About Us

PUBLIC HEALTH

Ribbon Blockchain is a Platform for Collaboration and Automation of Public Healthcare processes to improve efficiency and quality of healthcare delivery

We use Blockchain as the underlying technology

Our App

Public Health Incentives App

Incentivizes & Rewards Patients & Healthcare Practitioners for prescribed health related tasks and activities
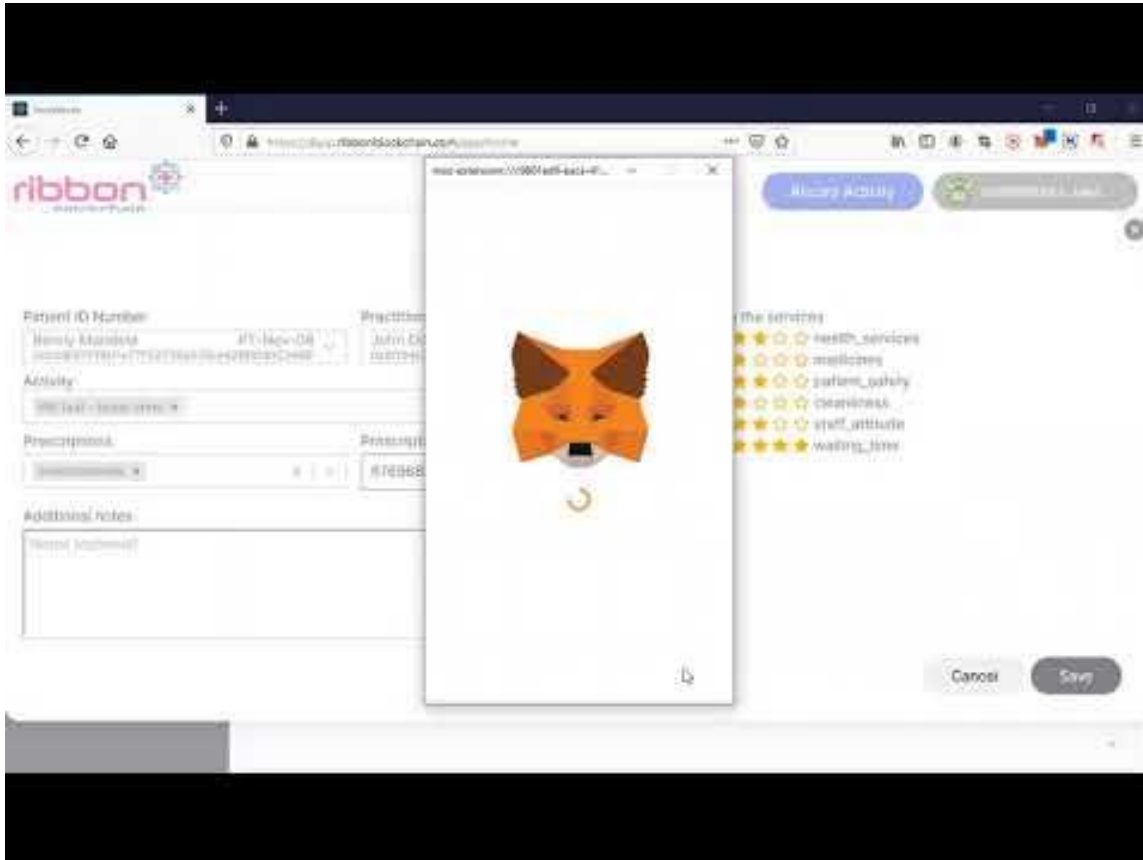
Its like <u>Discovery Vitality</u> for Public Health

We have engaged with South African Dpt of Health & Pharmaceuticals to understand their requirements to develop this app
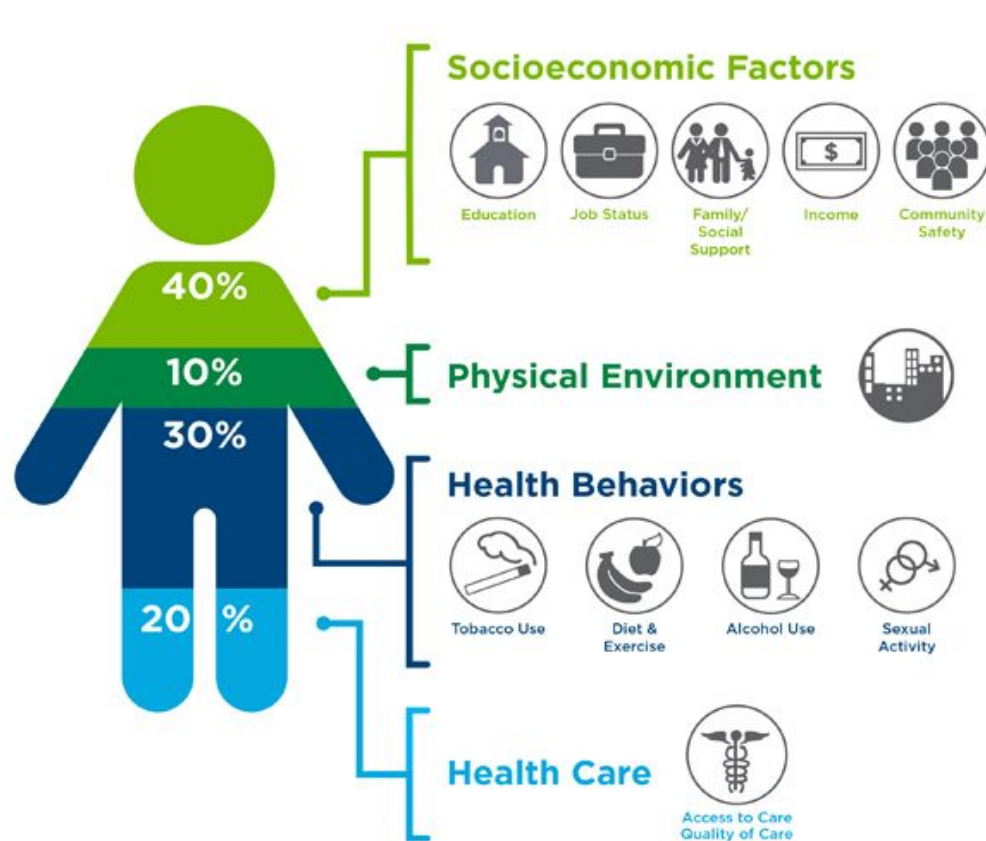
We have a green light to Pilot with DoH in the HIV Use Case

RIBBON BLOCKCHAIN

How it Works

Public Health Incentives App

To develop it, we had to 1st Understand Social Determinants of Health

Socioeconomic Factors
- Education
- Job Status
- Family/Social Support
- Income
- Community Safety

40%

Physical Environment

10%

30%

Health Behaviors
- Tobacco Use
- Diet & Exercise
- Alcohol Use
- Sexual Activity

20 %

Health Care
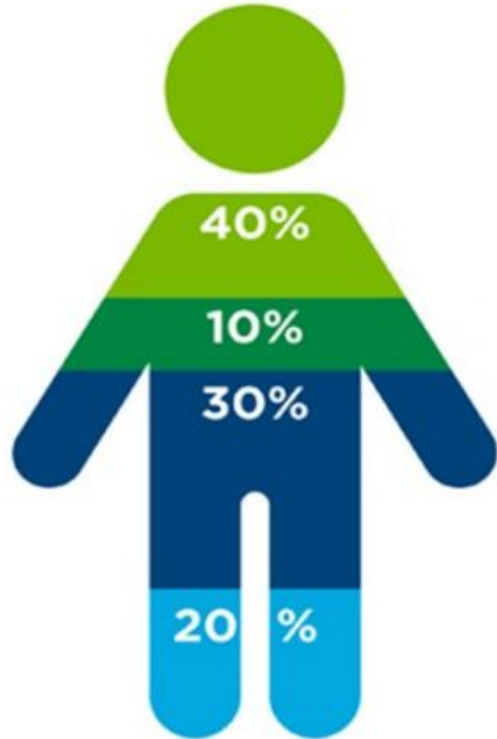- Access to Care Quality of Care

80% of a person's health & well-being is determined by social, environment and behavioral factors

20% of a person's health and well-being is related to access to care and quality of services

& role of Digital Solutions in Public Health

..are used to bridge the gap in administering Care for the 80% of Social, Environment & Behavioral determinants of Health

Health Transformative
Consumer Engaged
Appropriate
Consistent
Equitable
Affordable
Transparent
Shoppable
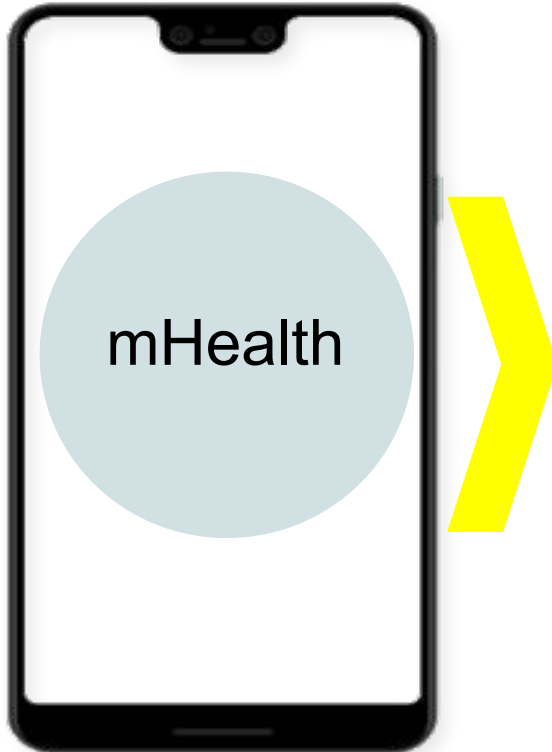Referable
Convenient
Digital
Clinical
Preventive
Procedural

in the form of

eHealth
(electronic health)
mHealth
(mobile health)
technologies

RIBBON BLOCKCHAIN

Problems with Mobile Health Solutions

Mobile Health (mHealth) solutions are best to deliver remote care direct to individuals but have several problems such as:

mHealth

PROBLEMS

- Ad hoc
- Data silos
- Weak Security
- Difficult to Audit
- Multiple transaction platforms
- High risk to Gvt
- Costly to Gvt to implement
- No POPI compliance
- No Health Act compliance

RIBBON BLOCKCHAIN

Blockchain's Role in Digital Health

Blockchain can be used for <u>standardizing</u> Trust, Verification & Proof on a common Ledger

mHealth
(mobile based health solutions)

PROBLEMS
- ad hoc
- Data silos
- Weak Security
- Difficult to Audit
- Multiple transaction platforms
- High risk
- Costly to Gvt to implement
- No Compliance

BLOCKCHAIN
- Standardization
- Interoperability
- Cryptographic Security
- Audit
- Single Ledger transaction platform
- Low risk to Gvt
- Low cost to Gvt to implement

RIBBON BLOCKCHAIN

Why Blockchain in Public Health?

One single source of Clinical & Medical Truth/Proof/Trust to minimize error to save lives & money

OUR EXPERIENCE IN BUILDING OUR BLOCKCHAIN APP

Public Health Incentives App

Step 1

We had to find a best practice process for Disease management (a Guideline Process)

World Health Organization
Has a formula to end new HIV infections

90-90-90

(Triple-90)

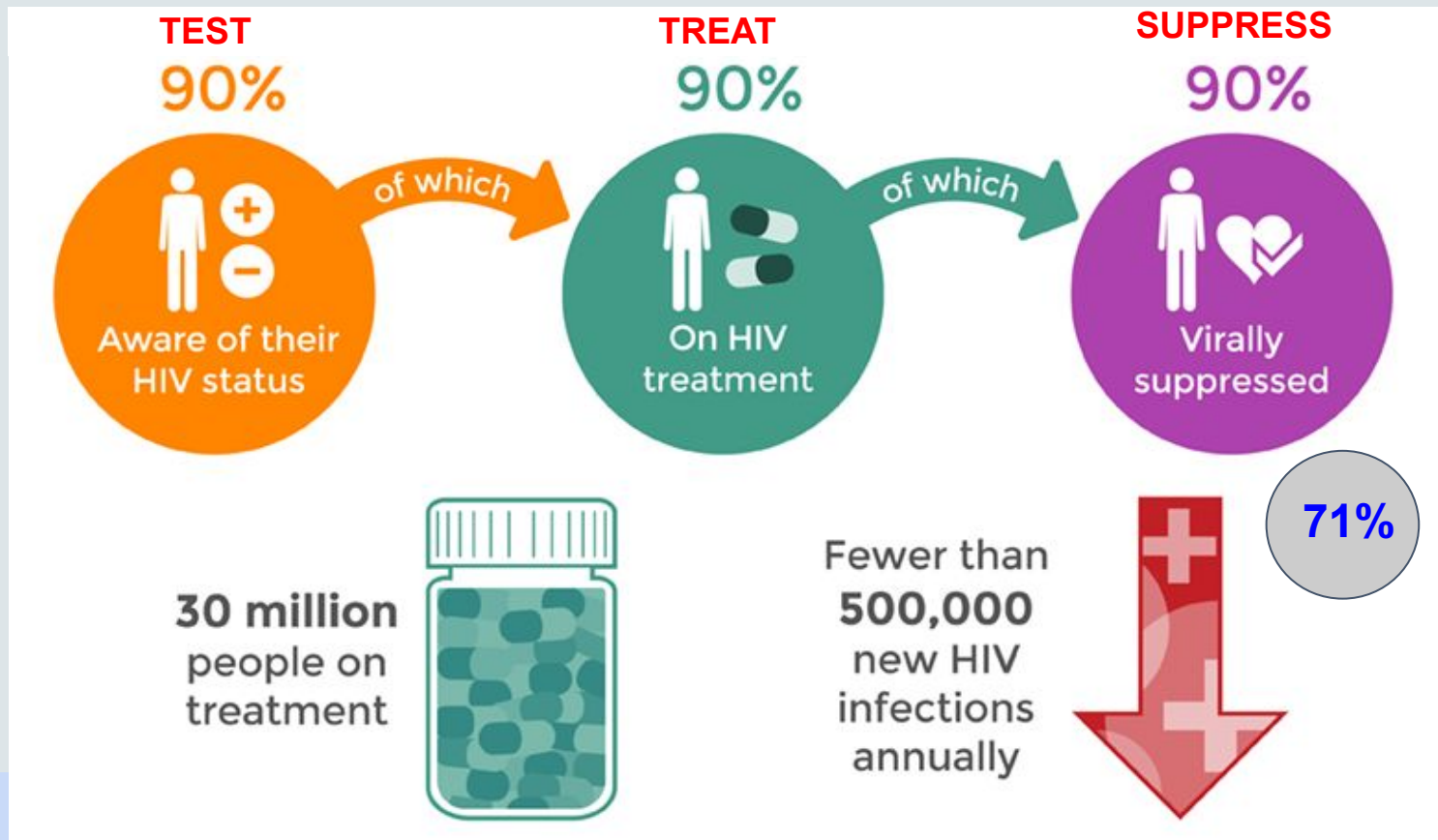an Algorithm/Process "as important to Health as Einstein's E=MC^2 is to Physics" unknown.

BLOCKCHAIN just so happens to love Algorithms (Smart Contracts)

Healthcare is full of Algorithms to manage/treat diseases

Blockchain & Health are a match made in heaven

World Health Organization
90-90-90 Algorithm to end HIV

TEST
90%

Aware of their HIV status

of which

TREAT
90%

On HIV treatment

of which

SUPPRESS
90%

Virally suppressed

71%

30 million people on treatment

Fewer than 500,000 new HIV infections annually

World Health Organization's
90-90-90 applied to Diseases

Chronic Diseases

eg HIV: Adherence

1. **Test** 90% of population
2. **Treat** 90% of people testing positive (ARV)
3. **Suppress** viral load in 90% of people on ARV through medicine **Adherence** until HIV is undetectable & they can't infect anyone else

Repeat until you have no new HIV infections.

Infectious Diseases

eg Covid-19: Flatten Curve

1. **Test** 90% of suspect cases/at risk population
2. **Isolate & Treat** 90% of positive cases
3. **Trace & Test** 90% of exposed direct contacts
4. **Suppress** new infections by imposing Self-Isolation on 90% of the population
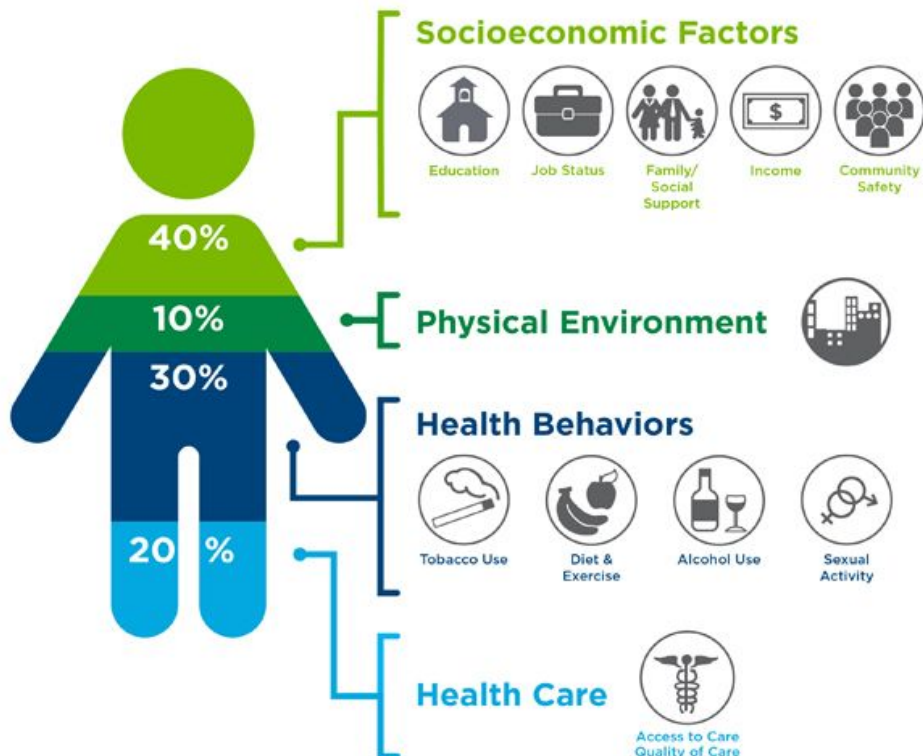
Repeat until you have no new Covid-19 infections.

Step 2

encode the process (Algorithm) onto a Blockchain App

We created a Smart Contract to Incentivize Social Determinants of Health ?

1. Incentivize people to Test

2. Incentivize people to initiate and Adhere to Treatment

3. Incentivize people to Suppress disease & prevent new infections

4. Incentivize healthy lifestyle habits

5. Incentivize behavior change

6. Incentivize participation in Adherence groups

7. Incentivize patient education & engagement

etc etc etc

Which parts of Blockchain did we Use?

Automate Payments

Smart Contracts

To Automate incentive payments for interactions

Audit/Accounting

Ledger

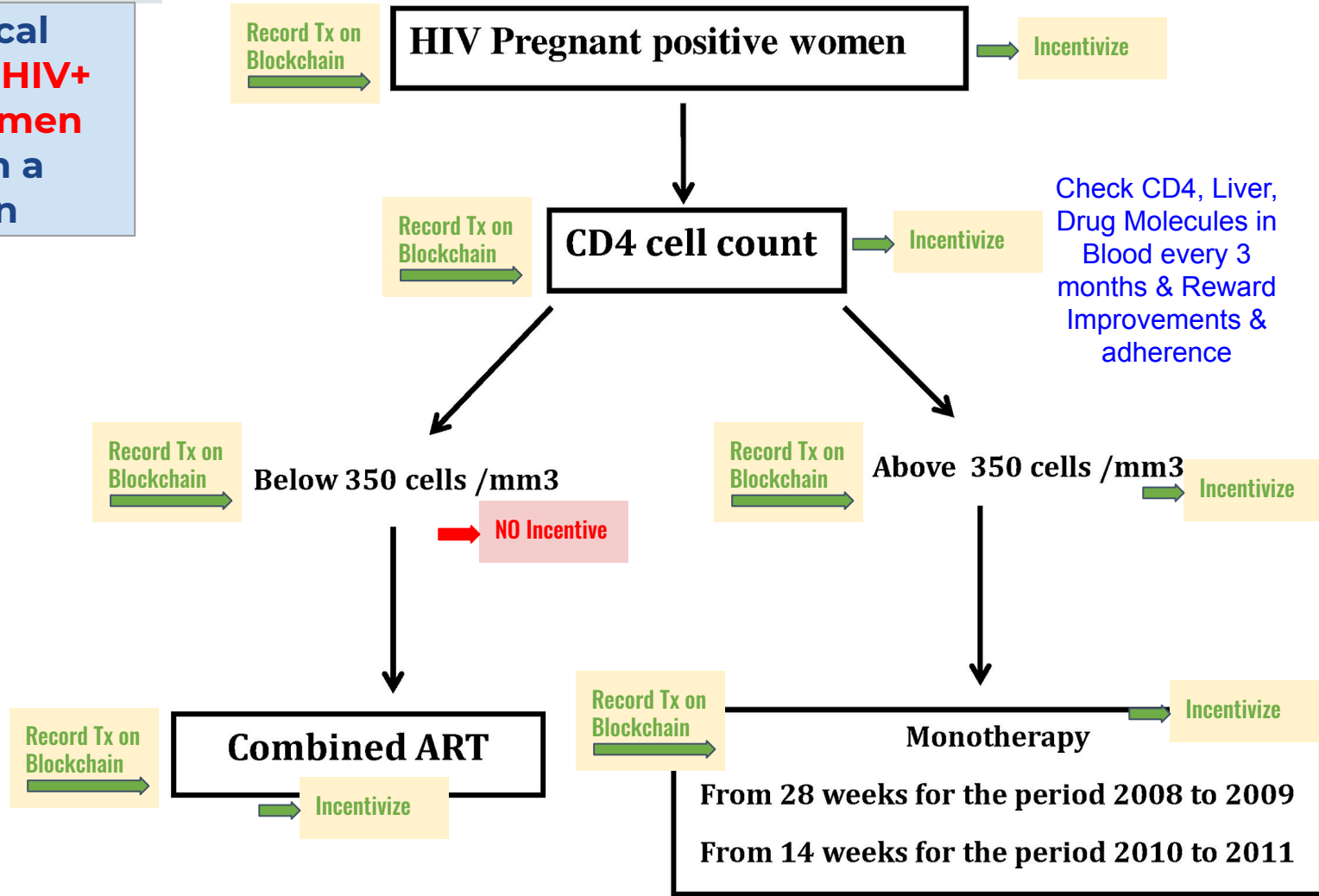To record payments and maintain balances

Other inputs?

Behavior Science & Health Ethics

To determine incentive types & amounts

An old Clinical Algorithm for HIV+ Pregnant Women recorded on a Blockchain

Example 1

HIV Pregnant positive women

Record Tx on Blockchain → Incentivize

CD4 cell count

Record Tx on Blockchain → Incentivize

Check CD4, Liver, Drug Molecules in Blood every 3 months & Reward Improvements & adherence

Record Tx on Blockchain → Below 350 cells /mm3

NO Incentive

Record Tx on Blockchain → Above 350 cells /mm3 → Incentivize

Combined ART

Record Tx on Blockchain → Incentivize

Record Tx on Blockchain → Monotherapy → Incentivize

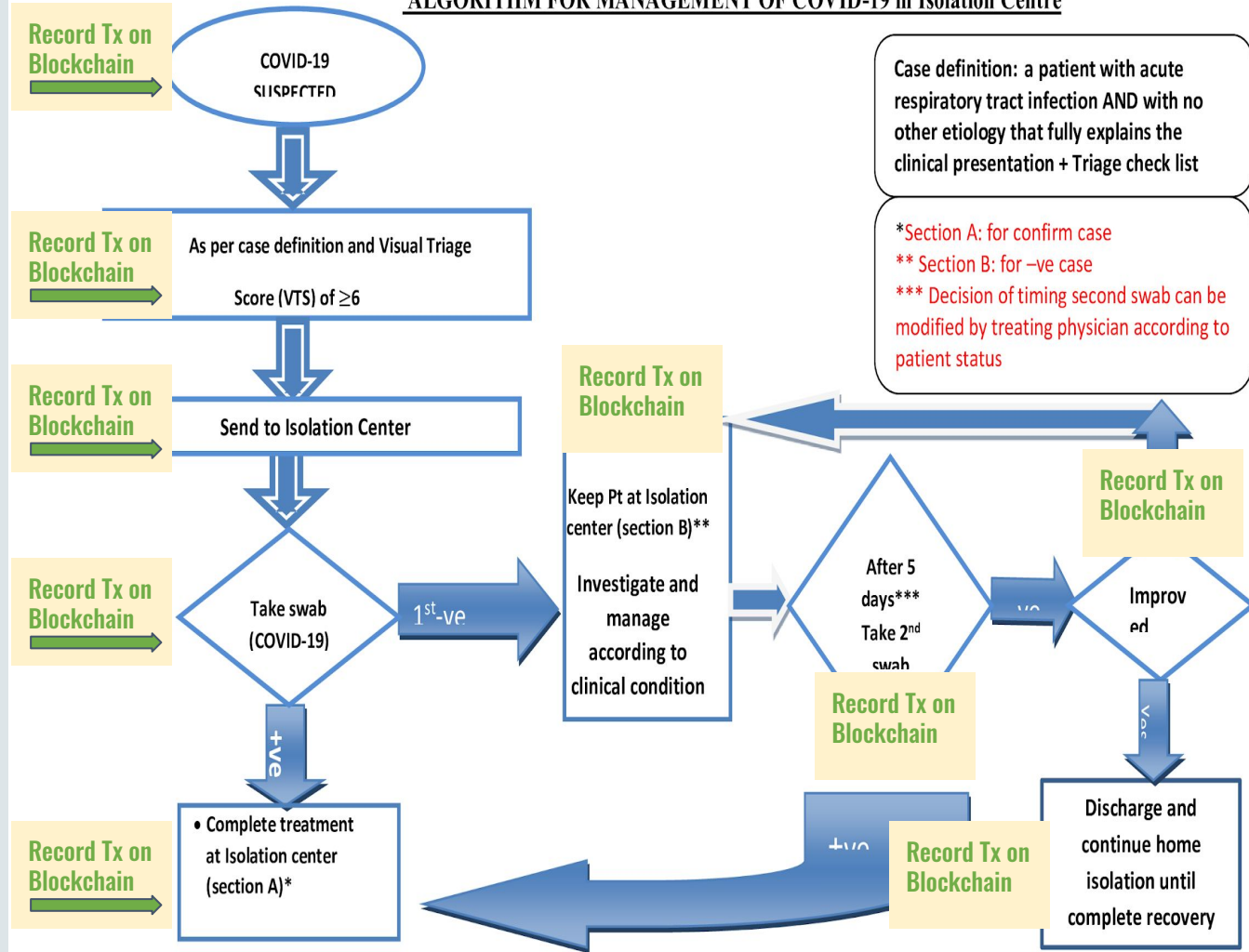From 28 weeks for the period 2008 to 2009

From 14 weeks for the period 2010 to 2011

A Clinical Algorithm for Covid-19 recorded on a Blockchain

Example 2

ALGORITHM FOR MANAGEMENT OF COVID-19 in Isolation Centre

Record Tx on Blockchain

COVID-19 SUSPECTED

Case definition: a patient with acute respiratory tract infection AND with no other etiology that fully explains the clinical presentation + Triage check list

Record Tx on Blockchain

As per case definition and Visual Triage Score (VTS) of ≥6

*Section A: for confirm case
** Section B: for –ve case
*** Decision of timing second swab can be modified by treating physician according to patient status

Record Tx on Blockchain

Send to Isolation Center

Record Tx on Blockchain

Take swab (COVID-19)

1st -ve

Record Tx on Blockchain

Keep Pt at Isolation center (section B)**

Investigate and manage according to clinical condition

After 5 days*** Take 2nd swab

-ve

Improved

Record Tx on Blockchain

Record Tx on Blockchain

+ve

+ve

Record Tx on Blockchain

• Complete treatment at Isolation center (section A)*

Discharge and continue home isolation until complete recovery

Analytics

Use Data Science techniques to transform Transaction linked health data into actionable information, insights & predictions to make informed Decisions that saves lives

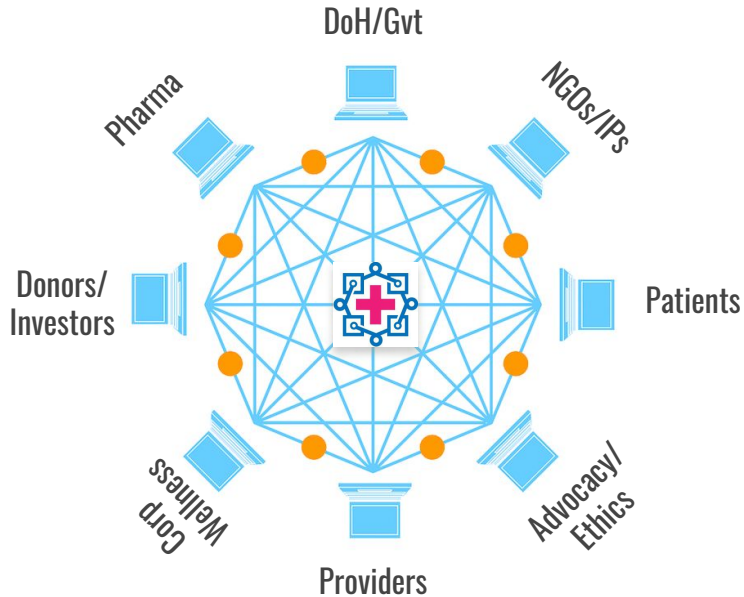e.g Machine Learning
Data Visualization tools (Tableau) etc

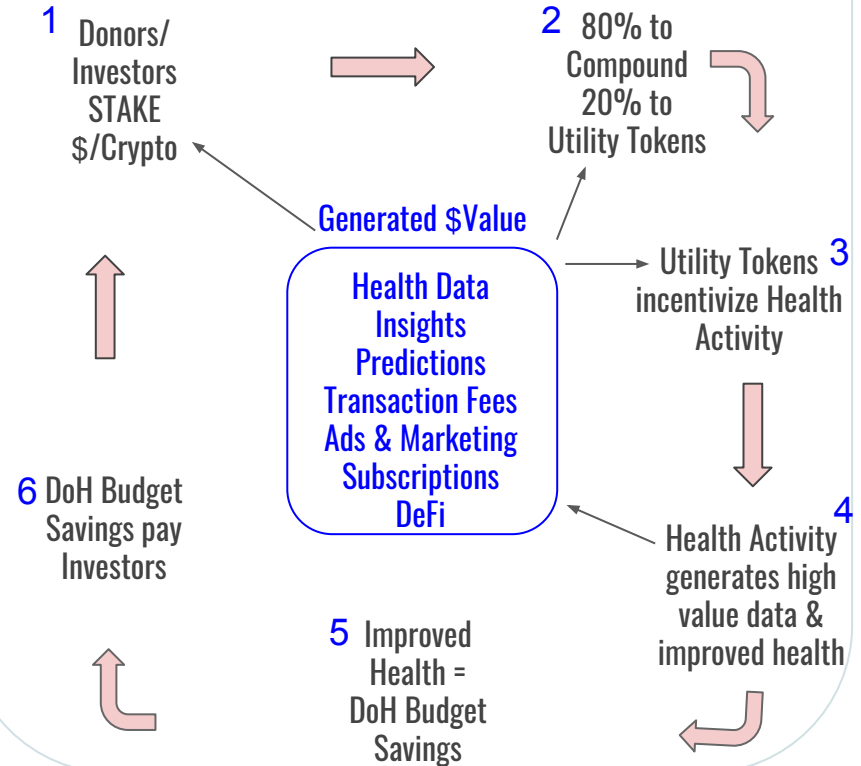# Step 3

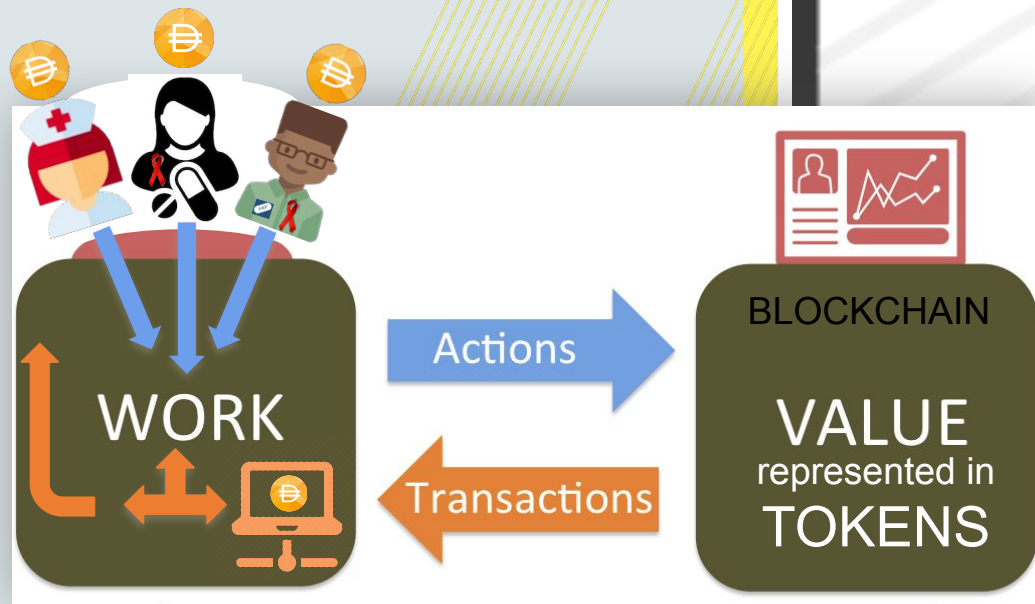# Design a Sustainable Real World Business Model

Blockchain Network

Blockchain Network Validators

DoH/Gvt

NGOs/IPs

Pharma

Patients

Donors/Investors

Advocacy/Ethics

Corp Wellness

Providers

Sustainability & Network Effect

1 Donors/Investors STAKE $/Crypto

2 80% to Compound 20% to Utility Tokens

Generated $Value

Health Data
Insights
Predictions
Transaction Fees
Ads & Marketing
Subscriptions
DeFi

3 Utility Tokens incentivize Health Activity

4 Health Activity generates high value data & improved health

5 Improved Health = DoH Budget Savings

6 DoH Budget Savings pay Investors

Work-Value-Token circular Relationship

WORK
Users WORK by completing prescribed TASKS & ACTIONS that are recorded and verified on the Blockchain

VALUE
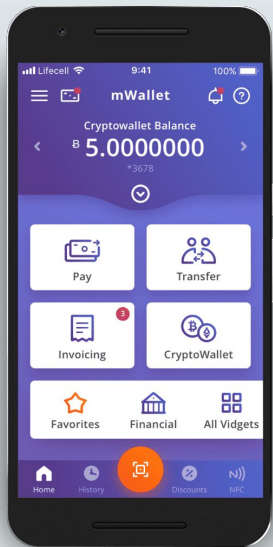The completed tasks or **ACTIONS** have a cost **VALUE** represented in **TOKENS**

TOKEN
TOKENS are distributed to Users for their **WORK**, & such **TRANSACTIONS** collect Network Fees to pay the Network Nodes, Validators, & Coders for maintenance & upgrades

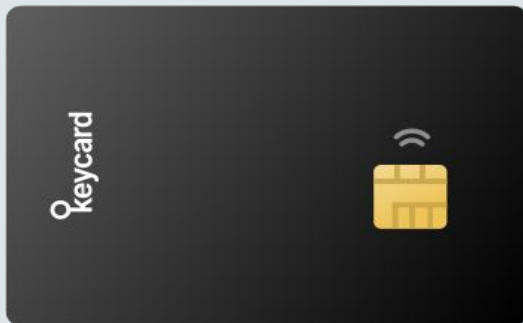# How are Incentive Tokens paid out?

Mobile App

Incentive Reward Tokens are paid to users via:
1. Mobile App & USSD Crypto Token Wallet
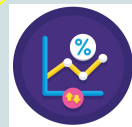2. NFC Rewards Token Debit Card for those without phones

USSD

*134*926#

Crypto Debit Card

keycard

Card Features :

✔Loyalty Rewards ✔NHI Healthcare Card
✔Portable Health Record ✔Debit Card

Tokens earn Interest

Tokens can buy Online

Tokens can buy at Retail

Tokens can be sent Peer to peer

Revenue Model

Advertising & Marketing

Transactions & Brokerage Fees

Whitelabel Technology Leasing

Subscriptions & Decentralized Finance Fees

Utility Fees

Asset Sales
Investor Token Sale, Information Sales (Analytics, Insights, Predictions)

This is how the Platform generates Sustainable Revenue to run itself at network capacity
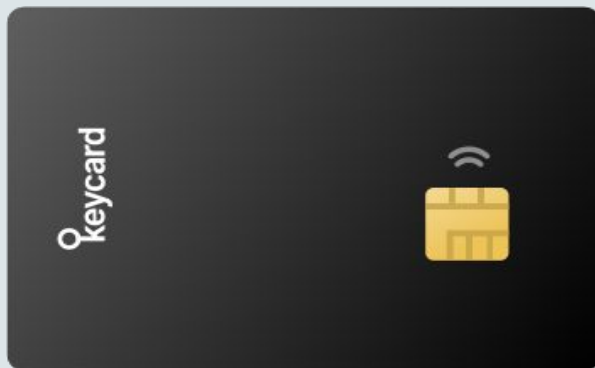
Collaboration Opportunity on USSD & Crypto Debit Card

Are you interested in collaborating on the Crypto Debit Card?
Do you have a small budget to chip into the crowdfunding for the developers?
Lets collaborate to develop USSD & Crypto Debit Card for the unbanked and underbanked
Our team have received about 15 demo cards in SA, Nigeria & Uganda from Ethereum Foundation

keycard

*134*926#

1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
*	0	#

Card Features :
✔️Loyalty Rewards ✔️NHI Healthcare Card
✔️Portable Health Record ✔️Debit Card

@RibbonPlatform

Thank You!

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