive essentially ensures that collectively they agree on what is the official ledger that should be used by everyone.

Synchronizing the ledger across the network, a miner will be able to solve the transaction and add it to the ledger. The miner will then broadcast that information to the entire network. He will say, “here is a validated transaction



and here is the key that enables everyone on the network to take it and add it to their own ledger.”

What are the other miners going to do? They will see that the transaction is already validated and added to the ledger, which means there is no point in trying to solve this transaction again. The other miners will immediately take this transaction, add it to their own ledger and will look for another transaction to work on, and hopefully get a reward next time.

1.2. WHY BLOCKCHAIN

A fully decentralized business needs both a decentralized infrastructure and a decentralized decision making. Every user in this network becomes the owner of the network too. Blockchain facilitates the inclusion of fringe stakeholders to position of salience at the core of decision making.

We will use blockchain to facilitate meaningful interactions among peers working together in Ubrica ecosystem. To start, Ubricoins will facilitate point of sale payment system for Ubrica’s e-commerce platform (sokojanja.com). Ubricoins will reduce friction of currency in the trade and facilitate real time transfer of cash. Ubricoins will also act as the escrow to protect its members from fraud by eliminating middlemen who do not usually provide value for money.

Blockchain aims at changing the external environment by including the distant voices from the fringe stakeholders who are most of times neglected in our societies. This will help us understand the concerns of distant and diverse stakeholders. Including the fringe stakeholders allows Ubrica to understand the complex and evolving issues that may potentially affect the basis of its future and addressing them.

Ubricoins gives us an opportunity to build an incentive structure for goodwill and excellence. We will therefore focus on giving incentives to traditionally



marginalized hardworking people who contribute knowledge for the betterment of humanity.

1.3. Relationship between Blockchain, Money and Law

Blockchain, money and law interact to create a new phenomenon of freedom of measuring value of information (Gilder, 2016). Information technology has existed since its inception in the 1930s without building capability for measuring value. Nakamoto's (2009), discovery of time-stamp to solve the double spending problem on the blockchain gave information network, a valid measurement of value that translate into money. Bitcoin was born as a smart contract that enables transfer of value among people transacting on the network.

Buterin's (2012) innovation, gave us Ethereum blockchain that allows everyone to build smart contracts. This system can resolve disputes directly and efficiently reducing lawyer/client work load. Smart contract escrow will replace escrow accounts managed my law firms. The escrow in the smart contract will manage the promises of payments, and release money when conditions are met. Blockchain will also improve the effectiveness of the criminal justice system. The blockchain works with three processes; open ledger, distributed ledger and miners. Information recorded on open ledger is there for everyone to see, therefore improving the quality of police work who investigate crime and the court system that prosecutes the offenders. The distributed ledger is immutable and indestructible because it is hosted on millions of nodes in the network. All the nodes agree on the valid document by consensus.

Business will benefit from blockchain technology. The earlier a business adopts the blockchain technology, the better. Industries that implement blockchain will find it far easier to enforce standard operating procedures within their organizations. Information is readily verifiable on the immutable record. Mission critical terms and conditions specified for particular products cannot be changed. Blockchain uses consensus algorithm to validate transactions. In order



to participate in validating transactions, a person must expend enormous energy and computing power. The validator, also known as a miner, has to pay out of pocket for the electrical energy and powerful computers. The validator is paid only when he or she verifies a valid transaction and posts it to the open ledger for everyone to see. Posting an invalid transaction does not attract a reward; it results in a loss of money spent on electrical energy and computing power. This mining process secures accountability that could spur widespread improvement in capitalist ethos. It will make it easier to discover exploitative or environmentally damaging practices. Blockchain is a powerful technology whose power will expand in the coming years. In the legal and business world, it will enhance precision and accountability.





2. UBRICOIN

Ubricooin is a decentralized application (DApp) built on Ethereum protocol. It is a peer-to-peer utility token that will give incentives to anyone in the world to facilitate global health. We will use Ubricooin to create platforms to support life science research and development, generic drugs manufacturing and health services delivery. Ubricooin will be the gateway to the biomedical world which comprises Soko Janja, health services delivery, science and technology parks and biomedical industrial city (Figure 3). Ubricooin will expand Ubrica’s capability to host future worthy life science and health blockchain projects and spinoffs.

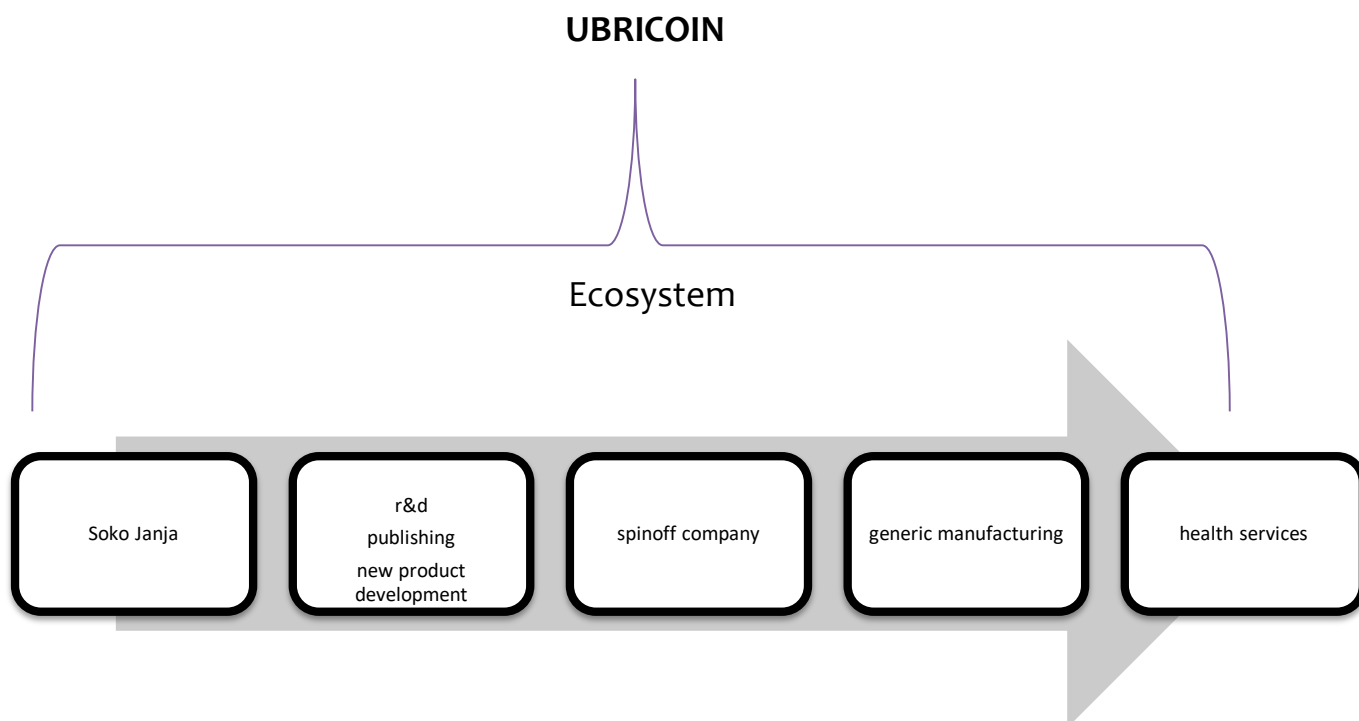


FIGURE 3. USES OF UBRICOIN: LIFESCIENCE AND HEALTH PROJECTS BUILT ON UBRICOIN BLOCKCHAIN



We created 10,000,000,000 (ten billion) Ubricoins (UBN). UBN refers to one Ubricoins. The smallest unit of UBN, a Brevis, is one billionth of a UBN. As an ERC20 token, a UBN is configured to be used globally by all individuals. A UBN derives value from the exchange with Ether. We intend to distribute and sell the 10 billion UBNs on Ethereum blockchain. The UBN will comply with the ERC20 standard and it will be transferable on Ethereum platform.

2.1. Ubricoins as a Utility Token

A UBN is a utility token that represents future access to Ubrica ecosystem. We will use Ubricoins to develop products and services that the token holders will later redeem for goods and services developed by the token.

Tokens are of two types (a) equity tokens and (b) utility tokens. Equity tokens are investment instruments. There are two types of utility tokens: (a) digital coupons, and (b) tokens that provide users with access to its decentralized forum (i.e., Soko Janja). Ubrica tokens are classified as utility tokens and participants in the Ubrican community can buy them for to access the Ubrica ecosystem. Ubrica will issue tokens for development of its projects and creation of excellence. This will allow the token holders to buy different Ubrica products or services in future. The main purpose of Ubricoins is to get access to the Ubrica ecosystem, but not to gain profits or dividends. Token holders will be enrolled on Soko Janja at no cost and get medical services at a URCC near them. The main value of the token is access to Ubrica's proof of stake protocol tokenization platform.

In proof of stake, Ubricoins will incentivize actors by assigning them units of Brevis for creating blocks (i.e., block rewards). It will also give privileges to incentive actors by giving them decision-making rights that can be used to extract rent (e.g., transaction fees). In proof of excellence, Ubricoins will increase actor token balances or give them privileges if they do something good. If they



do something bad, Ubricoins will reduce actor token balances and revoke privileges.

2.2. WHY UBRICOIN

Ubricoins will support design, development and implementation of Ubrica project to decentralize global health. Ubrica project involves building world class capability for **high quality life-science and health-production (LSHP) in the world**. We will build a model physical project in Kenya. Ubrica project in Kenya will create a node for highly advanced biomedical research and development, and highest quality health care services. The project will ensure sufficient support for discovery of solutions to most vexing health problems in the world, particularly those emerging from the African continent and other developing parts of the world.

Ubricoins will help gather intelligent data about health, nutrition information and diseases. Artificial intelligence will facilitate the presence of global health. Data gathered will help us develop smart community health decision support system, smart public health decision support system and smart clinical decision support systems.

The implication of artificial intelligence will include:

- early disease detection algorithm built on International Classification of Diseases (ICD)
- health and diseases monitoring
- effect and impact evaluation of health programs
- improved data security, accuracy and speed of diagnosis

Blockchain technology will create cash incentive tokens for supporting development of scientific products and the commercialization of products in the online marketing and retail platform called Soko Janja. We will use Ubricoins to create incentives for research and development and commercialization of



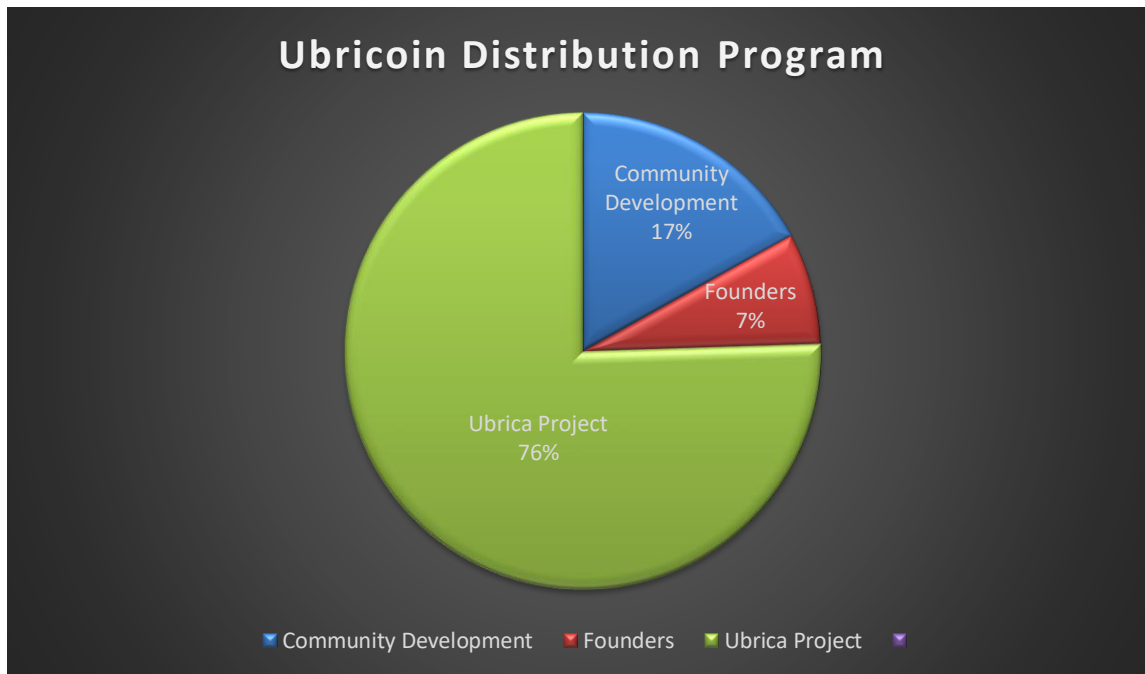
complete research products. This involves building world-class capability and capacity for health and clinical research in African countries. It also involves research reporting through peer-to-peer reviewed papers by creating incentive token to the authors. This will lead to more people taking part in growing scientific knowledge in Africa.

2.3. COIN DISTRIBUTION

We plan Ubricoins distribution in the following manner

- 3.4 billion (17%) UBNs for community development. The community development UBNs will be further divided to cover the following:
 - 0.2 billion UBNs for bonuses, to be used for the incentive structure
 - 0.2 billion UBNs for Airdrops
 - 3 billion UBNs for the team which include supporting community projects and partners.
- 1.5 billion (7.5%) for founders of the Ubrica Project including all the shareholders
- 15.1 billion (75.5%) UBNs for sale which will be used for the development of Ubrica projects: Soko Janja, Ubrica Retail Clinical Centers (URCCs), University Science and Technology Parks (USTPs), Biomedical Industrial City (BMIC)





2.3.1. Coins Available for Sale Distribution Program for the Ubrica Project

We plan to distribute the UBNs available for sale in the following manner (Figure 4):

- 3.02 billion (20%) of the UBNs available for sale will be used for design, development, management and scaling of Soko Janja
- 3.02 billion (20%) of the UBNs available for sale will be used for design, development, construction and management of Ubrica Retail Clinical Centers (URCCs)
- 3.02 billion (20%) of the UBNs available for sale will be used for design, development, construction and management of Science and Technology Park (STPs)
- 6.04 billion (40%) UBNs for design, development, construction and management of Biomedical Industrial City (BMIC)



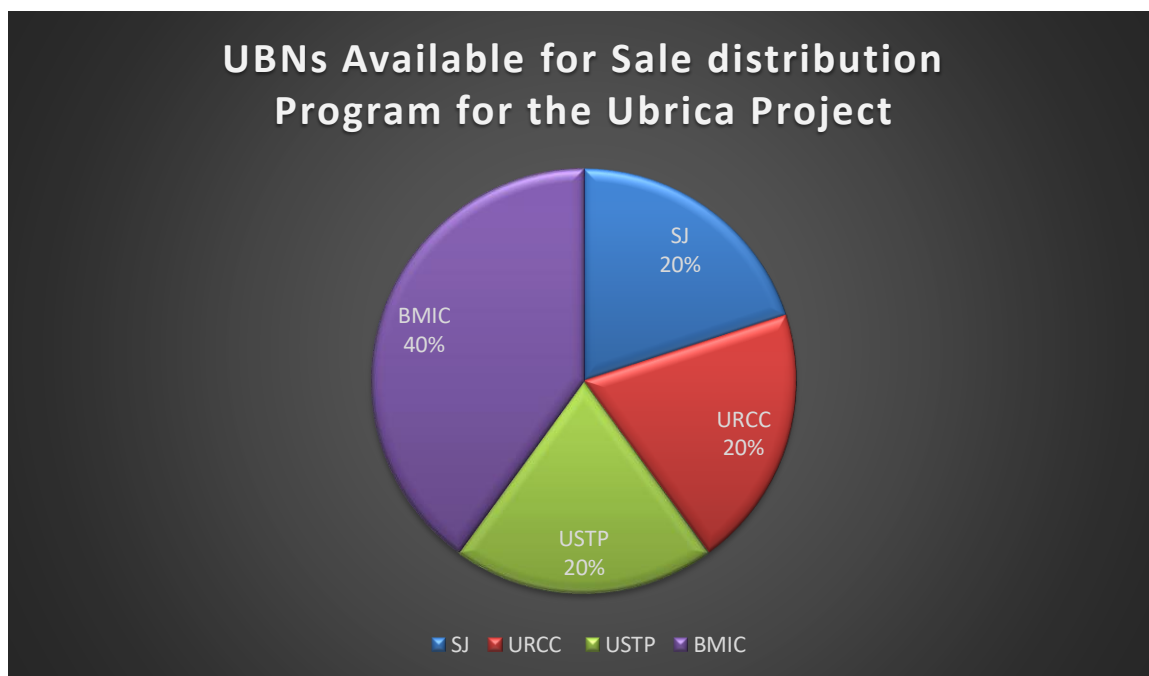


FIGURE 4. UBRICOIN DISTRIBUTION PROGRAM

(Note. SJ = Soko Janja; URCC = Ubrica Retail Clinical Centers; STP = Science and Technology Parks; BMIC = Biomedical Industrial City)

2.4. DIRECT BENEFICIARIES

2.4.1. CONSUMER

Ubricoïn will benefit you, the consumer of health and other services. You will receive Brevis airdrops from shopping on Soko Janja. Brevis airdrops are monetized loyalty points issuing from the point of sale platform on Soko Janja. You will also give direct feedback to providers, through a rating system. Providers receiving good rating will be rewarded with Brevis airdrops. You will experience increased access to health generating produce, products and services.



2.4.2. PROVIDERS

As a provider of health accepting Ubricoïn as payment at the point of sale, you will receive Brevis loyalty tokens, service quality tokens and direct feedback from consumers. You will also give direct feedback to consumers, such that consumers who adopt good health habits will be rewarded with Brevis.

Payers of health using Ubricoïn for payment transactions will experience dramatic reduction in payment fraud. You will be paid only for honest work.

Payers will enjoy simplified payment system built on blockchain.

2.4.3. PAYER AND SUPPLIER

As a supplier of products and services to the health system you will enjoy simplified payment system. You will receive Brevis airdrops and service quality token. You will also receive direct feedback from consumers, and in turn give direct feedback to consumers.

2.4.4. REGULATORS

Regulators of health services you will create intelligent regulation based on real-time data. This will ensure good governance. They will receive Brevis airdrops and service quality token. They will also receive direct feedback from consumers, and in turn will give direct feedback to consumers.

2.4.5. NON GOVERNMENTAL ORGANIZATION

Local and international non-governmental organization will enjoy simplified data gathering for need assessments, project implementation evaluation, and post implementation evaluation. They will receive Brevis airdrops and service quality token. They will also receive direct feedback from consumers, and in turn will give direct feedback to consumers.

2.4.6. INTERNATIONAL DEVELOPMENT ORGANIZATION

International development organizations concerned with global health will have a system for easy tracking and detection of diseases of global health concern



before they become epidemics. They will also enjoy simplified data gathering for needs assessments, project implementation evaluation, and post implementation evaluation. They will receive Brevis airdrops and service quality token. They will also receive direct feedback from consumers, and in turn will give direct feedback to consumers.

2.4.7. UNIVERSITIES/ ACADEMIC ORGANIZATIONS

University or academic organizations will receive rewards for increased quality of research, publication, translation and commercialization of knowledge.

2.4.8. HEALTH SERVICES ORGANIZATION

Health service organization will receive rewards for quality of services and better organized health systems, safe, effective, patient centered, timely, efficient and equitable as per IOM (2001) report on six domains of quality.





3. UBRICA GLOBAL HEALTH PROJECT

We created Ustawi Biomedical Research Innovation and Industrial Centers of Africa (UBRICA) to address three key problems of health in Africa: (a) lack of access to health services, (b) poor quality of health services, and (c) high cost of care.

We plan to overcome access problem in two ways. One way is to support construction of widely distributed clinical facilities integrated with retail centers and produce processing workshops. Such facilities will be known as URCCs. The other way is to increase supply of money by facilitating trade by online and onsite retail markets.

We shall improve quality of medical services by supporting design, development and science and technology parks (STPs) adjacent to all universities in Kenya. The STPs will promote translation and commercialization of university and community knowledge. This will bring to being, new knowledge technologies and services that of great quality.

We shall overcome high cost of medical services by construction of a biomedical industrial city (BMIC). It is in the BMIC, that we will support education and manufacturing of a full range of medical devices and all products used in health system. Locally manufactured technologies will be cheaper than imported versions.



Ubrica is embodied as a global health project built on three pillars (Figure 5): (a) smart contract pillar, (b) human engagement pillar, and (c) projects pillar. We describe the phased implementation program for the three pillars.

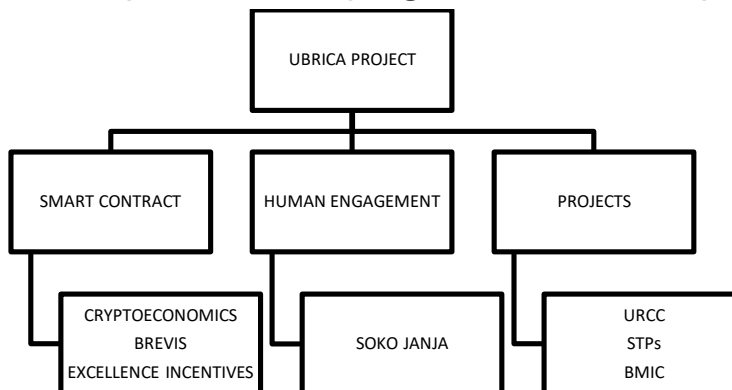


FIGURE 5. THREE PILLARS OF THE UBRICA PROJECT—STRATEGY FOR FUNDING UNIVERSAL HEALTH ACCESS

3.1. SMART CONTRACT

A smart contract is a computerized transaction protocol that executes the terms of a contract and facilitates all steps of contracting process (Szabo, 1994). Computer program enforces a contract between two or more parties. It executes the rules when all conditions are met. Smart contracts are built on blockchain and inherits blockchain property (i.e., immutable, distributed and decentralized providing digital security). Smart contracts are self-executing. They eliminate the third party by solving issues in a way that does not require trust and remove human judgment. The smart contract facilitates, verifies and enforces negotiations by implementing deterministic rules through a logic in a computer code (Buterin, 2012).

Smart contracts help exchange money, property, shares, or anything of value in a transparent, conflict-free way while avoiding the services of a middleman. Smart contracts not only define the rules and penalties around an agreement in the same way that a traditional contract does, but also automatically enforce those obligations.



3.1.1. Smart contract escrow in Soko Janja

Ubricoins smart contract will act as an escrow to the Ubrica e-commerce Soko Janja. During purchase, the consumer will order an item and send Ubricoins to the smart contract. The smart contract will generate a code and send it to the buyer. The code will only be known by buyer. The smart contract will hold the Ubricoins until delivery. Upon delivery of the item, the buyer will give the seller the code to add to the smart contract or the buyer will send the code to the contract as an acknowledgment of the receipt of the item. The smart contract will have a provision to divide the proceeds to different pools such as courier services and health fund.

Time is set upon which, if the item is not delivered in time, the contract becomes void and the money is sent back to the buyer. The time limit helps incase the seller decides not to deliver the item.

We will also use the smart contract for health financing by pooling health funds as explained in chapter 7. This will allow risk sharing in the health sector while thinking about how to put money in people pockets to fund health. Ubricoins smart contract will facilitate, verify, negotiate and conclude contracts between individuals and their contracting party.



3.1.2. Smart Reward

Using the smart contract we will create a crypto-currency program to reward excellence through a reward system. The smart reward system will help actors in the various industries to act properly towards the betterment of the community. We will issue rewards in different sectors affected by poor quality of services or inactivity. In the education sector, we will create a reward system for teaching, research and practice. The current health sector is dominated by poor quality of services. The reward system will give incentives to health professional who demonstrate quality of care and document their work for others to learn from. We shall also reward the use of Ubricoins for financial transactions in everyday practice. Buying from local suppliers and manufacturers on Soko Janja (peer-to-peer) will attract rewards.

The reward system will allow every consumer of services to get a chance to rate his/her provider in the decentralized application.

3.2. HUMAN ENGAGEMENT

The human engagement pillar involves engaging people at their basic level of existence to discover how they can work together to create wealth. Members engaged will enter into a distributed autonomous organization (DAO) known as the Co-operative Society of Ubricans (CSU). We have created an online retail store known as Soko Janja (see, shop.ubrica.com) where members can buy and sell produce, products, and services from one another.

3.3. PROJECTS

Ubrica project comprises three distinct scientific real estate projects: a series of world class health centers, university science and technology parks, and a biomedical industrial city in Kenya. These projects are the rationale for issuing UBNs. We will sell coins project-wise with each project taking four phases.



3.3.1. Ubrica Retail Clinical Centers

We intend to construct at least 100 health centers that will be leased to qualifying health professionals on a 20 year mortgage agreement.

3.3.2. University Science and Technology Parks

We will facilitate design, development and implementation of 66 Science and Technology Parks (STPs) for universities.

3.3.3. Biomedical Industrial City

We propose to implement Biomedical Industrial City in Kenya, known as Ubrica One. Ubrica one project is planned and designed to meet the full range of health needs, including curative and preventive services, of those residing and working in the Medical City as well as those visiting the Medical City for medical tourism and other purposes





4. SMART REWARD (CRYPTOECONOMICS)

We have built, on blockchain technology, a decentralized model that will overcome shortage of financing for health, which has been the thorniest issue in global health. Lack of funding for health in many countries of the world has led to increased burden of disease, years of life lost due to illness, very poor quality of life, and very low quality adjusted life years.

We strive to create a health conscious community that rewards people who provide valuable contribution to education and knowledge in lifescience and health. Through a smart reward system, we will see a rise in emergence of new knowledge and solutions to most vexing issues in health. Ubricoïn will reach a broad market for knowledge production that will include billions of people in developing countries who have been excluded from health care and from financial systems.

Ubricoïn on blockchain for global health is extremely powerful as it will build financial incentives for traditionally marginalized hardworking people who contribute knowledge for the betterment of humanity. For the first time in history of mankind, hundreds of millions of people who contribute good deeds to improvement of health related quality of life of human race will receive incentives for their good deeds.



This smart reward system will unlock unprecedented amount of funds to support advancement in knowledge in general, particularly in lifescience and health production in the world. Good teachers who care deeply about their students, good researchers who contribute to new knowledge, and good practitioners who strive to provide greatest quality of service will receive financial incentives for their good deeds.

Ubricoïn crypto-currency reward program involves creating incentive programs to reward excellence in education, research and practice. The program rewards the use of Ubricoïn for financial transactions in everyday practice. Buying from local suppliers and manufacturers on Soko Janja will attract rewards. By doing so, quality of medical and health care will improve all over the world.

It is widely documented that people living in developing countries do not have access to good quality education, products of research, and professional services. Much worse, developing countries are not at the forefront of biomedical research, development, innovation, and commercialization of research knowledge into commercial products and services.

The enterprise for translation of science into products for everyday domestic use and clinical care does not exist in developing countries, because there is no incentive for creating such enterprises. Absence of biomedical and health care innovation has resulted in a huge burden of disease in developing countries. Innovation in biomedical and health ecosystems rely on good financial incentives. The global financial community has not created financial incentives for biomedical innovation and health production.

Lo (2016), explained that when financial innovation is absent in a particular field of science, large scale innovation in that field is not possible. By contrast, with financial innovation any level of innovation is possible in any field of science. According to Lo, when financial innovation in a field is present, large scale



innovation is possible in that field. Lo adds that financial innovation is a necessary and sufficient condition for any other innovation to occur. Furthermore, the global financial system has enough financial resources to solve all global health problems. This means that we have enough money in the world to support best quality health care for everyone. We however have lacked the technology to organize it.

To overcome this problem, Ubricoïn will build financial incentives that will ensure continuous throughput of scientific innovation in service of health production in the developing world. To be successful, Ubricoïn will have to reward all stages of knowledge production, beginning with primary school education (Table 1). Education excellence reward system will offer tokens to primary school teachers, secondary school teachers, university educators, researchers and post university practitioners. Service quality smart reviews will provide community of users the power to incentivize quality and eliminate mediocrity in academia and industry. Ubricoïn self-executing smart review contract will be the most powerful tool to improve service quality and establish loyal customer base.

TABLE 1. SMART CONTRACT INCENTIVES FOR KNOWLEDGE AND PERFORMANCE EXCELLENCE

Short Name	Program name	Qualifying criteria
PSTRP	Primary school teachers reward program	Attendance to class Quality of teaching Engaging students in practical work Use of Ubricoïn for financial transactions Buying locally produced products on Soko Janja
HSTRP	High school teachers reward program	Attendance to class Quality of teaching Engaging students in practical work Number of students qualifying to university Use of Ubricoïn for financial transactions



		Buying locally produced products on Soko Janja
UTRP	University teachers reward program	Attendance to class Quality of teaching Engaging students in practical work Number of graduating students successfully placed to employment Follow-up with former students to discover their performance in professional life Use of Ubricoi for financial transactions Buying locally produced products on Soko Janja
OARP	Original academic research reward program	Accepted proposal by a peer-review process Publication of original research in a peer-reviewed journal Presentation of original research in an academic conference Translation of original research into prototypes for the market Commercialization of prototypes Use of Ubricoi for financial transactions Buying locally produced products on Soko Janja
PRP	Practitioner reward program	Professional service quality Continuing professional development Accepted practice research proposal by a peer-review process Publication of original research in a peer-reviewed journal Presentation of original research in a professional conference Translation of original research into prototypes for the market Commercialization of prototypes Use of Ubricoi for financial transactions Buying locally produced products on Soko Janja
ORP	Organizational reward program	Professional service quality Use of Ubricoi for financial transactions Buying locally produced products on Soko Janja
CRP	Consumer reward program	Consumer service quality Use of Ubricoi for financial transactions Buying locally produced products on Soko Janja



4.1.1. Incentives for high Quality Knowledge in Primary and Secondary Schools

For primary school and high school teachers, we will create a rating system on blockchain to reward excellence in practice. We will issue Brevis to teachers who demonstrate commitment and dedication to student learning. The students will use the system to rate their teachers and the rating points will convert to Brevis. The rating system will be embodied on teachers' class attendance, quality of teaching and engaging students in practical work.

4.1.2. Incentives for High Quality Knowledge in University

University lecturers/professors will be rewarded for demonstrating quality knowledge transfer to their students. This will be done through the rating system where the students will rate their professors based on the knowledge gained and their satisfaction on the content delivered. Brevis will be issued based on a rating system, with those with good rating receiving the tokens.

We will also offer incentives for lecturers who will develop original proposals and peer reviewed papers. To encourage sharing of research work we will offer incentives to people who present their original research in conferences and commercialization their research. We will reward lecturers and professors who show interest and commitment in reviewing of research papers and publishing and running journals on Ubrica Journal System.

4.1.3. Incentives for Professional Practice

Professionals lack incentive to do good in society today. Using Ubricoïn, we will issue tokens to individuals who demonstrate good professional practice, work ethics and good customer service. We will create a rating system where professionals will be rated by peers and consumers. This will act to improve quality in all sectors and eliminate inadequacy and corruption in practice.

4.1.4. Incentives for Shopping on Soko Janja

To promote village, level commerce we will offer tokens to people who buy things made by local manufacturers. To facilitate local economy, we will issue rewards for user registration into on Soko Janja platform. Consumers who will register and provide additional profile information will receive Brevis. Purchasing and referring new users in Soko Janja will attract reward.

4.1.5. Airdrops

Airdrops are coins sent to the users wallet addresses at no cost. The coins are sent in the process of distributing tokens to users of a cryptocurrency (e.g., Ubricoïn). The users are required to perform certain task as directed during airdrops announcements. The airdrops are used to create awareness of the coin and to reward loyalty.

We will use the airdrops to create a larger Ubricoïn community. A large community will create a more decentralized network which in turn will increase the level of security in the Ubricoïn network.

We will offer airdrops inform of Brevis to users (people who hold the Ubricoïn on their wallets) and to Ubrica project supporters. We will also issue Brevis to people who will use our coin to do transactions. We will have two forms of airdrops: planned and surprise airdrops. The planned airdrops will be used to create awareness and the surprise airdrops will be used to reward loyal coin holders (i.e., those who will hold the Ubricoïn and those who will use Ubricoïn for transactions)





5. HUMAN ENGAGEMENT

Our human engagement pillar involves engaging people at their basic level of existence to discover how we can work with them to create wealth.

5.1. The common Notions

We know that a person becomes poor when he or she is unable to exchange his goods or services for currency. When a person cannot find market for his or her products, services or farm produce, he or she ends up being poor. Nearly 95% of people living in Kenya are unable to find market for more than 80% of their farm produce. Kenyan subsistent croppers and pastoralists living in rural areas are extremely impoverished because they cannot find market for their produce. The only available market comes to them in form of organized cartels who buy the farm produce and livestock at a throwaway price. Even at this throwaway price, cartels are only able to purchase less than 20% of all the produce. The rest goes to waste. Perishable produce such as fruits, vegetable, flowers, animal products are rotting away in the villages of Kenya. This extreme waste of produce of the land, kills all possibility of generating wealth for the local people, and multiplies, by several orders of magnitude, the rotting capital in the country (see e.g., de Soto, 2002).

5.2. The Quandary

Without anywhere to sell produce, a subsistent cropper or a livestock producer slides into extreme poverty. When sick, she is afraid to seek medical service until the disease advances, and becomes incapacitating. She is forced by worsening



disease to seek medical care and arrives at a medical facility without enough money to pay for medical service. Her money does not cover for the medical service offered by the provider at the medical facility. The provider reduces the quality and quantity of service offering to match the little money available from the patient. The problem is that the provider of medical service receives hundreds of patients with advanced disease, but with little or no money. In most cases, the patient cannot pay anything at all. This severe lack of money to pay the providers in Kenya has led to a severe decline in the quality of medical service. Many owners of health facilities have to *cut-corners* just to *make ends meet*. Cutting corners by a medical provider means cutting a critical service, increased risk of worsening of disease, medical errors, or introduction of new diseases. Distressed medical providers in Kenya are offering the lowest quality experienced in the world. Low quality medical service is a serious health hazard to the people, which by itself results in death of health consumers in many instances. Health providers are seriously concerned by this problem. Without access to money however, and surrounded by masses of people with advanced disease, they are between a rock and a hard place. This is the quandary of health service.

5.3. Fundamental Solution

Logical reasoning indicates that the fundamental solution to health production problem lies in a system that improves the economy of each individual. In line with this logic, we have created a system to help people find market for their produce, services and products. In order to help a person, he or she must first join and become a member of distributed autonomous organization (DAO) known as the Co-operative Society of Ubricans (CSU). We intend to enroll 14 million families in Kenya alone. Once joined, our community workers help the member to send to market whatever he or she is producing. We have created an online retail store known as Soko Janja (see shop.ubrica.com) where members can buy and sell produce, products, and services. We have started enrolling individuals onto Soko Janja. Enrolled individuals can post pictures of their products, produce and services to the online retail store. Members of the CSU



will use their wealth to finance health production for themselves and their loved ones. We will use Ubricoins to facilitate the management of the online store. Ubricoins will also be used at the point of sale in Soko Janja as well as an incentive structure to encourage people to buy from each other to activate local economy.

5.4. SOKO JANJA 3.02 BILLION UBN

We will distribute 3.02 billion UBNs to support our online retail store Soko Janja (see shop.ubrica.com) to help operationalize wealth creation by each individual in any given community. We are proposing to build a platform that will be decentralized. The platform will facilitate peer-to-peer trading without Ubrica mediating. The trading will involve the use of Ubricoins as means of payment which will be validated by blockchain.

5.4.1. The Reward System

We will create an incentive structure to facilitate peer-to-peer trading and purchase of locally produced products, produce and services. Holders of Ubricoins purchasing locally produced products and services in Soko Janja will receive the services and products at a discount. They will also receive loyalty points for shopping in Soko Janja.



5.4.2. Reuse of Points

Points received from shopping at Soko Janja will be used to access more products, produce and services in the Ubrica ecosystem such as shopping at Soko Janja or access to health services in the URCCs and BMICs

These 1 billion coins will be sold in four phases at \$0.5 per UBN.

TABLE 2. UBRICOIN DISTRIBUTION PROGRAM FOR SOKO JANJA

	Tokens	Phases	Uses
Soko Janja	302M Phase 1 allocation	Design	<ul style="list-style-type: none"> • Desktop and field research • Cash in fiat • Calling and registering manufacturers, clients, suppliers and customers • Building a delivery system
	604M Phase 2 allocation	Development	<ul style="list-style-type: none"> • Buy new laptops and computers • Networking capabilities • Raise money for energy and utilities • Money for salaries
	906M Phase 3 allocation	Management	<ul style="list-style-type: none"> • Strategic planning • Organizing teams • Coordinating • Controlling
	1.208B Phase 4 allocation	Scaling	<ul style="list-style-type: none"> • Engaging the 14 million households • Cash fiat for payment of 7,250 community workers • Reaching the 47 counties, 210 sub counties, 1420 wards • Incentives



			<ul style="list-style-type: none">• Shopping at Soko Janja
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5.4.3. Phase 1 allocation

We will allocate 302 million coins at this stage. These funds will be used to design the e-commerce platform. Funds will also be used for field research to assess the market for the local products, visiting manufacturers to sell the idea and register them on the platform, calling and listing manufacturers, clients, suppliers and customers.



5.4.4. Phase 2 allocation

We will allocate 604 million UBNs at this stage. These funds will be used for the development of Soko Janja. We will buy new computers to facilitate maintenance, updates and development of the platform. These funds will also cater to networking capabilities and paying salaries to people who will be working on the platform. We will also use a fraction of the funds raised to market the platform.

5.4.5. Phase 3 allocation

We will allocate 906 million coins at this stage for developing management capacity. This will include identifying, recruiting, training and retaining human resource for Soko Janja. These funds will be used to organize and upgrade teams into departments. In coordinating, we will make sure all the teams are working together in a synchronized version so that all the teams will work as a single whole. We will also create a team for controlling financial resources including creating appropriate use of the Ubricoi, token distributions, airdrops and loyalty incentive programs. We will use these funds for strategic planning to scale Soko Janja into a peer to peer market.

5.4.6. Phase 4 allocation

We will allocate 1.208 billion coins for scaling Soko Janja. These funds will be used to enroll 14 million households and to pay 7,250 community workers who will be recruited to register manufacturers and suppliers in the 47 counties, 210 sub-counties and 1,450 wards in Kenya. We will create an incentive program to reward customers who will be buying locally produced products from Soko Janja.





6. UBRICA RETAIL CLINICAL CENTERS

Achieving universal health involving ensuring access. Ubrica will build retail clinical centers called Ubrica Retail Clinical Centers (URCCs). We will use the URCC model to organize village level commerce. A URCC will have three primary components: a medical clinic, a retail store, and produce value addition and quality improvement workshop. We intend to support design, development and construction of at least 100 health centers that will be leased to qualifying health professionals on a 20 year mortgage agreement. We will construct an average of two units per county in Kenya. Some counties with greater population may have more than two. Each center will have a fully furnished health center and a retail store. Individuals enrolled into the CSU form the consumer base of the URCC. Each URCC will serve a catchment population of about 300,000 people. Thus, 100 URCCs will serve at least 30 million people. The URCC project requires US\$ 1 billion. We shall allocate 3.02 billion Ubricoins to fund design, development and implementation of 100 URCCs in Kenya.

6.1. URCCS 3.02 BILLION UBN

We will allocate 3.02 billion UBNs to help in design, development, construction and management of the URCCs. We intend to construct at least 100 health centers average of two units per county. The 3.02 billion UBNs will be allocated in four phases.

6.1.2. *The Reward System*



The aim of creating the URCCs is to build a healthy conscious community. We will use Ubricoins to create an incentive structure to facilitate healthy behaviors. We will issue points to people who:

- Practice preventive health such as, exercise, proper diet, optimal sleep and early screening of diseases.
- Basic and secondary prevention of diseases such as diabetes, hypertension and diagnosis checkups.

All points earned will go to the pooled smart contract which will be used for paying providers for health services and shopping at Soko Janja.

TABLE 3: UBRICOIN DISTRIBUTION PROGRAM FOR UBRICA RETAIL AND CLINICAL CENTERS

	Tokens	Phases	Uses
Ubrica Retail Clinical Centers	151M Phase 1 allocation	Design	<ul style="list-style-type: none"> • Desktop and field research • Doctors and other professionals who would become owners of URCCs • User research
	453M Phase 2 allocation	Development	<ul style="list-style-type: none"> • Consult professionals such as, architects, engineers, planners, construction, security personnel and IT professionals.
	1.51B Phase 3 allocation	Construction	<ul style="list-style-type: none"> • Land purchase and entitlement • Construction of 100 URCCs (2 per county)
	906M Phase 3 allocation	Management	<ul style="list-style-type: none"> • Mortgages • Incentives • Customer satisfaction



6.1.1. Phase 1 allocation

In this phase we will allocate 151 million UBNs. The funds raised will be used for the design of the URCCs. Desktop research will be carried out to determine the structure and requirements needed to construct the URCCs. Field research and visiting the sites will be done to determine suitable areas for constructing the URCCs. We will also do environmental studies and acquire permits.

We will do marketing to create awareness and identify doctors who will be running the clinics. Public outreach and evaluation will be carried out to understand the scope of the project.

User research will also be done to determine our target audience and capacity for utilization of health services in each county. User studies will include consumers of care, providers of care and payers of care. This will help in determining the optimal number of clinics for each county. Counties with greater population may require more than two URCCs.

We will develop a program for quality training. This will help improve the quality of care that will be provided in the clinics. The identified doctors who will own the clinics will go through continuous professional development. A fraction of the funds raised in this phase, will be used for project planning (i.e., getting proper legal documents, permits and doing feasibility studies).

6.1.2. Phase 2 allocation

We will allocate 453 million UBNs in this phase. These funds will be used for the development of URCCs. We will hire consultants, architects, engineers, planners, construction security personnel and IT professionals. This team will be responsible for planning and generating of construction documents for different counties.

6.1.3. Phase 3 allocation



In this phase, we will allocate 1.51 billion UBNs. This will help us in acquisition of land and their title deeds for the implementation of the URCCs project. This land will be sourced from different counties in Kenya. Our goal is to ensure that we at least have land in all the 47 counties so as to effectively start the construction of the URCCs. We will also use these funds to purchase clinical equipment required in the clinics.

6.1.4. Phase 4 allocation

We will allocate 906 million UBNs for management of the URCCs. The funds will support mortgages to the doctors who will own the URCCs. The mortgages will make it easy for fresh graduates to own clinics. Some of the funds raised will be used in an incentive program. We will reward health professionals with Brevis for provision of quality of care. We will also issue tokens to individuals with good health seeking behaviors. These incentives are meant to improve the quality of care and as motivation to the doctors. Offering tokens to the patients will lead to early disease detection and prevention of diseases.

Funds raised from this phase will be used for continual growth and maintenance of the clinics and to set stage for long-term success. We will also hire teams which will be in charge of maintaining the equipment.





7. UNIVERSAL HEALTH COVERAGE

We focus on our intent to build Sustainable One Health Communities (SOHCs) comprising six primary components shown in Figure below.



FIGURE 6. PHYSIOLOGICAL FEATURES OF A SUSTAINABLE ONE-HEALTH COMMUNITY



- A co-operative Society of Ubricans (CSU) constituted by our members drawing from local communities.
- Produce/product workshops for improving quality and packaging of things produced by our members.
- A retail store that serves as a market for produce and products by members of the CSU.
- A one-health clinic that provides clinical services to members of the CSU.
- A web/mobile platform (<http://shop.ubrica.com/>) for managing the commerce issuing from the retail system.
- A biomedical industrial city

The retail store, the one-health clinic, the co-operative workshop and e-commerce platform activates the 4th element of health production. We have designed SOHCs to overcome grand challenges in global health. We recognize the critical role of animals, environment, and economy in human health. We believe that sustainable health production in global health is a function of a system that integrates simultaneous operation of these four elements of human health, animal health, environmental health and economic health.

Our SOHCs are rooted in the conception that economic development is the most powerful means of health production. Economic development is the greatest cause of improvement in health. Economic health, the 4th element of health production, is the primary driver of sustainable one-health in any community in the world. It is common knowledge that compared to a wealthy person a poor person is more likely to get sick; more likely to develop complications of disease; more likely to succumb complications and to



FIGURE 7: THE FOURTH ELEMENT OF HEALTH



develop disability due to disease, and more likely to die from a disease. It is impossible to improve health of a poor person in the long term, without improving the wealth of the person in the long term.

7.1. Fundamental Solution

When we strike a sale at Soko Janja, we divide the proceeds of produce/product sale into three fractions. One fraction goes back to the member, in form of profit. Second fraction goes back to the co-operative to meet operations and administration needs. The third fraction sits in a health fund. This is what is called health risk pooling. A member seeking care at a health facility is fully covered. The owners of health facility are happy because they are assured of payment of the quantity and quality of their service offering.

7.1.1. Health Risk Pooling

Pooling refers to collecting money from many people in a group so that the money collected is then used to pay for health services for its members. Pooling risks together allows the higher costs of the less healthy to be offset by the relatively lower costs of the healthy. Pooling ensures that the risk related to financing health is borne by all the members of the pool. Its main purpose is to share the financial risk associated with disease, disability and death for which there is uncertain need.

Smith and Witter (2004) explained that there are four classes of risk pooling (a) no risk pool, under which all cost lies with the individual; (b) unitary risk pool, under which all cost is transferred to a single national pool; (c) fragmented risk pools, under which a series of independent risk pools (such as local governments or employer-based pools) are used; and (d) integrated risk pools, under which fragmented risk pools are compensated for the variations in risk to which they are exposed. Small, fragmented risk pools, which are the norm in developing countries, have seriously adverse outcomes for the users of the health system.



7.1.2. Pooled Smart Contract

Each individual holder of Ubricoïn will receive a smart contract to use health services at a URCC at the time of need Ubricoïn holders who will shop at Soko Janja, practice healthy behaviors will get loyalty point inform of Brevis. The Brevis will go to the pooled smart contract to be used to access health care services in the URCCs. The smart contract will cover preventive and curative services for the holder by the contract. Pooled smart contract will recreate a pooled smart contract (PSC) that will act as health risk pooling.





8. UNIVERSITY SCIENCE AND TECHNOLOGY PARKS

A science and technology park, also known as a research park is a property based development that fosters the growth of tenant firms and affiliated with a higher institution of learning. The purpose is to facilitate sharing of knowledge, promote innovation and advance research to viable commercial products. Ubrica will facilitate design, development and implementation of 66 Science and Technology Parks (STPs) for Kenyan universities. We will also provide STP Development and Management Service through our Scientific Real Estate Development Division (SREDD). The Science and Technology Park Development and Management Service will involve setting out the strategy and objectives of the 66 new parks and deciding on the best model for implementation. SREDD will manage many complex processes and diverse relationships. We shall allocate 3.02 billion Ubricoins to fund design, development, implementation and management of 66 STPs in Kenya.

8.1. How Science and Technology Parks Benefit the Local Community

The Science and Technology Parks provide locations that foster innovation and development and commercialization of technology and where government, universities and private companies may collaborate.

- Science parks may offer a number of shared resources such as incubators, program and collaboration activities, telecommunication hubs, reception, security, among others



- Science parks also aim to bring together people who assist the developers of technology to bring their work to commercial fruition.
- They can be attractive to university students who may interact with prospective employers.
- Apart from tenants, science parks create jobs for the local community, for example they may be built with restaurants, sports facilities, etc.
- Science parks catalyze community innovation.

8.2. Translation and Commercialization of Science

We opened dialogue with several Universities in Africa for commercialization of science. We developed a Science and Technology Park Development and Management and Technology Transfer Services Agreement that will be used to guide our relationships with Universities. This science and technology park development and management, and technology transfer or knowledge conversion services agreement will be made with UBRICA as the “Manager” and the University as the “Institution.”

8.2.1. Ubrica-University Science and Technology Park Management and Technology Transfer Services

Ubrica will provide two services to Universities, science park development and management services and technology transfer or knowledge conversion services.

8.2.2. Knowledge Conversion/Technology Transfer Service

Ubrica will establish a University Technology Transfer Office (UTTO) to facilitate the commercialization of University intellectual property, including patents and copyrights. UTTO will work with researchers and students in every college to prepare new inventions for the patenting process and potential licensing opportunities.



UTTO's job will be to create sustained focus on transferring cutting-edge research and innovation to the commercial marketplace, generating revenue and diversifying the economy. The UTTO will have knowledgeable and professional staff with specialized backgrounds. The UTTO staff will work in collaborative teams to create markets, execute patenting and licensing of new ideas, discoveries and innovations, to translate them into the commercial products and services. The UTTO will be responsible for the development, protection, and utilization of intellectual property rights. UTTO will serve as the liaison of cooperative ventures between university and industry.

8.2.3. Start-Up Companies

UTTO will promote and facilitate business development and entrepreneurship by bringing researchers together with experienced entrepreneurs and investors to form companies for commercializing university technologies. The UTTO will create and foster new start-up companies that will create jobs and provide mutually beneficial relationships to advance technological innovations and to bring their services into the marketplace. UTTO will maintain an electronic database of start-ups based on university technology. The data base will be publicly available through Ubrica Website that people can view and invest directly.

8.3. Incentive Structure for Science Parks

We will create a reward system for the science park. Staff members who will work in collaborative teams to create markets, execute patenting and licensing of new ideas, discoveries and innovations will receive rewards. The Ubricoïn will be used to provide discounting services for knowledge conversion enterprise in:

- exploration during the needs assessments and feasibility studies,
- research for both qualitative (phenomenological, ethnography and grounded theory) and quantitative research (non-experimental, quasi experimental and experimental studies),



- publication of original works, white papers, monographs, anecdotes and case reports,
- translation of scientific knowledge which may include execution of patents, intellectual protection and
- commercialization of products of research.

The reward system will also facilitate the translation of innovations into commercial products and services. Researchers and students who will work with UTTO will also receive incentive.

We will build a structure for incentivizing, university lecturers/professors who provide quality education by showing good class attendance and engaging students in practical work that will result to a high number of skillful graduates placed to employment. In addition, the lecturers/professors will be rewarded following up with students' professional life. They will further get rewards for the use of Ubrico in financial transactions and buying products on Soko Janja.

8.4. STPS 3.02 BILLION UBN

These coins will be allocated in the year 2020 to support innovation in science and technology. We will allocate coins to facilitate the knowledge transfer from the universities to the industry. The 3.02 billion coins will be allocated in four phases each phase raising funds to support different segment of this project.

TABLE 4: UBRICOIN DISTRIBUTION PROGRAM FOR SCIENCE AND TECHNOLOGY PARKS

Science and Technology Parks	Tokens	Phases	Uses
	151M Phase 1 allocation	Design	<ul style="list-style-type: none"> • Desktop and field research • Recruiting doctors and other professionals • User research



	453M Phase 2 allocation	Development	<ul style="list-style-type: none"> Physical geotechnical suitability Architecture, Economic Construction Security, technology. planning, studies, analysis, Engineering, planners, planning, Information
	1.51B Phase 3 allocation	Construction	<ul style="list-style-type: none"> Land purchase and entitlement Construction of 66 STPs
	906M Phase 4 allocation	Management	<ul style="list-style-type: none"> Mortgages Incentives Customer satisfaction

8.4.1. Phase 1 allocation

We will allocate 151 million UBNs to facilitate the design of the STPs, setting out the strategy and deciding on the best model for implementation. We require a lot of desktop and field research to understand the STPs scope and relationships. This will be done by a team of professionals. We will therefore, sell these UBNs to support this stage of STP development.

8.4.2. Phase 2 allocation

In this stage we will allocate 453 million UBNs. Funds will be used for the development of STPs. We will identify and hire architects, engineers and planners who will be responsible for developing the project scope and planning the implementation of the STPs.

We will use the funds to support feasibility studies which will include physical planning, geotechnical studies, suitability analysis, architecture, engineering, economic planners, construction planning, security, information technology.



8.4.3. Phase 3 allocation

We will allocate 1.51 billion UBNs to facilitate the construction of the STPs. We intend to construct 66 STPs in different Kenyan universities. These funds will be used to purchase land, entitlement and the construction material for this project to monitor and evaluate the project.

8.4.4. Phase 4 allocation

We will allocate 906 million UBNs to support management of the STPs. We will use the funds to create a mortgage program to facilitate ownership of scientific real estate developed as innovation hubs. We will also create a reserve fund to support operation of innovation hubs within each STP, until breakeven. Operations of an innovation hub within an STP will be responsible for generating high quality research, ideas innovation, translation/commercialization of knowledge into products and services that help solve local problems.

STPs will bridge the university with the industry and with the local community. To stimulate new innovations we will create bounty programs to reward individuals or groups with new scientific ideas that will help provide solutions to our vexing problems. We will issue tokens to people who will

- produce original research,
- publish the results of their original research,
- present the results of their research in scientific conferences locally and internationally,
- translate their research knowledge into commercial prototypes, and
- commercialize their prototypes into products of everyday use.





9. UBRICA ONE BIOMEDICAL INDUSTRIAL CITY

We propose to implement Ubrica One Biomedical Industrial City in Kenya (Ubrica One). We will build Ubrica One on multiple disparate land parcels all aggregating to approximately 4,000-acres. The complete project will be multiple master-planned biomedical industrial parks with specialty hospitals fashioned as academic medical centers (“AMCs”), research facilities, residential areas, and specialized industrial zones.

9.1. STRATEGY

Ubrica one will host a Children & Women’s AMC, a Heart & Lungs AMC, a Neuroscience & Rehabilitation AMC, a Trauma & Orthopedic AMC, an Eye & Ear AMC, a Cancer Hospital & Hospice Care AMC, a Tropical & Infectious Diseases AMC, a Renal & Urologic AMC, a Gastro-Intestinal Diseases AMC.

9.1.1. Vision

Our vision is to create places that will be lead centers of excellence in global health in:

- discovery, development, and commercialization of cutting edge technologies in biomedicine
- world class services in health promotion, disease detection, disease prevention, and disease treatment.

9.1.2. Mission

Our mission is to establish and sustain leadership in:

- Translational research in human biology, human physiology and human medicine
- Nano-science, biotechnology, molecular biology and human genetics
- Clinical medicine
- Organization of systems of delivery of care
- Information systems for health

9.1.3. *Theoretical Underpinning*

Our project is underpinned by the theory of knowledge conversion continuum that explains that knowledge has to traverse five distinct stages to translate in products that people can use to solve problems of everyday life: EXPLORATION—RESEARCH—PUBLICATION—TRANSLATION—APPLICATION.

9.1.4. *Phenomenal Structure*

The phenomenal structure of Ubrica One is grounded by four primary functions of a world class academic medical center: RESEARCH—EDUCATION—INNOVATION—PATIENT CARE. We propose to build Ubrica One as an all-inclusive development with multiple land uses to be located on an aggregate of 4,000-acre lot of land in Kenya. Upon completion, Ubrica One will be home to eight ultramodern academic specialty medical centers structured as world class HOSPITALS, centers for advanced science in biomedicine structured for advanced RESEARCH, and centers for biomedical translation and innovation structured for COMMERCIALIZATION and MANUFACTURING (Table 2).

TABLE 5. KEY FEATURES OF THE UBRICA ONE BIOMEDICAL INDUSTRIAL CITY

Structure	Function
HOSPITALS	Eight ultramodern academic medical centers providing patient care and education.
RESEARCH	Centers for advanced biomedical research.
PRODUCT COMMERCIALIZATION and MANUFACTURE	Centers for advanced biomedical translation, innovation, and commercialization of knowledge into products and services for home and clinical use, and manufacture of products.



The phenomenal structure of the Ubrica One is underpinned by the theory of advanced academic medical center that is built on the principle of integration to collocate the functions of advanced research in science technology and medicine [RESEARCH], world class medical and science education [TEACHING], translation of research knowledge products into commercial products for everyday use at home and in the clinical environments [INNOVATION], and delivery of care of the highest quality possible [PATIENT CARE] (Figure 9).



FIGURE 8. PHENOMENAL STRUCTURE OF UBRICA ONE DEPICTING FUNCTIONAL KINSHIP OF AN ADVANCED ACADEMIC MEDICAL CENTER THAT INTEGRATES RESEARCH, TEACHING AND INNOVATION WITH PATIENT CARE.

This proposal contains a brief description of the project, starting with the explanation of the background of the problem that the project is meant to solve. In addition, the proposal explains the purpose of Ubrica, the general approach to implementation, and the significance of implementation Ubrica One.

9.2. STATEMENT OF INTENT

Our intent is to create in Kenya, centers of excellence for (a) discovery, development and commercialization of cutting edge technologies in biomedicine, and (b) world class health care services in health promotion, disease prevention, and treatment. Two major and closely interrelated problems motivate our intent:



- **The severe inadequate infrastructure for global health.** Health services in many countries of the world are unsafe, of low quality, and inaccessible to majority of the people. People, afraid to use health services locally, seek medical care in other countries. Indeed, healthcare consumers would be willing to pay more for better care that is of high value, of efficient supply of drugs, of better technical quality, of well-maintained health facilities, and of short wait times. The specific problem is that an entity that can produce comprehensive world-class medical service is lacking. Ubrica One will be home to five ultramodern academic specialty medical centers structured as world-class hospitals to deliver care of the highest quality possible.
- **The absence of health services and biomedical innovative research and development (R&D) capability.** Ubrica One is poised to create a world-class research facilities attached to the world-class hospitals. The research facilities will serve as centers for research excellence in Kenya. The centers will produce the best-in class researchers in health, medicine, and basic sciences. The research facilities will also serve as technology transfer organizations that will manage intellectual property, licensing, and commercialization of products of research, and industrial development to meet health needs of people.

9.3. BACKGROUND OF THE PROBLEM

In this section we present the background of the problem addressed in this proposal from the framework of knowledge conversion. The section underpins knowledge conversion as the centerpiece of national development, emphasizing the central importance of comprehending knowledge conversion to comprehend development.

9.3.1. *Theoretical Underpinning: National Development a Function of Knowledge Conversion*



Knowledge conversion is the work of discovering knowledge residing in the local environments and mastering the discovered knowledge to create products and services that people and organizations can use to advance themselves and to defend themselves from enemies. Knowledge converts in five steps starting from exploration, going to research, then to publication, then to translation and finally to application of knowledge (Figure 10).



FIGURE 9. USTAWI STAGES OF KNOWLEDGE CONVERSION CONTINUUM

Note. From, Macharia Waruingi (2010). Knowledge conversion by open innovation. Ustawi the knowledge conversion organization. Minnetonka, MN: Ustawi. (Used with permission of author.)

Human development depends on capability of people residing in that nation, to muster all the five stages of knowledge conversion in all fields of knowledge. A developed nation in biomedicine, for example, is the one that has built a full-scale capability for exploratory work in biomedicine, biomedical research, publication and dissemination of biomedical knowledge, translation of published biomedical knowledge into products such as pharmaceuticals and medical devices and systems for delivery of health care services, and application of biomedical knowledge in health promotion, disease prevention, cure of



disease, and education of present and future generations of care providers. Table 5 depicts the steps in the knowledge conversion continuum in biomedicine.

TABLE 6. STAGES OF THE KNOWLEDGE CONVERSION CONTINUUM, AND PRODUCTS ASSOCIATED TO EACH STAGE

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Process	Exploration	Research	Publication	Translation	Application
Product	Discovery of facts, theories, and propositions,	Verification of facts, theories, and propositions	Journals Thesis Text books Popular books Art	Intellectual capital management, patents	Pharmaceuticals Medical devices Health delivery systems Education systems

Typically, underdeveloped nations lack the will to develop capability for exploration, research, and translation of knowledge. Because they lack the will to develop these capabilities, they rely for their existence, on application of products and services created from knowledge discovered in other countries. They rely on foreign facts, theories and propositions to implement their work programs in their nations. Facts, theories and propositions from foreign sources do not have working capacity in local situations because they do not fit. Because of this problem, nations that rely on theories developed from knowledge products generated for a foreign nation remain underdeveloped and subservient to the nations from where the theories originated.

9.3.2. *Relevance*

For example, theories about approach to diseases developed from knowledge collected in Boston, Massachusetts in the United States is of little help to a clinician in Nyeri County dealing with medical conditions local to Nyeri County Hospital in Kenya; much less in a health center in Mukurweini, or Othaya in Kenya. Geography, culture, climate and other local forces have it that diseases that occur in Nyeri are different from the diseases that occur in Boston.



Furthermore, the local environments (culture, diet, nutrition, climate, geography, economy) affect the human physiology in such manner that the physiology adapts to local conditions. Indeed, the local environment modifies human genetic expression, which in turn modifies the human physiology for adaptation to needs of the local environment.

9.3.3. *Relevance Paradox*

Humans who live in hot climates are comfortable in high temperatures and do not tolerate the cold climates without a period of acclimatization. Similarly, humans who live in the lowlands with high oxygen tension do not tolerate low oxygen-tension highlands without a period of acclimatization. This physiological adaptation of individuals means that the human body tolerates medications differently according to local environment. Rather, factors in local environment determine the effectiveness of a medical treatment given to an individual. As such, medicines developed with knowledge gathered from Boston dwellers, may have lower effectiveness on Nyeri dwellers. Thus, use of knowledge from Boston to solve problems plaguing people in Nyeri leads to incomplete solutions, with attendant negative consequences.

9.3.4. *Exploration and Discovery*

Theories and propositions about how do help people deal with medical problems in Nyeri must come from the work of discovery of such knowledge in Nyeri, and not Boston. Theories and propositions about health and disease in Nyeri must be verified through formal research about health and disease in Nyeri.

9.3.5. *Intellectual Property Protection*

The discovered theories, propositions, and their verifications must be protected with appropriate regulations and patents to safeguard loss of intellectual property. Unprotected intellectual property is open to exploitation by outsiders leading to tremendous loss.



9.3.6. Publication

After appropriate protection, the discovered theories, propositions, and their verifications must be published in journals, books, thesis, monographs for dissemination to schools, universities, government organizations, non-governmental organizations, business organizations, and indeed to all interested individuals. The published knowledge is then available for creation of new products and services that have fit and working capacity in the local environment. Local companies can use the translated knowledge to create medicines, medical devices, health delivery systems, medical services systems, etc.

9.3.7. Application

The glaring absence of medical manufacturing in African countries, and the extremely poor quality of medical services is the product of lack of attention to exploration, research, publication and translation of local knowledge. A country that has no local knowledge resembles a human being whose higher center of the brain is amputated.

9.3.8. Knowledge Conversion in Biomedicine for Global Health

Developing countries lag behind in knowledge conversion in biomedicine. Many governments of developing countries allocate no investments on exploration of knowledge that would lead to discovery of bio-medical facts, theories and propositions. Furthermore, governments of developing countries invest very little in research that would lead to verification of facts, theories and propositions. They do not invest in discovery and verification for the benefit of the citizens of their nations. To overcome this problem, we must discover new ways of funding knowledge conversion in biomedicine for global health using blockchain.

9.3.9. Private Sector and Knowledge Conversion in Biomedicine in the World



Private health care sector has historically played an important role in health services delivery in developing countries. The absence of a well-organized health insurance system and ambivalence in health care financing, however, limit the growth of the private health care. In recent years, several developing countries have rapidly re-emerged from grinding poverty, and business is springing back. The national leadership is supportive of the private health care enterprise, encouraging private investment in health care and medical facilities. The general problem is inadequate health systems in developing countries. These countries suffer long-term neglect and lack of investment with high rate of infection in hospitals and limited medical equipment.

Investment in world-class Ubrica One Biomedical Industrial City will help to overcome the problem of global health. Specifically, Ubrica One will be the beacon of hope for biomedical discovery and a source of excellence in bio-scientific publications. In addition, Ubrica One will lead to a new horizon of translational medicine, medical devices and pharmaceutical manufacturing for global health.

9.4. BMIC 6.04 BILLION UBNs

We will allocate 6.04 billion UBN to fund biomedical industrial city. The fund raised will be used for design, development, construction and management of BMIC. We will issue coins to facilitate construction and post-construction management of biomedical industrial city. The biomedical city will function as an epicenter for discovery and development of medical innovations for global health.

9.4.1. Reward System

Holders of Ubricoins will receive discounted services at the biomedical industrial city. The discounted services will include: healthcare services, hospitality and tourism. The users of BMIC will receive loyalty points.

9.4.2. Reuse of Points



The loyalty points will be used to assess services in the Ubrica ecosystem such as shopping on Soko Janja and receiving services in URCCs. The points will also be used in the pooled smart contract.

The 6.04 billion coins will be issued in four phases each phase raising funds to support different segments of this project.

TABLE 7: UBRICOIN DISTRIBUTION PROGRAM FOR BIOMEDICAL INDUSTRIAL CITY

	Tokens	Phases	Uses
Biomedical Industrial City	402.6M Phase 1 allocation	Design	<ul style="list-style-type: none"> • Desktop and field research • Doctors and other professionals • User research
	604M Phase 2 allocation	Development	<ul style="list-style-type: none"> • Physical planning, geotechnical studies, suitability analysis, Architecture, Engineering, Economic planners, Construction planning, Security, Information technology.
	3.02B Phase 3 allocation	Construction	<ul style="list-style-type: none"> • Land purchase and entitlement • Government
	2.01B Phase 4 allocation	Management	<ul style="list-style-type: none"> • Mortgages • Incentives • Customer satisfaction • Excellence in education, clinical practice and performance in all fields

9.4.3. Phase 1 allocation



We will issue 402.6 million UBN to facilitate the design of the BMIC, setting out the strategy and deciding on the best model for implementation. We require a lot of desktop and field research to understand the BMIC scope. This will be done by a team of professionals.

9.4.4. Phase 2 allocation

In this stage we will issue 604 million UBNs. This will be used for the development of BMIC. We will identify and hire architects, engineers and planners who will be responsible for developing the project scope and planning the implementation of the BMIC.

These funds will be used to do feasibility studies which will include, physical planning, geotechnical studies, suitability analysis, architecture, engineering, economic planners, construction planning, security, information technology.

9.4.5. Phase 3 allocation

We will issue 3.02 billion UBN to facilitate the construction of the BMIC. We intend to construct BMIC in Kenya. These funds will be used to purchase land, entitlement and the construction material for this project. The raised funds will also be used to do monitoring and evaluation of the project.

9.4.6. Phase 4 allocation

We will issue 2.01 billion UBN to support management of the BMIC. We will use the funds to create a mortgage program to facilitate ownership of medical and scientific real estate. We will also create a reserve fund to support operation of innovation hubs within the BMIC, until breakeven. Operations of an innovation within the BMIC will be responsible for generating high quality research, idea innovation, translation/commercialization of knowledge into products and services that help solve local problems. The BMIC will bridge the university with the industry and with the local community.



To stimulate new innovation we will create bounty programs to reward individuals or groups with new scientific ideas that will help provide solutions to our vexing problems. We will issue tokens to people who will

- do original research,
- publish the results of their original research,
- present the results of their research in scientific conferences locally and internationally,
- translate their research knowledge into commercial prototypes, and
- commercialize their prototypes into products of everyday use.





10. DISTRIBUTION PROGRAM

Our goal is to get Ubricoins to be accepted by 2024, as standard method of payment for the 14 million families in Kenya. Complete acceptance will mean that all transactions will go through Ubricoins.

We hope that people will use Ubricoins for making payments for groceries, school fees, medical care, transport, entertainment and for capital purchases such as vehicles, buildings, land, for funding capital projects. In addition, people will use Ubricoins to pay for all kinds of professional services to providers. Architects, engineers, doctors, lawyers, teachers, and the like, will accept Ubricoins for services provided. Paraprofessionals; technicians, plumbers, carpenters, and all labor providers in general, will accept UBNs as payment for their labor.

Business people will pay for the purchasers in UBN. Petrol station owners will pay petroleum dealers with UBN. The dealers will then pay the refiners in UBN thus covering the supply side. On the demand side, people will buy petroleum using UBN. Similarly, restaurant owners will pay for groceries and other restaurant supplies in UBN. The customers will in turn pay restaurant owners in UBN. In the travel business, people will pay for tickets, hotel, accommodation, meals and other travel amenities in UBN. UBN will generally be accepted in all transactions, in both the supply and the demand side of business.

Implementation Strategy



According to Rogers (1962), adoption of innovations such as Ubricoïn encounters five categories of people:

1. Innovators who want to be the first to try the innovation. Innovators are venturesome and interested in new ideas. Innovators are willing to take risk. They are often the first to adopt new ideas. Very little, if anything, needs to be done to appeal to innovators.
2. Early adopters are opinion leaders who enjoy leadership roles, and embrace change opportunities. Early adopters are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation. They do not need information to convince them to change.
3. Early majority are rarely leaders. Early majority typically need to see evidence that the innovation works before they are willing to adopt. Strategies to appeal to this population include success stories and evidence of the innovation's effectiveness.
4. Late majority are skeptical of change. They will only adopt an innovation after it has been tried by the majority. Strategies to appeal to this population include information on how many other people have tried the innovation and have adopted it successfully.
5. Laggards are bound by tradition and are very conservative. They are very skeptical of change and are the hardest group to bring on board. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups.

Among the 14 million families in Kenya the following table indicates the number of families in each category.



TABLE 8. ADOPTION PROFILE OF UBRICOIN BY FAMILIES IN KENYA, BY 2024

Categories	Percentage %	Number of families
Innovators	2.5	350,000
Early adopters	13.5	1,890,000
Early majority	34	4,760,000
Late majorities	34	4,760,000
Laggards	16	2,240,000
Total	100	14,000,000

By 2024, we expect that Ubricoins to be used for transactions by 11,760,000 families of the 14 million families in Kenya. The 2,240,000 families remaining, represents the laggards, who in Roger’s model, may not adopt Ubricoins as their standard mode of payment. Non-the-less, they are highly likely to interact with people using Ubricoins, such that they will become indirect users. For example, a laggard could receive Ubricoins sent to him or her through a neighbor. Other laggards may request friends, relatives or neighbors to help with shopping using UBN.

Value Creation

While Roger informs us about the likelihood of people adopting particular innovation, Metcalfe’s law (1980), is instructive about how Ubricoins will gain value in the market. According to Metcalfe, the value of a network is directly proportional to the square of its users ($V = n(n-1)/2$). Ubricoins is already a currency. We do not need to hedge the value of the coin with fiat currency. We only need to create a network of Ubricoins holders to use it as common tender (see e.g., Bendell, Slater, & Ruddick, 2015). Our target in the primary stage is to help at least one million people create Ubricoins wallets. By Metcalfe’s law, this translates to a value of one million squared; that is, a value of one trillion.



We have set aside two billion UBN to be distributed to one million people to facilitate adoption by 11,760,000 people by 2024. The principal mechanism for distributing the two billion Ubricoins is by allocating the coins directly from the main contract to individual wallets held by people in disparate locations in the country.

Primary Network Creation

We have developed a program for creating and building the UBN network. Network creation involves distributing UBN to clusters of nested generations with disparate distribution conditions. Generation refers to the source of the Ubricoins. For example, first generation (G1) comprises people who receive UBN directly from Ubricoins contract assisted by Ubrica team. The second generation (G2) comprises people who receive help from the first generation (G1) to open wallets. The third generation (G3) comprises people who receive help from the second generation (G2) to open wallets, and so on. We have created a referral program to reward each generation as an incentive to help us reach the one million target.

G1 will receive 10,000 Ubricoins from the Ubrica team. G1 will then receive 20,000 UBN when they help ten people open wallets, and sent 1000 UBN to each of ten. The ten people receiving 1,000 become G2. G2 then receives 9,000 UBN from the contract to top up to 10,000 UBN. G2 in turn will help 10 people in their network open wallets, and distribute 1,000 to each wallet. G2 wallets receives 20,000 UBN after distributing all the 10,000 UBN to 10 new wallets.

The new wallets forming G3, are then credited with 9,000 UBNs to top up to 10,000 UBN. G3 in turn will help 10 people in their network open wallets, and distribute 1,000 to each wallet. G3 wallets receives 20,000 UBN after distributing all the 10,000 UBN to 10 new wallets. In all the generations Ubricoins transferred after they open new wallets are reimbursed and are encouraged to continue recruiting. And the cycle continues to G4, G5,Gn.



Secondary Network Creation

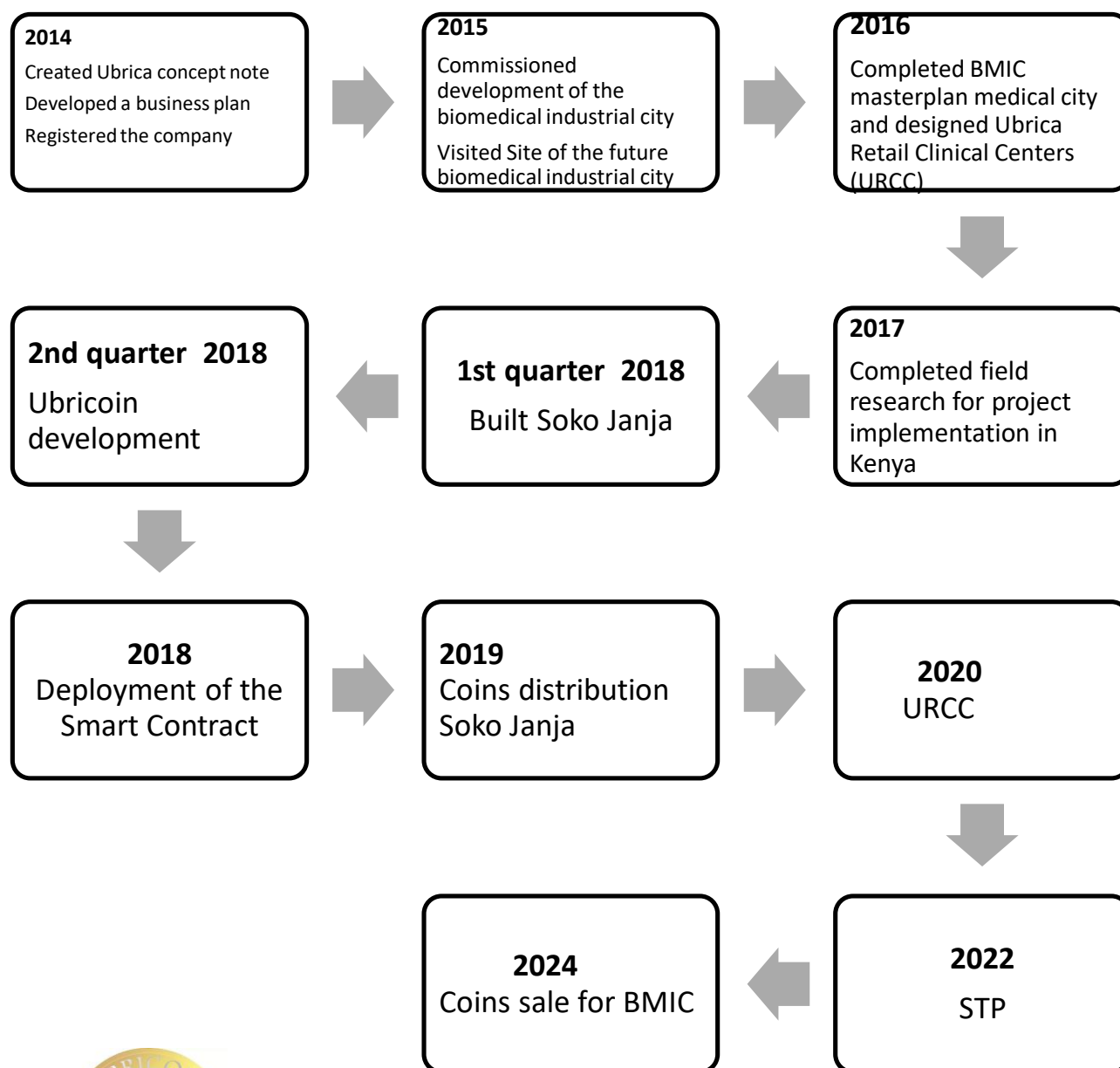
Soko Janja will be our secondary mechanism for coin distribution and adoption. People will use Ubricoins on Soko Janja for purchases. People will also receive new coins as loyalty points for purchasing in Soko Janja. The incentive program will also act as a mechanism of distributing Ubricoins in future. When the rating system is built people will receive Ubricoins for doing good in the community.



11. ROADMAP

Our journey to build capability for high quality *life-science* and *health-production (LSHP)* in Africa started in 2014. We created the concept note, developed the business plan and registered the company. Since then we have been able achieve major milestones. Therefore, we have created a feasible roadmap based on the goals of the organization.

FIGURE 10: ROADMAP BASED ON THE GOALS OF THE ORGANIZATION



12. SUMMARY

Ubricoïn on blockchain will serve as a platform devoted to improving quality of health for all. We will use Ubricoïn to develop global health industry and create market intelligence through a cryptocurrency reward system that will inspire positive contribution to health improvement around the world. We will use a smart review system to reward consumers for positive health behavior.

We need Artificial intelligence for global health. Ubricoïn will gather intelligent data about health, nutrition information and diseases. This data will help us develop smart community health decision support system, smart public health decision support system and smart clinical decision support systems. Ubricoïn will generate artificial intelligence for early disease detection algorithm built on International Classification of Diseases (ICD), health and diseases monitoring, effect and impact evaluation of health programs, improved data security, accuracy and speed of diagnosis.

We will use Ubricoïn to fund and create incentives for research, build world-class capacity for health and clinical research in developing countries and for research reporting through peer-to-peer reviewed papers by creating incentive token to the authors. This will lead to more people taking part in developing scientific papers. Ubricoïn will create incentives for research and new product development (R&D) with Brevis tokens for supporting development of scientific products. We will use Ubricoïn to support manufacturing of biomedical products, and to facilitate commercialization of the products in the online marketing and retail platform called Soko Janja. Ubricoïn will also support development and construction of scientific real estates in developing countries, including Ubrica Retail Clinical Centers (URCCs), Science and Technology Parks (STPs), a Biomedical Industrial City (BMIC).



Ubricoïn will benefit you, the consumer of health and other services. Consumers will receive Brevis airdrops from shopping on Soko Janja. Providers of health accepting Ubricoïn as payment at the point of sale will receive Brevises loyalty tokens, service quality tokens, direct feedback from consumers. Payers of health using Ubricoïn for transaction payment will experience dramatic reduction in payment fraud. Suppliers of products and services to the health system will enjoy simplified payment system. Regulators of health services will create intelligent regulation based on real-time data. This will ensure good governance.

Local and international non-governmental organization will enjoy simplified data gathering for needs assessments, project implementation evaluation, and post implementation evaluation. International development organizations concerned with global health will have a system for easy tracking of diseases of global health concern, detecting diseases before they become epidemics.



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