

Future of Banking (and payments) disruption is coming



Dr. Johan Pouwelse
Scientific Director
Delft Blockchain Lab



Delft University - Large academic Blockchain lab

3 master courses - 70 students/year – 12 professors



Talking points

KYC effectiveness

9 operational systems – disruption is coming

DAO is maturing (beyond DeFi hype)

DAO of the future: shared financial infrastructure

KYC: 0.2% effective

UN Research report

Anti-money laundering
success rate **0.2%**

Criminal enterprises keep up to
99.8% of illicit earnings

 **UNODC**
United Nations Office on Drugs and Crime

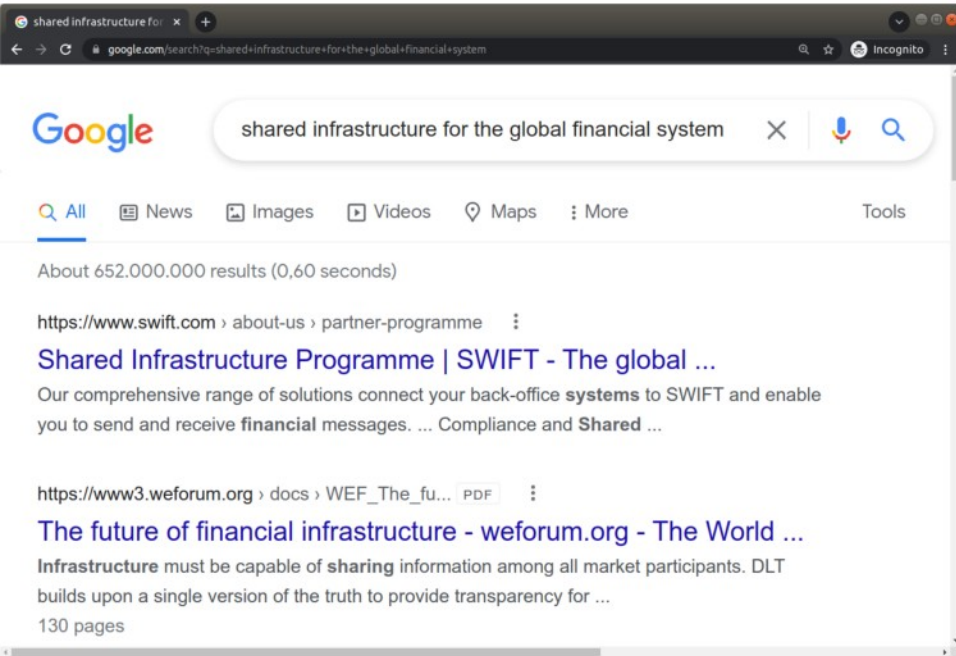
Estimating illicit financial flows resulting from drug trafficking and other transnational organized crime.

EffectiveAML.org

KYC: ineffective to the core

- Trillions of dollars, for 30-years, “war” against money laundering
- Still: 2-5% of global GDP laundering per year == \$2 trillion (outdated Interpol stats)
- KYC/ALM cost: **HUGE**

Shared financial infrastructure future



shared infrastructure for the global financial system

About 652.000.000 results (0,60 seconds)

<https://www.swift.com> › about-us › partner-programme

Shared Infrastructure Programme | SWIFT - The global ...

Our comprehensive range of solutions connect your back-office **systems** to SWIFT and enable you to send and receive **financial** messages. ... Compliance and **Shared** ...

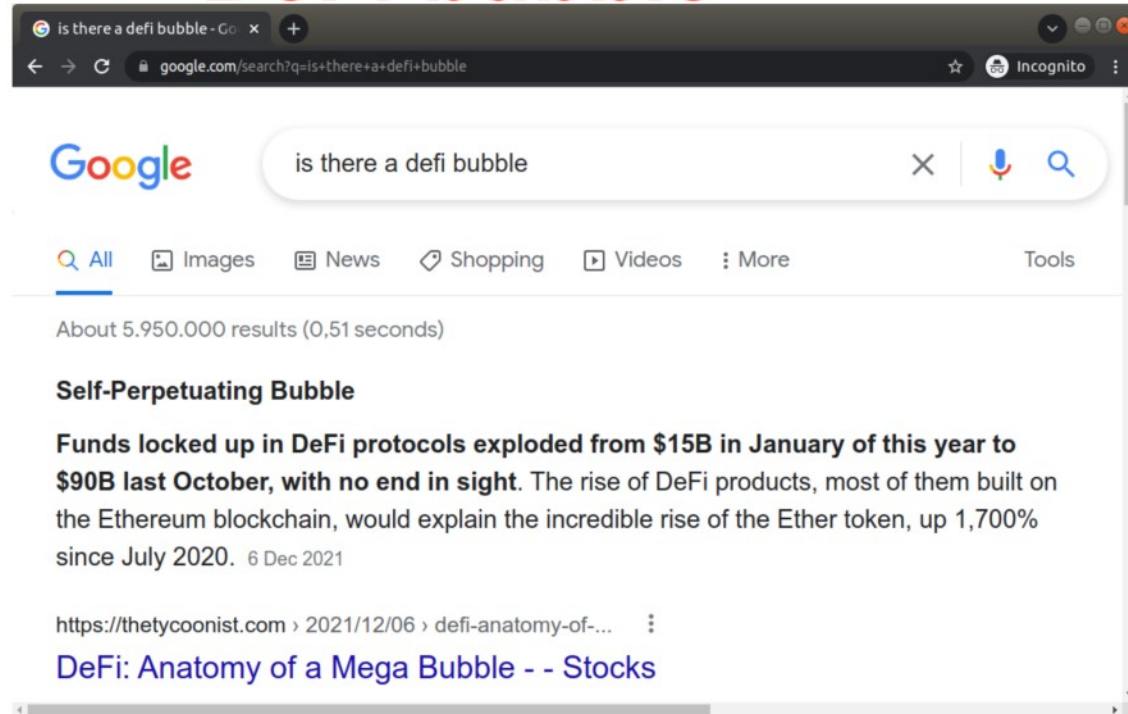
<https://www3.weforum.org> › docs › WEF_The_fu... PDF

The future of financial infrastructure - weforum.org - The World ...

Infrastructure must be capable of **sharing** information among all market participants. DLT builds upon a single version of the truth to provide transparency for ...

130 pages

DeFi bubble



is there a defi bubble - Go x

is there a defi bubble

About 5.950.000 results (0,51 seconds)

Self-Perpetuating Bubble

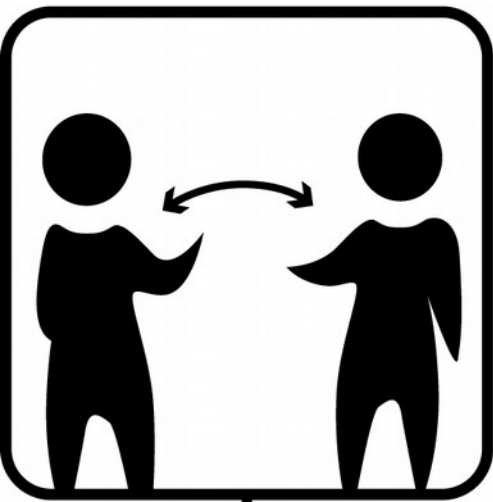
Funds locked up in DeFi protocols exploded from \$15B in January of this year to \$90B last October, with no end in sight. The rise of DeFi products, most of them built on the Ethereum blockchain, would explain the incredible rise of the Ether token, up 1,700% since July 2020. 6 Dec 2021

<https://thetycoonist.com> › 2021/12/06 › defi-anatomy-of-...

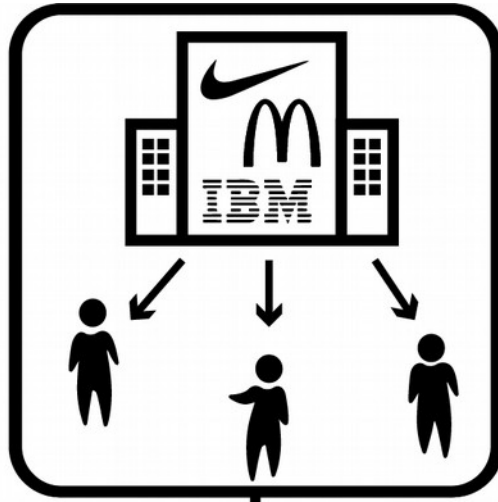
DeFi: Anatomy of a Mega Bubble - - Stocks

**Prediction:
convergence by 2030 in DAO form**

Shared fin. infrastructure: *fully decentralised*



a) Pre-Industrial Age



b) Industrial Age



c) Age of Big Tech



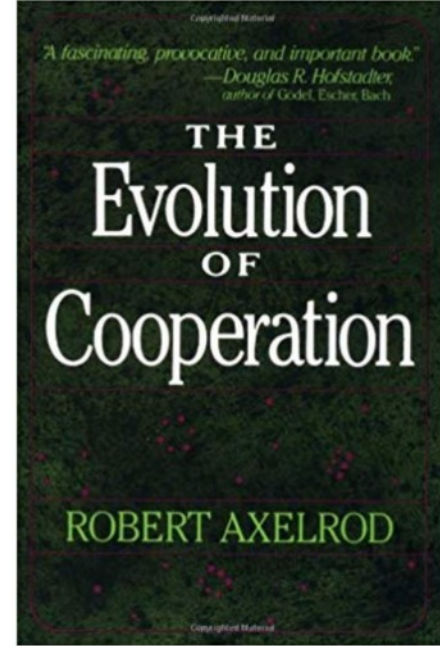
d) Internet-Scale Trust Infrastructure

Solve trust - 24 year of perseverance

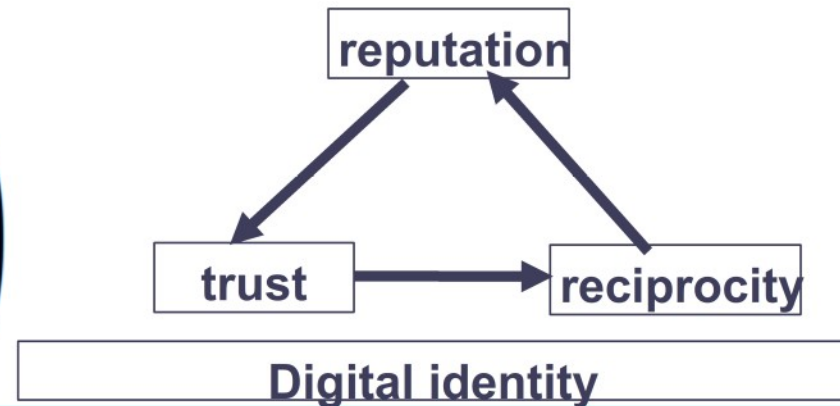
1) Trustchain – mathematics of trust

Mui et al 2001

- **Reputation:** perception that an agent creates through past actions about its intentions and norms
- **Trust:** a subjective expectation a peer has about another's future behaviour based on the history of their encounters
- **Reciprocity:** mutual exchange of deeds
- Generic cycle for economic activity



$$\mathbb{P}(W_{ij} = x) = \mathbb{P} \left(\left[\sum_{t=0}^{\infty} \mathbb{1}_{\{X_t=j\}} \right] = x | X_0 = i \right)$$



2) Digital ID



Ministerie van
Binnenlandse Zaken
en Koninkrijksrelaties

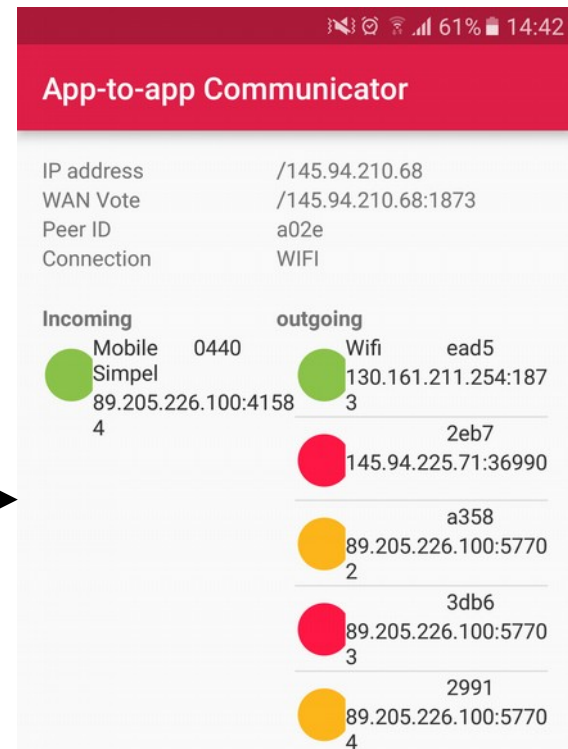
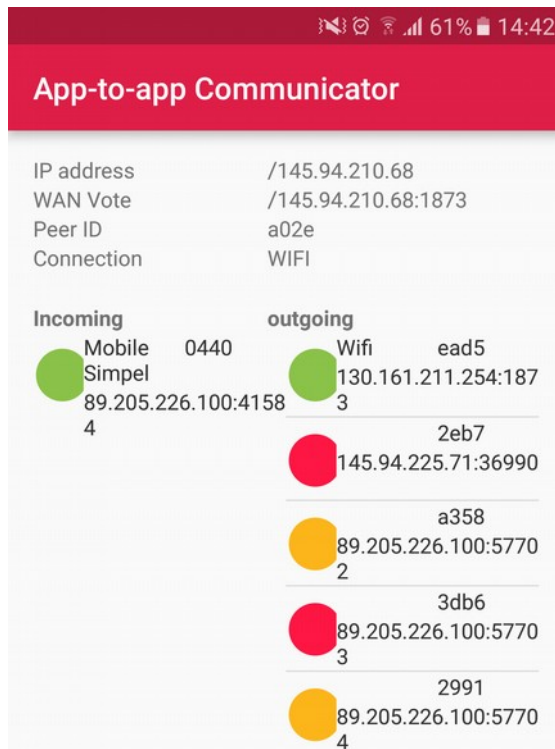
Started in 2015
Prototyping since 2018
“passport-grade” ID



Open Biometrics API (2018): <https://github.com/Tribler/py-ipv8/issues/74>

3) Phone-to-Phone network (2016)

- No servers
- No cloud
- No Javascript
- No Big Tech

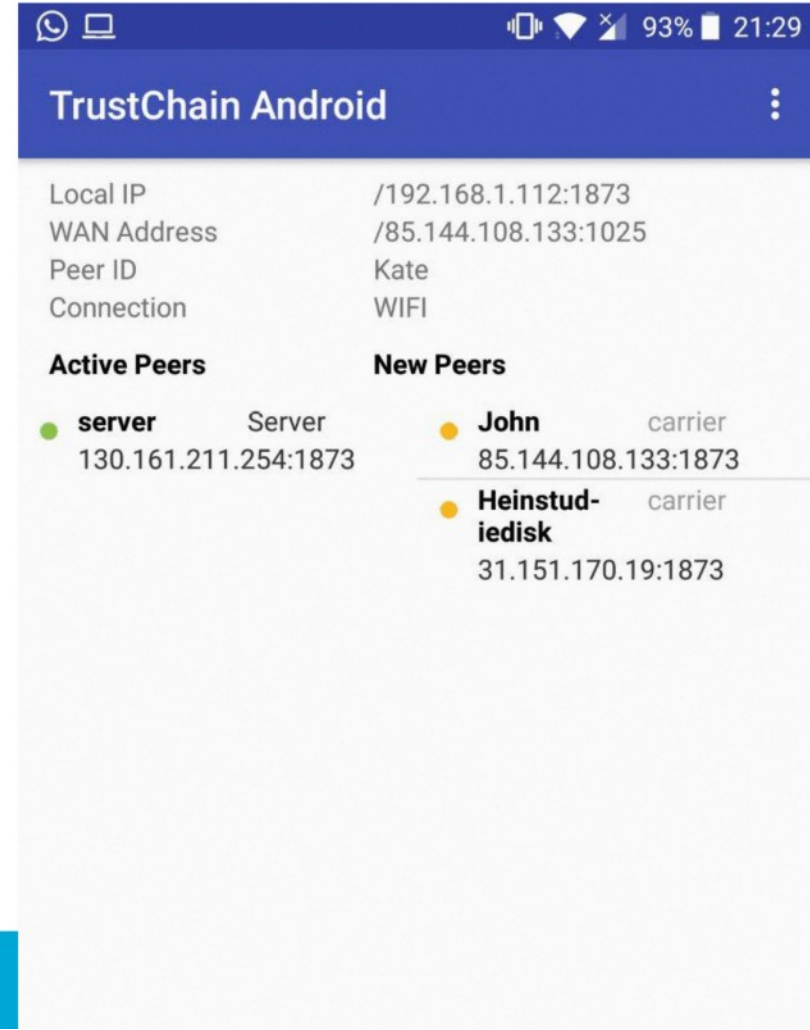
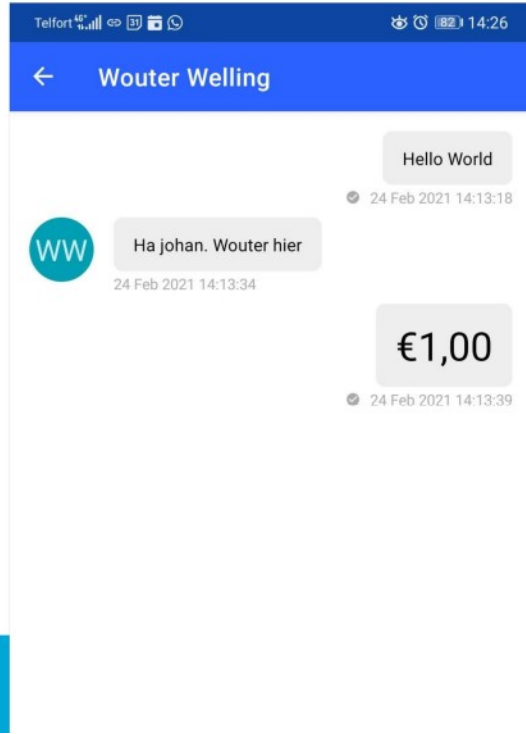


<https://arxiv.org/pdf/1512.00071.pdf>

3) Phone-to-Phone network (2016)

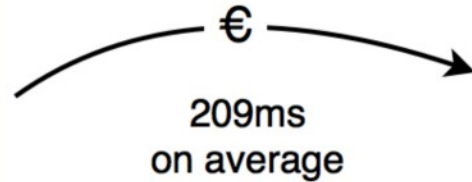


4) Social networking, Bitcoin, and signatures



5) Real-time Money Routing (2018)

IBAN:
NL97ABNA0384969621

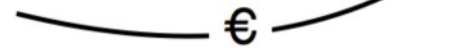


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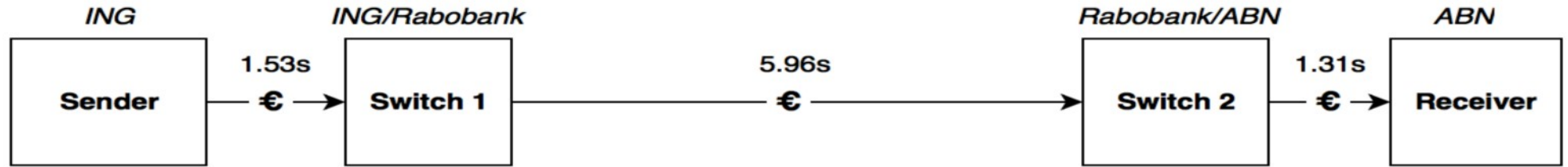
407ms
on average



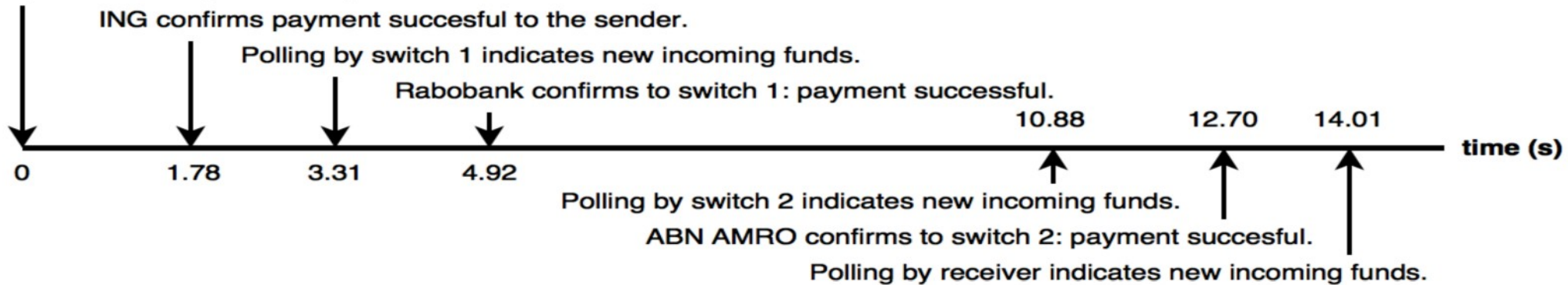
IBAN:
NL72INGB0873409911

- single open market for clearance and settlement – public infrastructure
- Any **trustworthy** party can clear&settle – end monopoly
- Instant global payments
- Hacked-lots-of-banks
 - Smartphone apps can move money inside bank instantly
 - “Money relay” - Every person with accounts at two banks – form chains
 - Created open banking payment APIs (permissionless)

5) Real-time Money Routing - performance



Request for money transfer by the sender sent to ING.



Martijn de Vos and Johan Pouwelse. "Real-time money routing by trusting strangers with your funds." 2018 IFIP Networking Conference (IFIP Networking) and Workshops. IEEE, 2018.

6) ID + Digital Euro



Connected to IBAN banking system (2021)
QR codes: real Euros and 18+ attestation

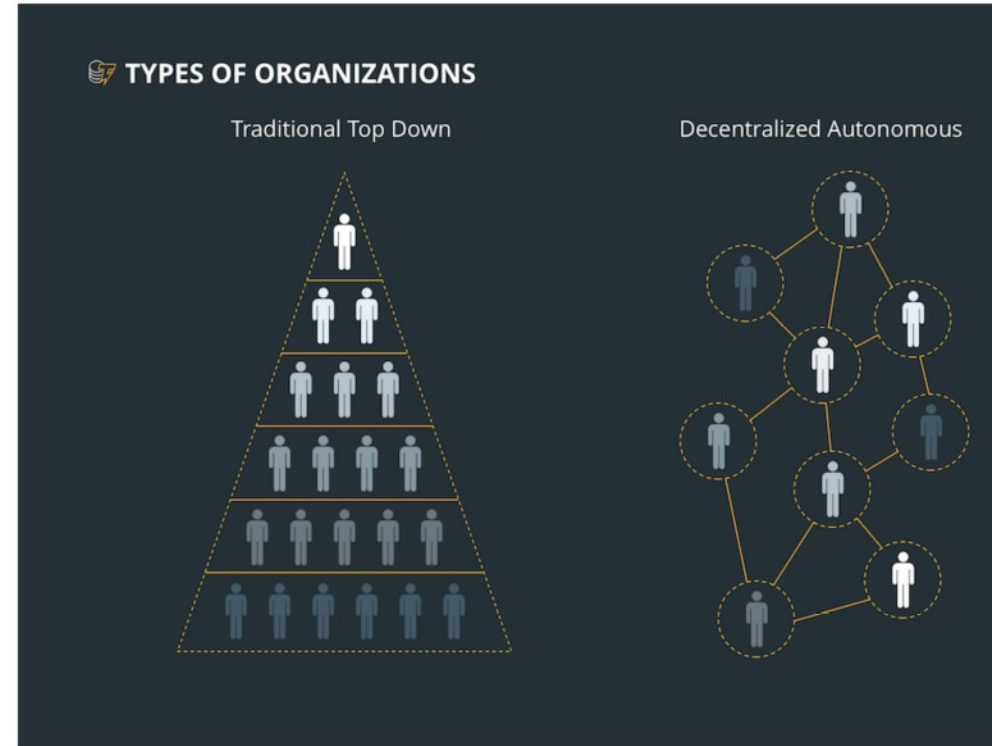
7) ID + Digital Euro: *offline cash* *replacement*



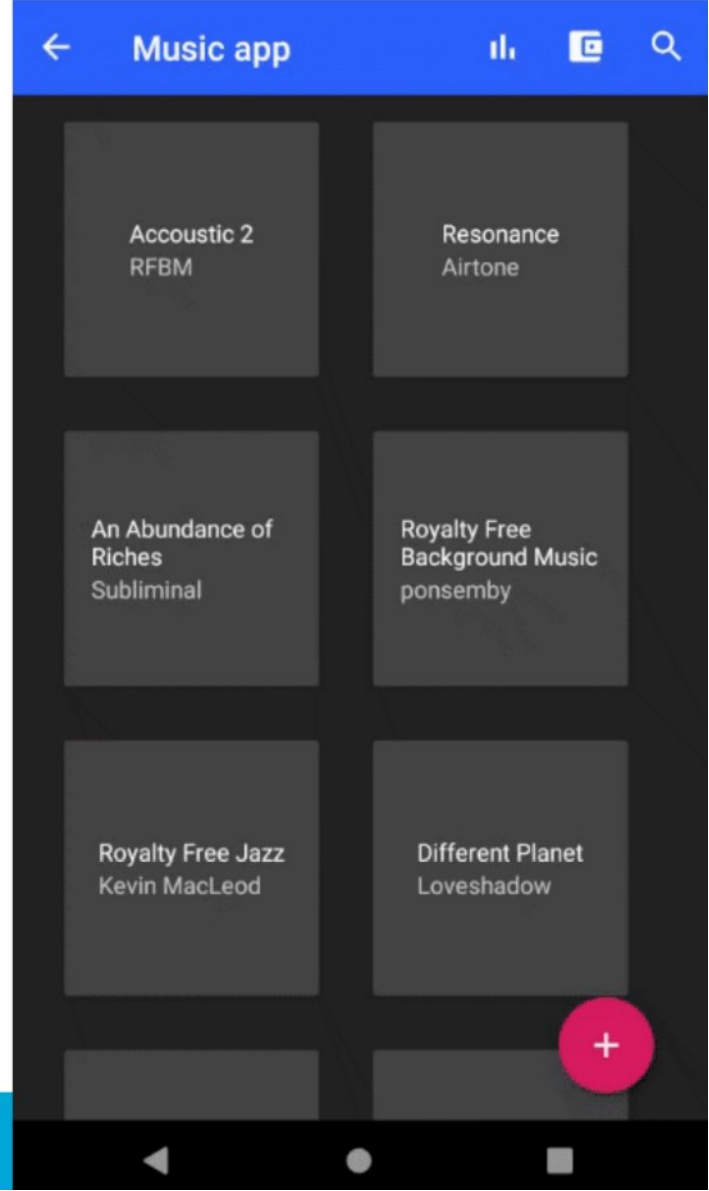
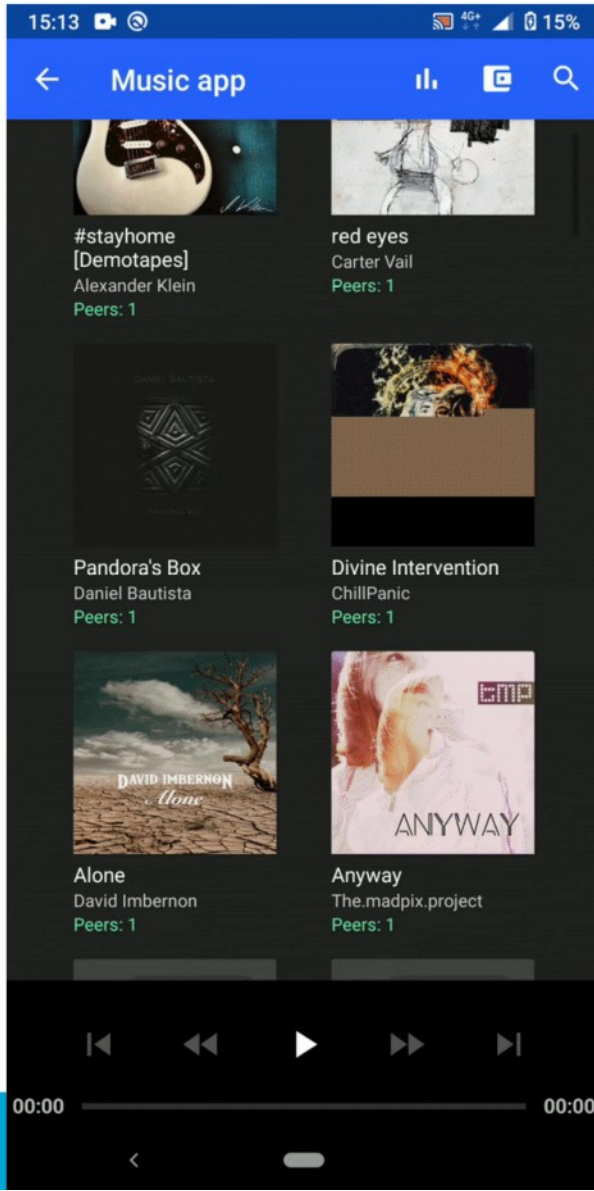
Norway trail: No Internet

Decentralised Autonomous Organisation

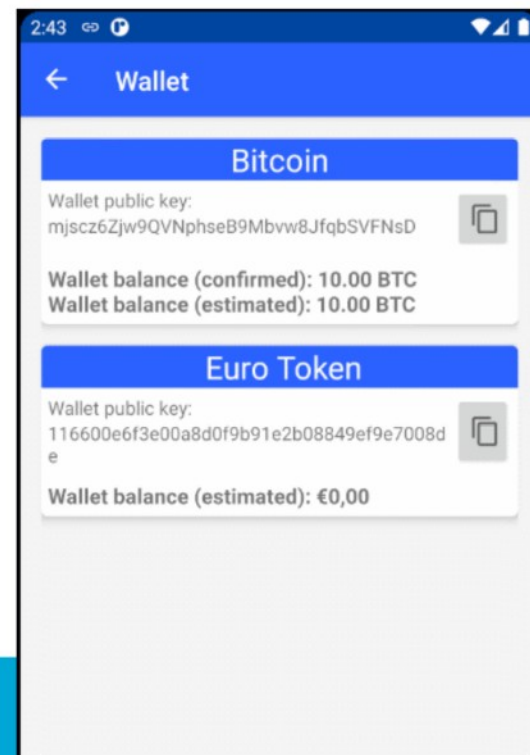
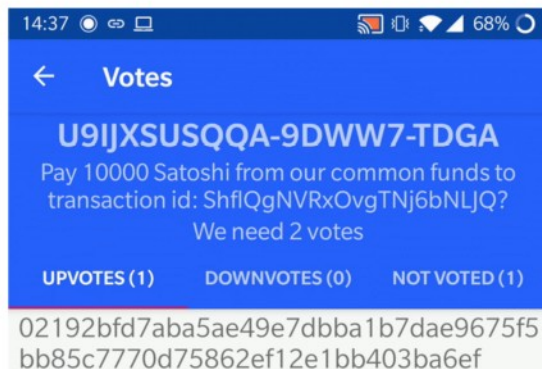
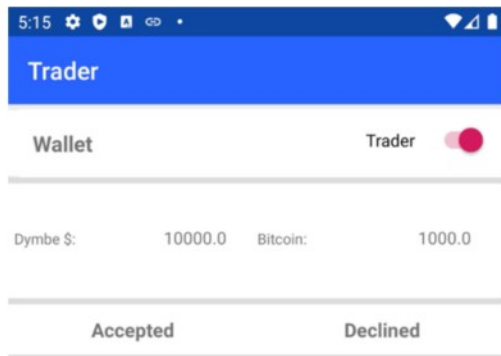
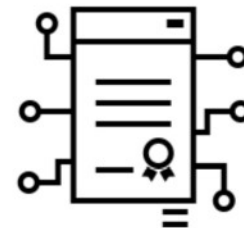
- alter the essence of capitalism
- leaderless organisation
- no physical existence
- start any economic activity
- equal ownership for all and meaningful control and participation in the means of production



8) Decentralised music industry



9) DAO V1 – Democratic control of money + AI (2021)



DAO - shared financial infrastructure



Broad societal change:

- 0) First robot organisation
- 1) Global open market for investments
- 2) Core: *universal trust machine*
- 3) Micropayments+democratic decisions

VERORDENING (EU) 2020/1503 - Europese crowdfundingdienstverleners.

Definities - Artikel 2.1.e) : “crowdfundingdienstverlener”: een rechtspersoon die crowdfundingdiensten verleent;

SPARE Slides

Keynote speech

Disruption is coming

Met de hype rond blockchain en AI is het gemakkelijk om de onderliggende fundamenteën te missen. Verschillende labs over de hele wereld zijn aan het pionieren met technologie met opmerkelijke eigenschappen.

De Technische Universiteit Delft maakte een digitale Euro en koppelde die met toestemming van de toezichthouders aan het bestaande IBAN-banksysteem.

De Delft-Euro ondersteunt offline overschrijvingen, paspoort-waardige identiteiten, en kosten-vrije transacties door een academisch zuivere server-vrije oplossing. De Web3-gebaseerde architectuur maakt gebruik van het phone-to-phone-paradigma.

Samen met Delft-DAO, de operationele Gedecentraliseerde Autonome Organisatie, komt er een nieuwe golf van disruptieve technologische mogelijkheden aan die mogelijk worden gemaakt door Bitcoin Taproot.

Dr. Johan Pouwelse, Associate Professor, Delft University of Technology & Wetenschappelijk directeur van het grootste blockchain lab van Europa

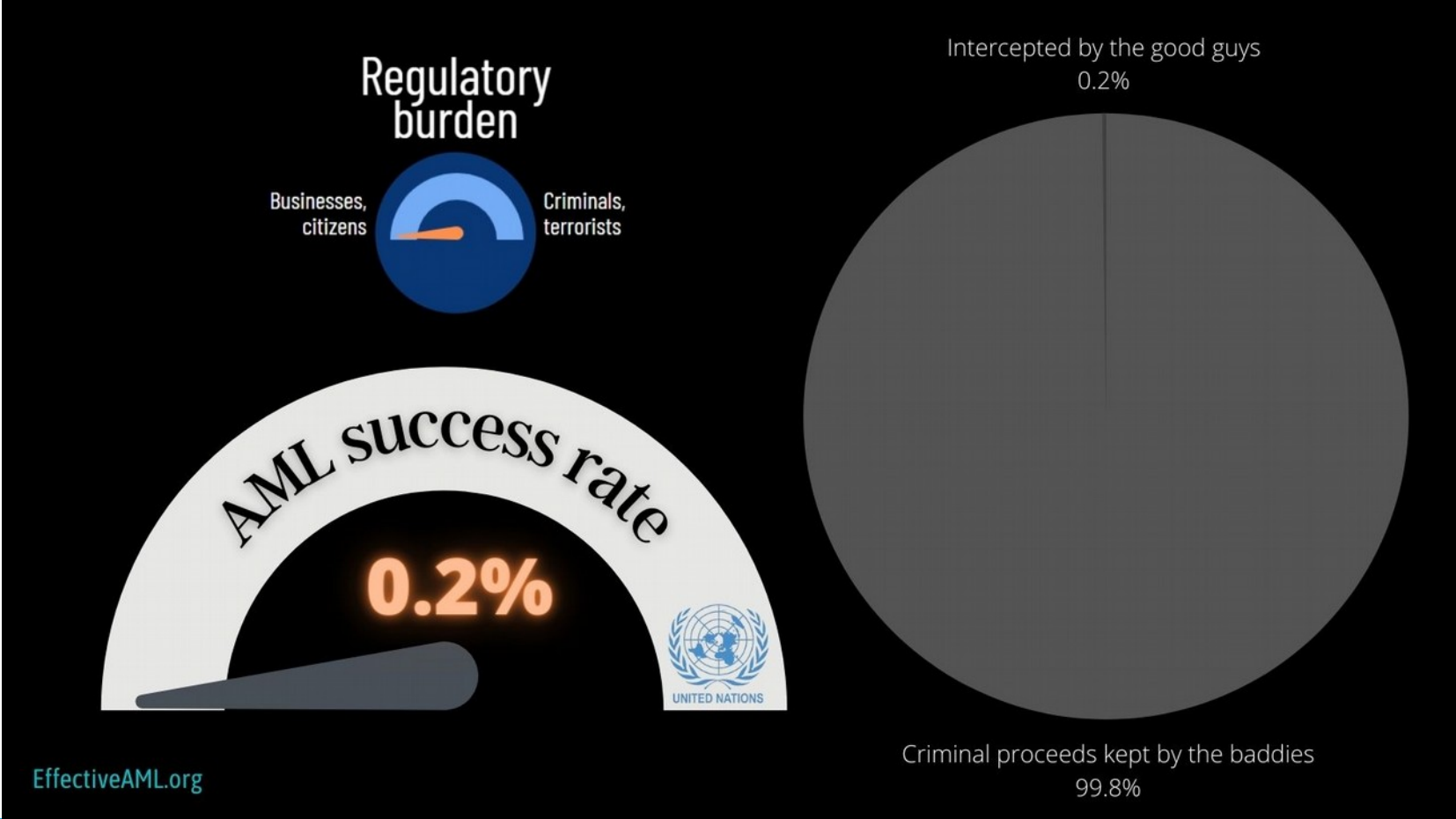
No KYC



Top Tools

Best
KYC-free
Exchanges

KYC: 0.2% effective



KYC: unhosted Bitcoin wallet





Paul Tang  @paultang · 2h ...

Another week, another social media storm by [#crypto](#) bro's. Now about the "transfer of funds regulation". Just like bank transfers, transferring crypto like [#Bitcoin](#)  should be accompanied with information about the person sending and receiving the funds. 1/



Patrick Hansen @paddi_hansen · Mar 26

1/ I hate to ring the alarm bell again, but the EU Parliament leaves us no choice  

This time it concerns a crackdown on unhosted wallets in the upcoming crypto AML regulation (TFR).