

calaMed

Dr Tal Rapke, CEO & Founder

Outline

- WHERE
 - Where is healthcare going?
 - Where are we now?
- WHAT
 - What problem are we solving?
- WHY
 - Why blockchain?
- ScalaMed
- Others









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of Health and Ageing, Department of Veterans' Affairs and Department of Human Services, or as authorised/required by law. This information may also be disclosed to doctors and pharmacists.











Blackpool Hospitals @BlackpoolHosp · 1h

Our computer systems are experiencing problems and we are working hard on a solution. We will update you as soon as possible. Thank you

Blackpool Hospitals @BlackpoolHosp · 1h

We apologise but we are having issues with our computer systems. Please don't attend A&E unless it's an emergency. Thanks for your patience

English

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Ooops, your files have been encrypted!

What Happened to My Computer?

Your important files are encrypted.

Many of your documents, photos, videos, databases and other files are no longer accessible because they have been encrypted. Maybe you are busy looking for a way to recover your files, but do not waste your time. Nobody can recover your files without our decryption service.

Can I Recover My Files?

Sure. We guarantee that you can recover all your files safely and easily. But you have not so enough time.

You can decrypt some of your files for free. Try now by clicking <Decrypt>. But if you want to decrypt all your files, you need to pay.

You only have 3 days to submit the payment. After that the price will be doubled. Also, if you don't pay in 7 days, you won't be able to recover your files forever.

We will have free events for users who are so poor that they couldn't pay in 6 months.

How Do I Pay?

Payment is accepted in Bitcoin only. For more information, click <About bitcoin>. Please check the current price of Bitcoin and buy some bitcoins. For more information, click <How to buy bitcoins>.

And send the correct amount to the address specified in this window.

After your payment, click <Check Payment>. Best time to check: 9:00am - 11:00am

 Ditcoin
 Send \$300 worth of bitcoin to this address:

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Decrypt

Check Payment



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PATIENT-CENTERED CARE





HEALTHY

DEEPENING HEALTH REFORM IN CHINA BUILDING HIGH-QUALITY AND VALUE-BASED SERVICE DELIVERY

World Bank Group

World Health Organization

Ministry of Finance, National Health and Family Planning Commission, Ministry of Human Resources and Social Security, The People's Republic of China





2016 World Bank's China recommendations:

care"

providers"

"people-centered integrated

"information sharing among

"active patient engagement"

where are we going



where are we now



Unsustainable increase in health spend

Health Care Cost (1970-2015)



oend 2015)

Everyone hurting



1960-61 1965-66 1970-71 1975-76 1980-81 1985-86 1990-91 1995-96 2000-01 2005-06

Demand is driving costs up



Chronic health ~80% of all health costs

Projected Growth In Population With Chronic Conditions, 2013–25





Source: Wu, Shin-Yi et al. 2000. Projection of Chronic Illness Prevalence and Cost Inflation. RAND Corporation.



Prevalence of Chronic Disease in the U.S.

Where healthcare dollars go



Source: Centers for Medicare and Medicaid





Acute conditions **Mental** health

2017 – Informed consumers

Chronic cancer

HEALTH CONSUMER

Chronic airways disease

Obesity



Results

Result	Unit	Reference Range		
6.94	x10 E12/	5.0 - 10.0		
9.4	g/dl	10.0 - 15.0		
29.4	%	30 - 45		
42.3	fi	39.0 - 55.0		
13.6	Pg	12.5 - 17.5		
32.1	g/dl	30.0 - 36.0		
4.46	x10 E9/	5.5 - 15.5		
3.925	x10 E9/1	2.5 - 12.5		
0.446	x10 E9/I	1.5 - 7.0		
0.045	x10 E9/1	0.00 - 0.85		
0.045	x10 E9/I	0.00 - 1.50		
0	x10 E9/I			
154	g/l	60 - 85		
15	g/l	26 - 36		
139.0	gЛ	27 - 45		
0.1				

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Tomorrow?

Self-Care

Doctors

Hospitals



10th Anniversary Editon—Now With New Material

Don't

Move

An A-Mazing Way to Deal with Change in Your Work and in Your Life

Cheese? Spencer Johnson, M.D. Foreword by Kenneth Blanchard, Ph.D. coauthors of The One Minute Manager The World's Most Popular Management Method

Read by **Tony Roberts** and Karen Ziemba

GEI SMALL AND ALUABLE

Featuring a **10th-Anniversary** interview with Spencer Johnson





Problem

 Increasing burden of healthcare

Solution

- Empower patient with data
- Put patients in control of curating their healthcare journey
- Give the patients choice to manage their health as they want
- Empower patients with algorithms/Al/knowledge to support their journey

Criteria

- Don't move anybody's cheese
- Frictionless
- Don't ask anyone to do anything different

WHO Definition of Health

 Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity

Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946;

The definition has not been amended since.



IMPROVED POPULATION HEALTH











Blockchain

One internet user, transfer a unique piece of digital property, directly (no middleman) to another user securely.



Blockchain's value is realized where:

multiple stakeholders, no common sta
fraud
desire exists to cut out the "middle m
incumbents control the flow of information in le
audit trails important
processing and integration costs are



Indards

an"

egacy systems

high



- Is this tech too early for sensitive health data?
- Which blockchain?
 - O Unpermissioned or permissioned?
- Regulators/Legal: ownership of data? Is it ready for prime time?
- Why are there so few commercially viable applications of blockchain technology to date (beyond noise and proof of concept pilots)?
- Is there a place that makes sense to start?





Digital scripts at your fingertips

How Rx Works Today



Patient is Left Out / No Record / No Choice



 Enterprise centered •Perverse incentive to over-prescribe Patient lack control •No record





10% HOSPITAL ADMISSIONS due to medication issues

~30% PATIENTS NEVER PICK UP **THEIR PRESCRIPTION**

50% PATIENTS stop taking medications by 6 months



Patients are bypassed, confused, lack control, no price visibility.

Enter ScalaMed

ScalaMed Revolutionizing Prescriptions

Patient in Control







How ScalaMed Works

1. Prescribes in EHR

2. Patient download App

3. Digital Wallet





4. Patient sends to pharmacy



ScalaMed PATIENT-CENTRIC





ScalaMed BENEFITS ALL

Insurer/ Government



• Improve adherence

Pharmacy

- Less Fraud
- Lead generation



- Efficiency +++
- Meds Reconciliation



Scalamed: Why Now







2. Patient control

3. Blockchain



Why Blockchain?

PATIENT at the CENTRE. SECURE data OWNERSHIP

Decentralised. Not Another Database



Patient Owned





555 25415 FG582584F65 8524951 GHJ541558 852652975

No Double-Spend

0

Security by

Design















Your. Medical. Data.

It's your body

You paid for it

It is worth more than any other type of data

It's being widely sold, stolen and hacked. And you don't know it.

It's full of mistakes, that keep getting copied and pasted, that you can't edit

You are/will be generating more of it, but it's homeless

Your medical privacy is precious

The only way it can be made secure is to be decentralized

It is legally owned by doctors and hospitals

Hospitals won't or can't share your data ("information blocking")

Your doctor (>65%) won't give you a copy of your office notes

You are far more apt to share your data than your doctor

You'd like to share it for medical research, but you can't get it

You have seen many providers in your life; no health system/insurer has all your data

Essentially no one (in the US) has all their medical data from birth throughout their life

Your EHR was designed to maximize billing, not to help your health

your data

routine

inaccessibility

7:44 AM - 8 Oct 2017





Blockchain Use: Pay for outcomes

- Pay for outcomes
 - -Smart contracts
 - -Payment on achieving milestones vs upfront
 - eg Multiple Sclerosis medicine payment negotiation regarding how long the medication effects last
 - eg vaccinations





Blockchain Use Case: Clinical Studies

- –Unalterable data coming direct from patients
- -Historicity and inviolability of data
- -Traceability, and prevents a retrospective reconstruction through **Smart Contracts**
- -Saves data monitoring cost







Blockchain Use Case: Provenance and tracking

- Provenance of pharmaceuticals
 - -Drug Supply Chain Security Act
 - -Counterfeit
 - -Supply chain, recalls
- Mediledger Project (Pfizer, Genentech), Chronicled





Other Blockchain Potential Promises

- Remote consultations with globally accessible health records
- Remote diagnosis of people's conditions through the privacy of blockchain - crowdsourcing diagnosis through common symptomatology
- Incentives to improve health through smart contracts
- Implantable devices through the IoT blockchain report back on wear and tear and reduce unnecessary checkups, device replacement, or device failure
- Access for researchers to anonymous data for insights, patterns, innovation





WHERE DID IT GO? The U.S. spent \$3,031 billion on health care in 2014



Source: AMA Policy Research Perspective, "National Health Expenditures, 2014," Feb. 2016.





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Mr JR

- 68 yo male lawyer
- Hypercholesterolaemia, chronic CV disease (2* previous AMI, stents, AF, defibrillator)
- Didn't feel well at dinner
- Collapsed in street, CPR 1 hr
- Admitted to hospital no record available on medical history, no knowledge of medications
- Hospital double dosed medications causing nearly fatal AEs
- Took 24 hours, and a number of hours to pull together medical history and to track down all medications prescribed by GP and specialist, next of kin weren't aware



"Source of truth" list; integrated across providers

Consumer centered

No fraud. No double spend

