



Some Insights on the Forthcoming Landscape of Cryptoassets

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Main idea of this talk:

We are on the brink of a paradigm
shift in economy and finance



Why, and how taking account of this in our NiRvAna project

Plan of the talk

Recent **news** on the **BRICS** landscape of finance

The **BRICS de-dollarization** and the **R5/The Unit** currency

Recent **news** on the **USA** landscape of cryptoassets

Bitcoin ETF approved by the SEC

Ethereum ETF approved by the SEC

Anti-CBDC bill of the House of Representatives

The **tokenization** of finance

Updates on the **roadmap** of the digital **Euro**

The **quest** for a private/public trilemma-free blockchain/DLT technology

The **Algorand** solution for this quest

The **impact** of all this stuff on the **NiRvAna** WP5 work package



BRICS de-dollarization

An intergovernmental organization comprising

Brazil, Russia, India, China, South Africa

at the very beginning, with the addition of

Iran, Egypt, Ethiopia, and the United Arab Emirates (BRICS+)

Possible forthcoming member: **Saudi Arabia**

Originally identified to highlight investment opportunities the grouping evolved into a cohesive geopolitical bloc, with their governments meeting annually at formal summits and coordinating multilateral policies since 2009. Bilateral relations among BRICS are conducted mainly on the basis of non-interference, equality, and mutual benefit.

A total of 15 countries have formally applied to join BRICS:

-  Algeria^[75] 2
-  Cuba¹
-  Senegal^[85] 1
-  Bahrain^[79] 1
-  Kazakhstan^[83] 1
-  Thailand^[85]
-  Bangladesh^[80] 1
-  Kuwait¹
-  Venezuela¹
-  Belarus^[81] 1
-  Pakistan^[84] 1
-  Vietnam¹
-  Bolivia^[82] 1
-  Palestine¹
-  Nigeria^[77] 1

Have expressed interest in joining BRICS:

-  Afghanistan^[73]
-  Gabon
-  Myanmar^[90]
-  Serbia
-  Zimbabwe
-  Angola^[88]
-  Guinea-Bissau^[89]
-  Nicaragua^[91]
-  Syria^[92]
-  Cameroon
-  Guyana
-  North Korea
-  Tunisia
-  Colombia
-  Jamaica
-  South Sudan
-  Turkey
-  Comoros
-  Libya
-  Sri Lanka
-  Somalia
-  DR Congo
-  Mexico
-  Sudan
-  Uganda
-  Suriname

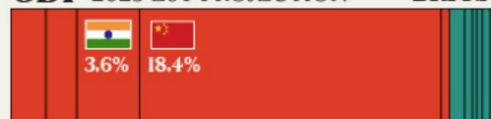


in numbers:

SHARE OF GLOBAL

GDP 2023 EoY PROJECTION

BRICS total with new members



29%

Saudi Arabia is the only trillion-dollar economy being added to BRICS.

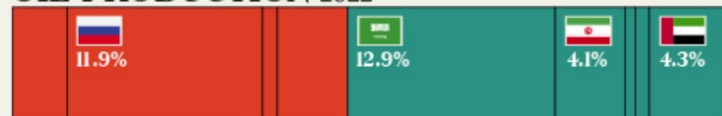
POPULATION 2023



46%

Adding high-population-growth countries like Ethiopia means BRICS could soon represent over half the world's population.

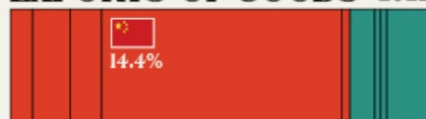
OIL PRODUCTION 2022



43%

The addition of Saudi Arabia, Iran, and the UAE will more than double BRICS' share of global oil production.

EXPORTS OF GOODS* 2022



25%

BRICS' share of global exports will increase slightly, continuing to be led by China.

*Merchandise trade only.

Sources: IMF, World Population Review, EI Statistical Review of World Energy, World Trade Organization

visualcapitalist.com





Financial strategic trajectory of the BRICS: **de-dollarization**

i.e. the attempt to replace the US dollar as medium of exchange with the **R5** currency

Renminbi, Ruble, Rupee, Real, and Rand

or with other multilateral central bank digital currency (CBDC) as the new global currency backed by gold or/and bonds guaranteed by the five countries

This will greatly diminish USA influence and impact in existing trade agreements

CBDC implementation within BRICS

Digital Renminbi: approved Aug. 14, 2020



Digital Ruble: approved July 24, 2023



Digital Rupee: pilot test since Dec. 1st, 2022



Digital Real: pilot test since March 2023

Digital Rand: under study

Working hypothesis: **THE UNIT**, i.e. a new **fractal monetary system** with a currency based on DLT technologies:

not a cryptocurrency, not a stablecoin, backed **40% by gold, 60% by R5**

<https://unitfoundation.org/>



USE CASES

Decoupling money from politics will undoubtedly offer unique opportunities for fair trade and investments across the globe removing economic bypasses created by political power plays and irresponsible fiscal and monetary policies.

<https://unitfoundation.org/>

USE CASES

BRICS+

Current Bretton Woods system definitely does not serve well development of BRICS+ countries.

Numerous sanctions and limitations have already been imposed or declared with massive direct and collateral economic damage.

Presently, BRICS+ is not ready to launch its own currency, but the need for a reliable independent international financial and monetary system is urgent.

UNIT ecosystem offers BRICS+ countries a unique framework, which can fully accommodate the inter-block trade and facilitate mutual investments thus alleviating economic disbalances hindering further integration.

EURASEX

Eurasian Economic Union successfully drives regional economic integration creating a single market with free movement of goods and services despite various sanctions imposed on some of its member-countries.

One of the stated integration objectives is launch of an open Eurasian Exchange which would enable direct access to vast natural resources of the region.

UNIT ecosystem can provide efficient mechanism whereby commodities and financial instruments will be priced and settled in UNIT tokens.



Единая валюта БРИКС подорвёт доминирование доллара



BRICS single currency will undermine dollar dominance

Discussed at the working group on financial services and investments created by the BRICS+ Business Council

Bitcoin ETF approved by the SEC



U.S. SECURITIES AND
EXCHANGE COMMISSION

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Statement



Statement on the Approval of Spot Bitcoin Exchange-Traded Products



Chair Gary Gensler

Jan. 10, 2024

Today, the Commission approved the listing and trading of a number of spot bitcoin exchange-traded product (ETP) shares.

ETF = Exchange-traded fund

ETFs own financial assets such as stocks, bonds, currencies, debts, futures contracts, and/or commodities such as gold bars.

An ETF divides ownership of itself into shares that are held by shareholders.

The logic is to be exposed on an asset, without owning it.

Very **attractive for Bitcoin**, due to difficulties and risk in managing the wallet, the keys,...

The SEC previously disapproved **more than 20 exchange rule** filings for spot bitcoin ETFs.

Why a Bitcoin ETF approval by the SEC now after 20 rejections?

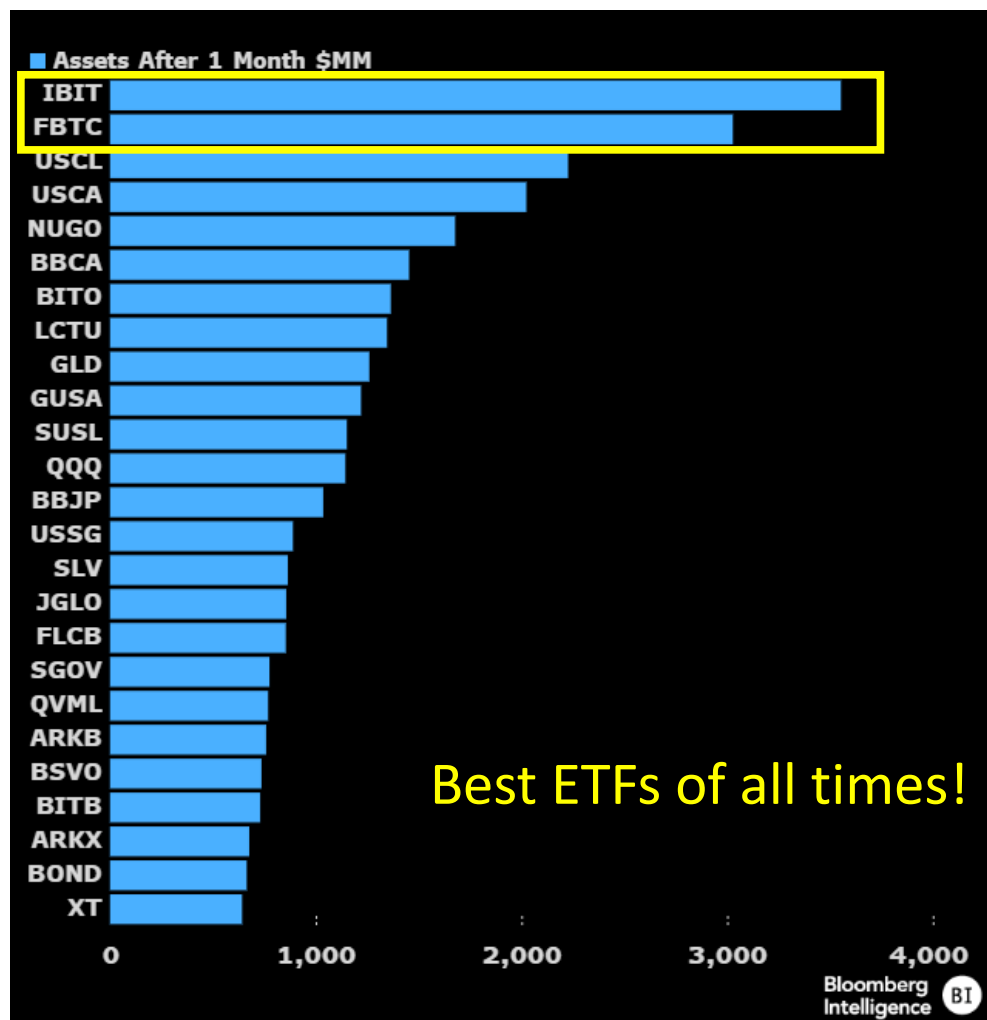


BlackRock

world's largest asset manager, with **\$10 trillion** in assets under management

BlackRock has been denied by the SEC just **once** in **576 attempts** when filing to list new ETFs in the US in the last 30 years!

Assets value after 1 month since the launch

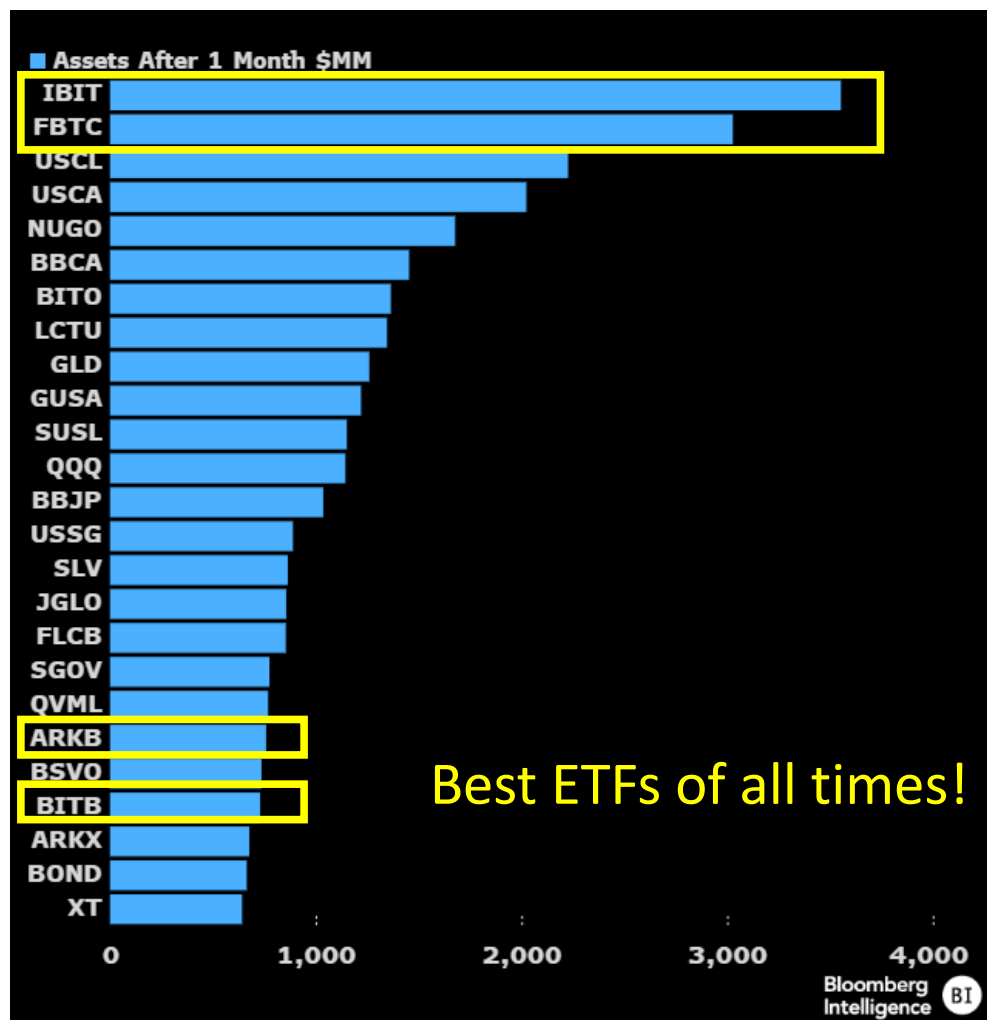


Bitcoin ETFs approved:

BlackRock (IBIT)
 Fidelity (FBTC)
 Bitwise (BITB)
 Ark 21Shares (ARKB)
 Invesco (BTCO)
 VanEck (HODL)
 Valkyrie (BRRR)
 Franklin Templeton (EZBC)
 WisdomTree (BTCW)

First 25 out of 5,535 total ETF launches in the last 30 years

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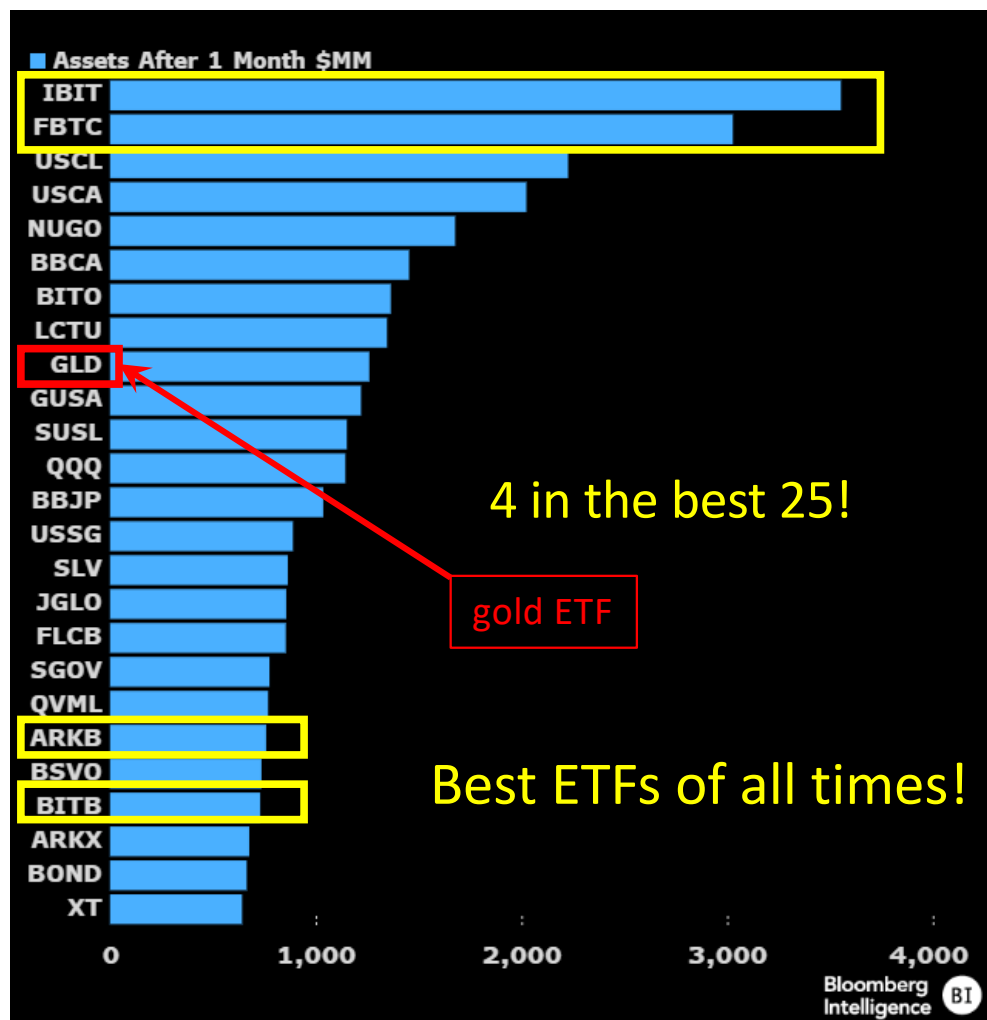
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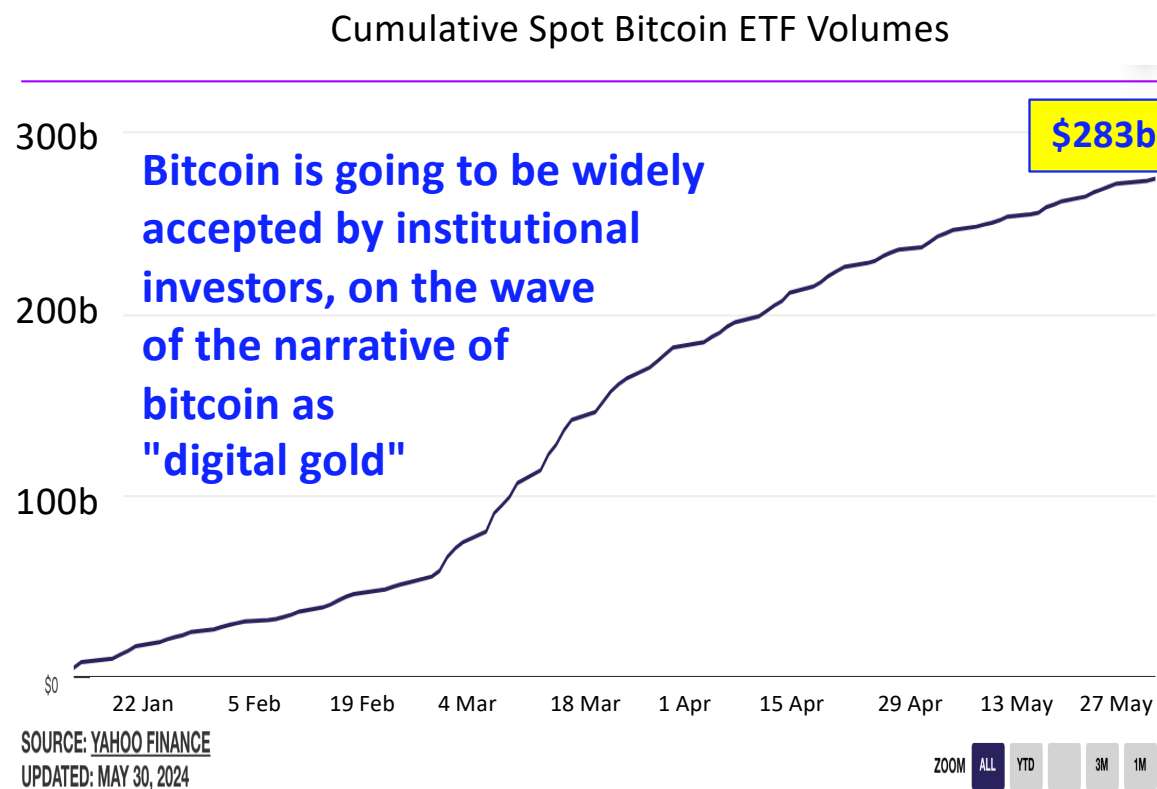
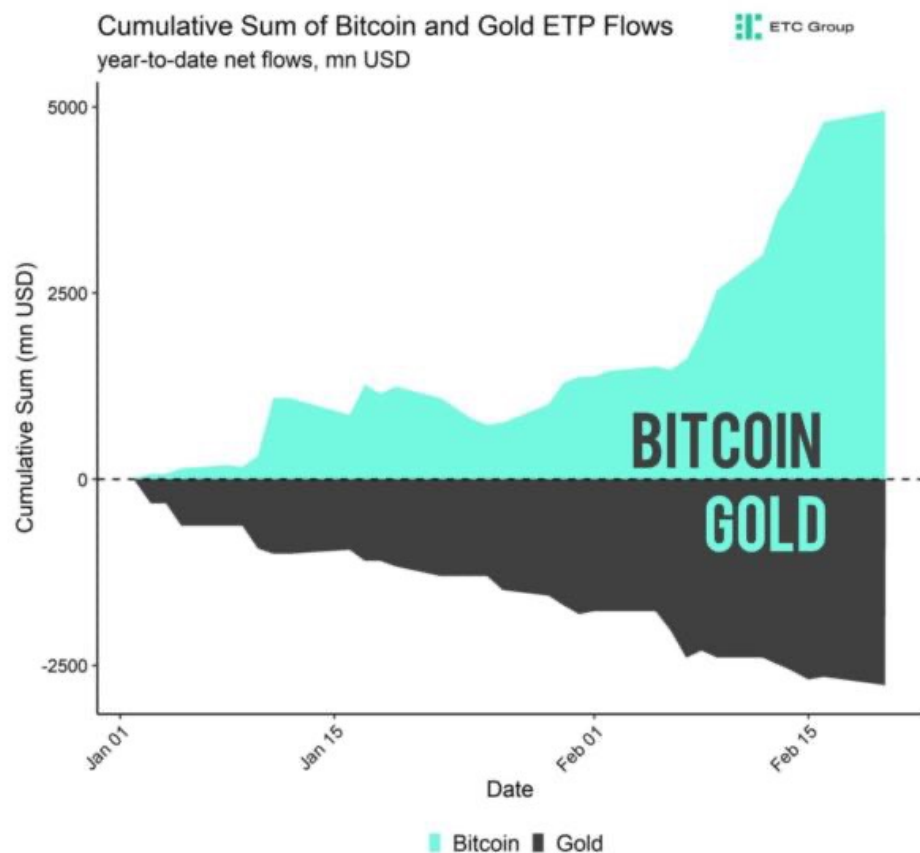
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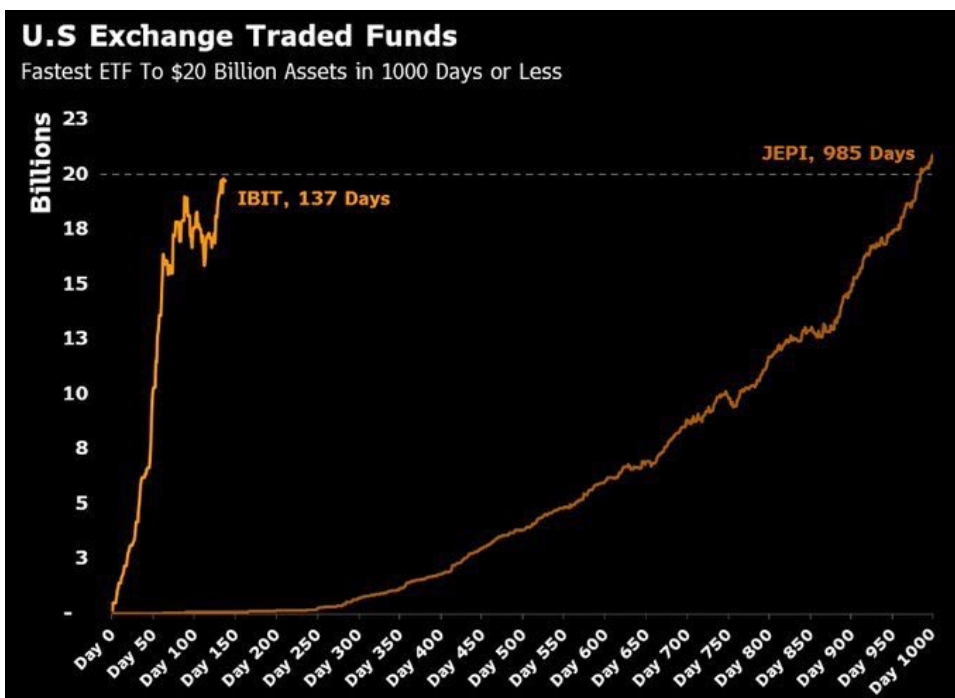
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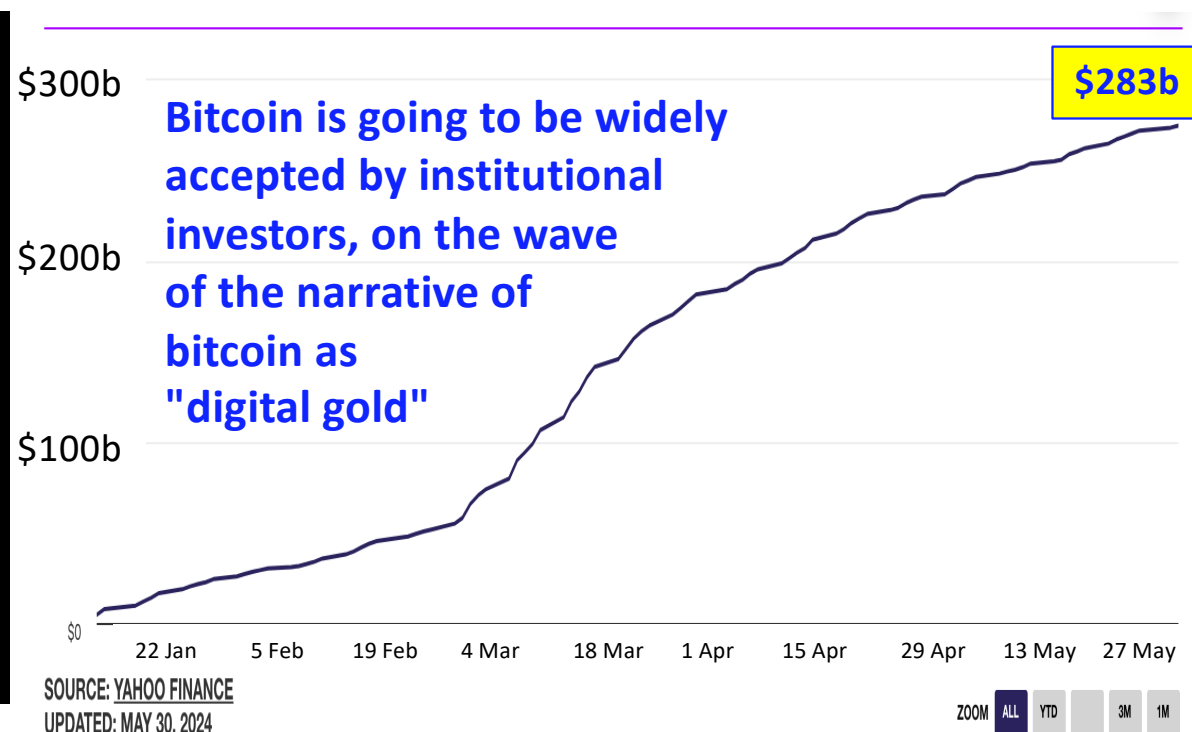


What are the consequences of the Bitcoin ETF approval?



<https://x.com/EricBalchunas/status/1795799124035440717>

Cumulative Spot Bitcoin ETF Volumes



Ethereum ETF approved by the SEC

Ethereum ETF approved:

Grayscale Ethereum Trust

Bitwise Ethereum ETF

Blackrock's iShares Ethereum Trust

VanEck Ethereum Trust

ARK 21Shares Ethereum ETF

Invesco Galaxy Ethereum ETF

Fidelity Ethereum Fund

Franklin Ethereum ETF

What are the consequences of the Ethereum ETF approval?

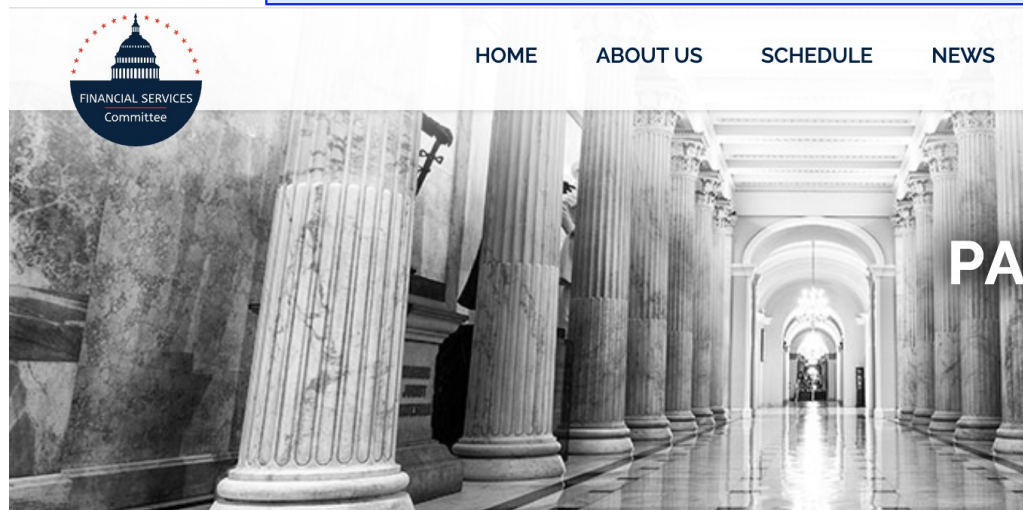


ETH could be defined as a “commodity” by the SEC



ETH could become **“the” platform to develop** the money of private groups
(see the next bullet, i.e. the anti-CBDC bill)

Anti-CBDC bill at the House of Representatives



Press Releases

House Passes CBDC Anti-Surveillance State Act

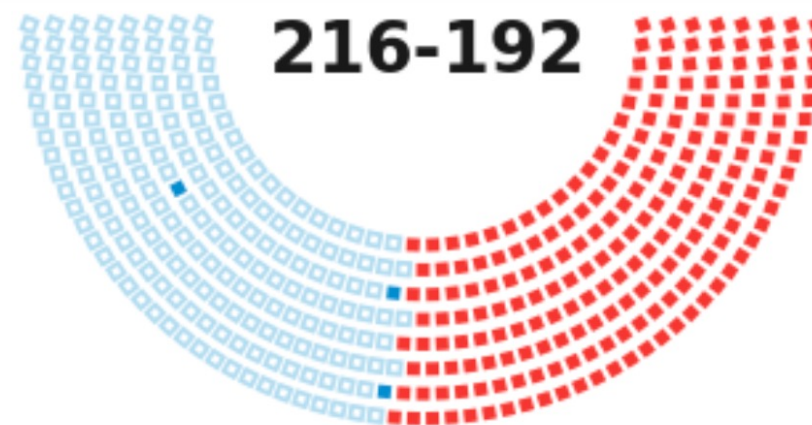
H.R. 5403 blocks the creation of a government-issued, government-controlled central bank digital currency

Washington, May 23, 2024 -

Today, the U.S. House of Representatives passed **H.R. 5403**, the CBDC Anti-Surveillance State Act, sponsored by Majority Whip Tom Emmer (MN-06). H.R. 5403 halts unelected bureaucrats from issuing a central bank digital currency (CBDC)—which would threaten Americans' right to financial privacy—without explicit authorization from Congress.

It prevents the FED to issue a CBDC !!

Ideology Vote Chart



Key: **Republican - Aye** **Democrat - Aye** **Democrat - No**

Seat position based on our [ideology score](#).

What could be the consequences of the Anti-CBDC bill, if definitively approved?

The USA would choose the **stablecoins of the private sector**
USDC, JPMorgan Coin, PayPal PYUSD...
instead of a CBDC
to issue the **digital dollar** under the strict supervision of the SEC

USDC (USD Circle) seems to be the best candidate
It is an ERC-20 token on **Ethereum blockchain**

In April 2022, **Circle Internet Financial** announced an agreement for a **US\$400M** funding round with investments from ...

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In April 2022, **Circle Internet Financial** announced an agreement for a **US\$400M** funding round with investments from **BlackRock**, Fidelity Investments, Marshall Wace LLP, Fin Capital and Clidenor Capital expected to close in the second quarter.

Better to repeat this revolutionary concept:

The USA would choose the **stablecoins** of the private sector

USDC, JPMorgan Coin, PayPal PYUSD...

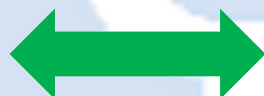
instead of a CBDC

to issue the digital dollar under the strict supervision of the SEC

BOSTON — APRIL 11, 2024 — Today, **Circle**, a global digital financial technology firm and the issuer of **USDC**, announced **new smart contract functionality** that would allow holders of the

BlackRock USD Institutional Digital Liquidity Fund (BUIDL)

to transfer their shares to Circle for USDC.

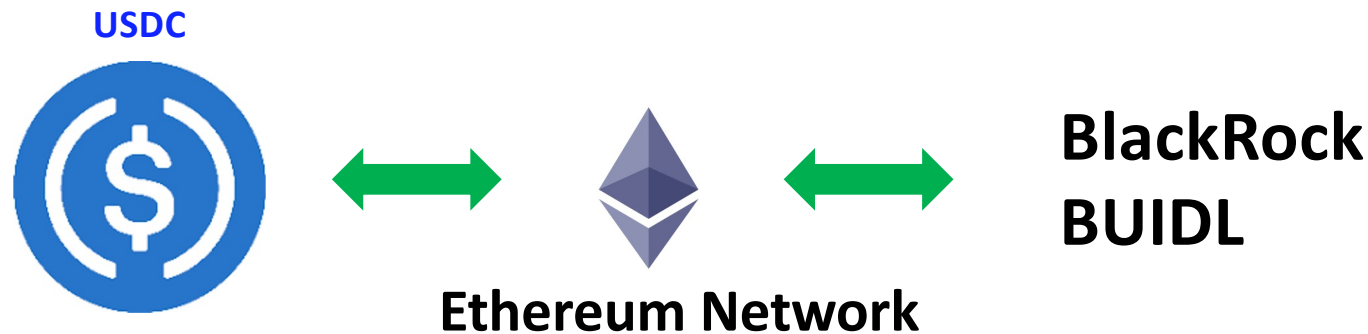


**BlackRock
BUIDL**

BUIDL is the first **tokenized fund** on the **Ethereum network**
It allows customers to buy ***tokenized stocks and bonds!!***

www.circle.com/en/pressroom

The collaboration between **Circle** and **BlackRock** represents an important step in the **integration of stablecoins into traditional financial markets through Ethereum network!!**



The Tokenization of Finance

<https://www.youtube.com/watch?v=HTveRLW7QP0>



Larry Fink
the CEO of
BlackRock

Bloomberg TV

“We believe **the next step** going forward **will be the tokenization of financial assets**.
And that means **every stock, every bond** will have its own basically CUSIP.
It'll be on one general ledger.
Every investor, you and I will have our own number, our own identification.” -

CUSIP = Committee on Uniform Securities Identification Procedures

Better to repeat this revolutionary concept:

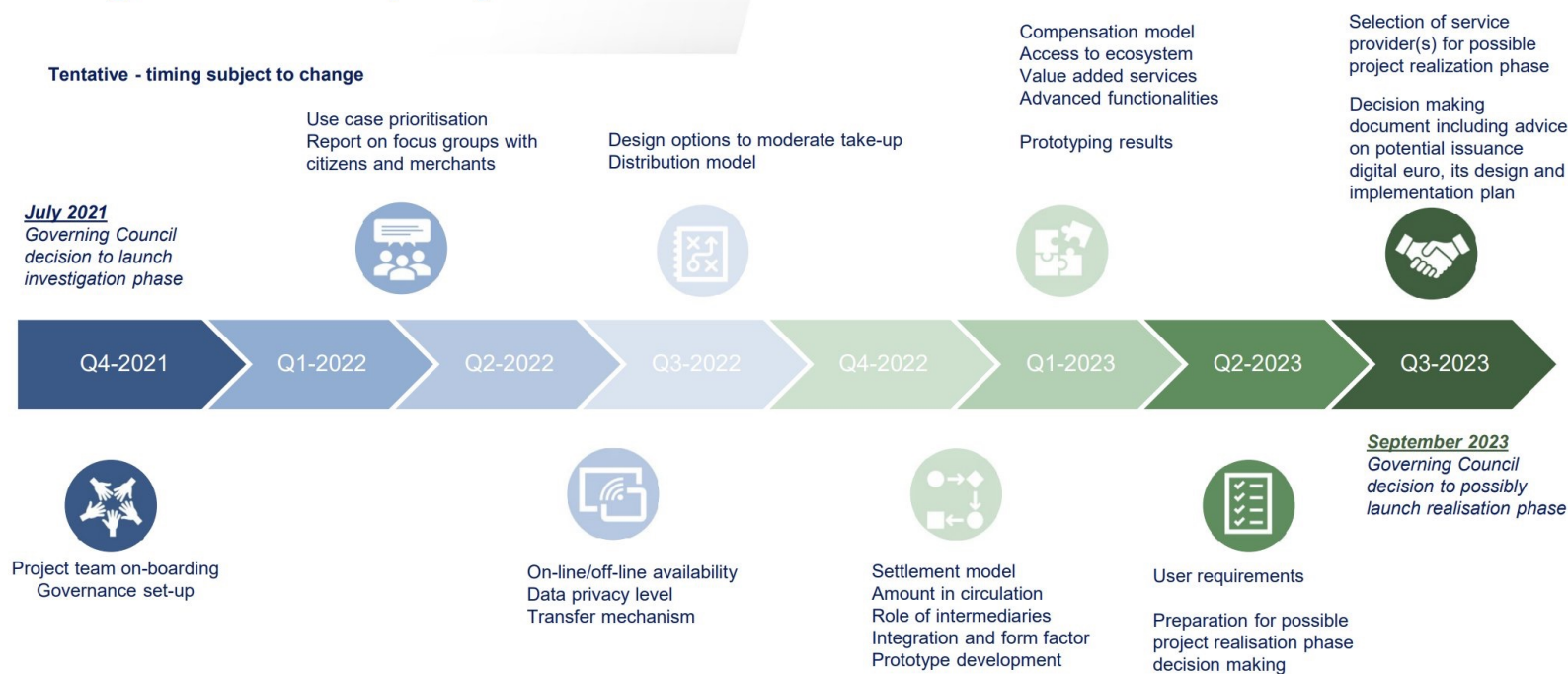
... the next step going forward **will be**
the tokenization of financial assets.

Larry Fink, BlackRock CEO

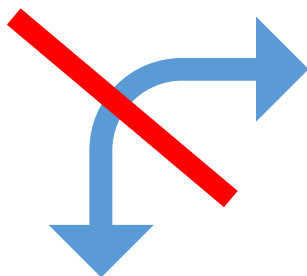
Updates on the roadmap of the digital Euro

No updates, since nothing has changed: starting from Nov 2023, we are always in the **preparation phase**

Digital euro project timeline



Summing up...



BRICS with **centrally controlled R5-TheUnit currency** and/or local CBDCs

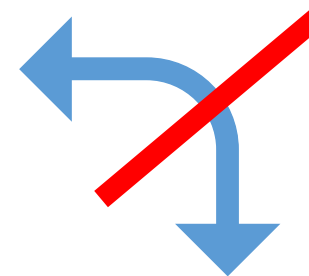
No private companies admitted

Full programmability of money and surveillance

Full interoperable

EU in the middle, **scared** by private solutions, but **uncertain** about the final infrastructure, the programmability and the surveillance level

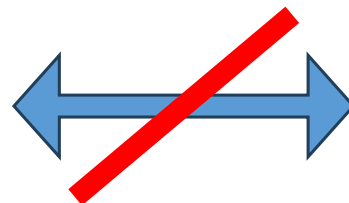
We are going towards possible non-interoperable networks



USA with a (possible) **private-only solution**, partly deployed on Ethereum (USDC, PYUSD), partly on other permissioned networks (Quorum for JPM)

No programmability and surveillance

Lack of interoperability



The quest for a private/public trilemma-free blockchain/DLT technology

Summing up the summaries

BRICS with centrally controlled **R5-TheUnit** currency and/or local CBDCs



quite jeopardized situation!

EU in the middle, scared and uncertain



on the digital Euro

**ETF
BTC**

**ETF
ETH**

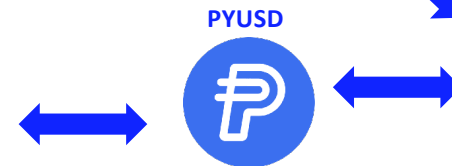
JPMCoin
Quorum Network
Private Ethereum network



Tokenization of assets

USA with a (possible) private-only solution

Solana blockchain



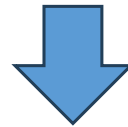
Ethereum Network

**BlackRock
BUIDL**



a lot of different networks
fragmentation of the monetary system
some public blockchains, some private DLT
different use cases
lack of interoperability among networks
:
:

To harmonize the global finance, we would need a global infrastructure able to handle all these networks, use cases, levels of privilege, ...



The quest for a global, private/public trilemma-free blockchain/DLT technology

Can **Ethereum** be the **final** solution to this quest?

I think **no**:

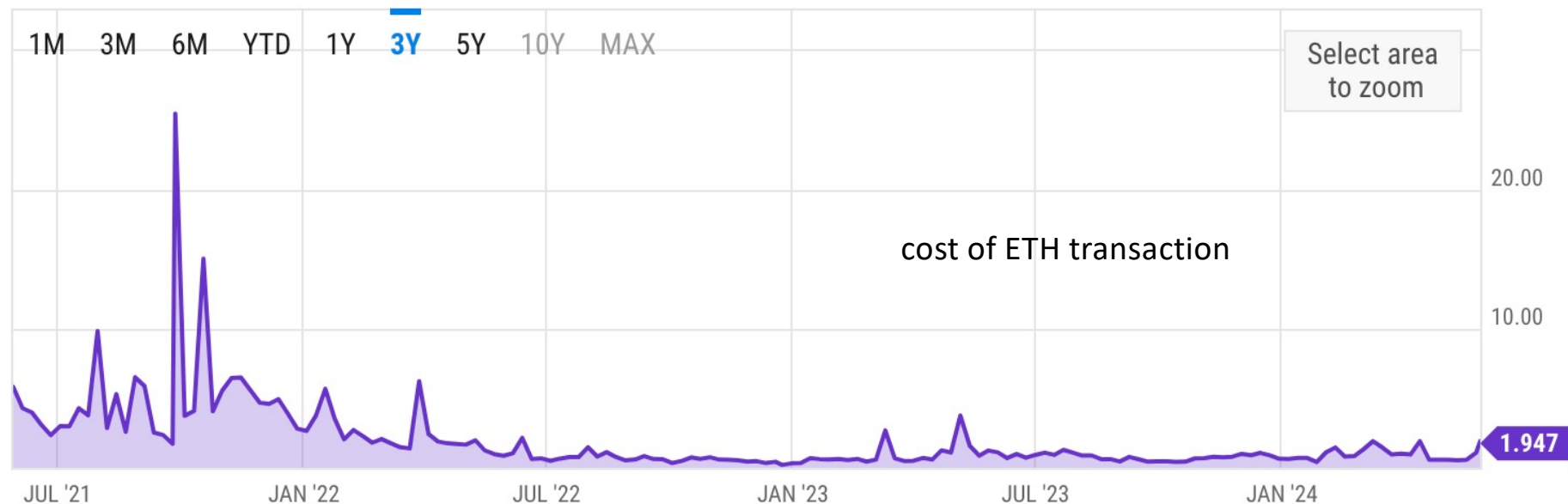
- 1) high fees
- 2) low scalability
- 3) concerns about effective decentralization
- 4) upgrades too frequent
- 5) lack of interoperability between private sub-networks and mainnet
- 6) built without a peer-review process at academic level

1) high fees

It could cost between **0.1 USDC** to **35 USDC** to **send USDC** from your wallet to another. It typically depends on the exchange you use for the transfer and the blockchain network your USDC lives on.

A simple **swap** between ERC-20 tokens on **UniSwap**, that requires a smart-contract, can cost **10 USD -> 100-300 USD** depending on the network congestion

<https://ycharts.com/>



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A simple swap between ERC-20 tokens on UniSwap can cost **10 USD -> 100-300 USD** depending on the network congestion

Good enough for institutional players, **not for retailers**

2) low scalability

The Scalability Challenge for Ethereum

There is a scalability challenge due to inherent properties of Ethereum mining that restricts block generation to between

7-15 TPS

As a comparison, Visa network processes around **45,000 TPS**.

3) concerns about effective decentralization

The problem is within the nature of PoS:

only people with the most coins have consensus over the network.

Moreover:

LIDO: a dominant player in *staking*
(33% of all Ethereum staked)

GETH: a dominant player in *execution layer* interaction clients
(61% of all interactions with Ethereum blockchain)

LIGHTHOUSE & PRISM: dominant player in *consensus layer* clients
(76% of all interactions within the Ethereum network)

4) upgrades too frequent

1. **Frontier (Ethereum 1.0):** 07/2015
2. **Homestead (Ethereum 1.1):** 03/2016
3. **Metropolis (Ethereum 1.2 e 1.3):**
 1. **Byzantium:** 10/2017
 2. **Constantinople:** 02/2019
4. **Istanbul (Ethereum 1.4):** 12/2019
5. **Muir Glacier:** 01/2020
6. **Berlin (Ethereum 1.5):** 04/2021
7. **London (Ethereum 1.6):** 08/2021
8. **Altair (Ethereum 1.7):** 10/2021
9. **Arrow Glacier** 12/2021
10. **Gray Glacier** 06/2022
11. **Bellatrix** 09/2022
12. **Paris** 09/2022
13. **Shanghai-Capella** 04/2023
14. **Cancun-Deneb** 03/2024
15. ...

4) upgrades too frequent

1. Frontier (Ethereum 1.0): 07/2015
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 1. Byzantium: 10/2017
 2. **Constantinople**: 02/2019
4. Istanbul (Ethereum 1.4): 12/2019
5. Muir Glacier: 01/2020
6. Berlin (Ethereum 1.5): 04/2021
7. London (Ethereum 1.6): 08/2021
8. Altair (Ethereum 1.7): 10/2021
9. Arrow Glacier 12/2021
10. Gray Glacier 06/2022
11. Bellatrix 09/2022
12. Paris 09/2022
13. Shanghai-Capella 04/2023
14. Cancun-Deneb 03/2024
15. ...



Huge vulnerability discovered
only 48 hours before the upgrade!!

High frequency of upgrades
=
high probability of a bug
that can destroy the network

(Halting problem & Rice theorem)

5) lack of interoperability between private sub-networks and mainnet



Ethereum mainnet



Ethereum private
sub-network

6) built without a peer-review process at academic level

\$450 billion based on a whitepaper with no referees!



Ethereum White Paper

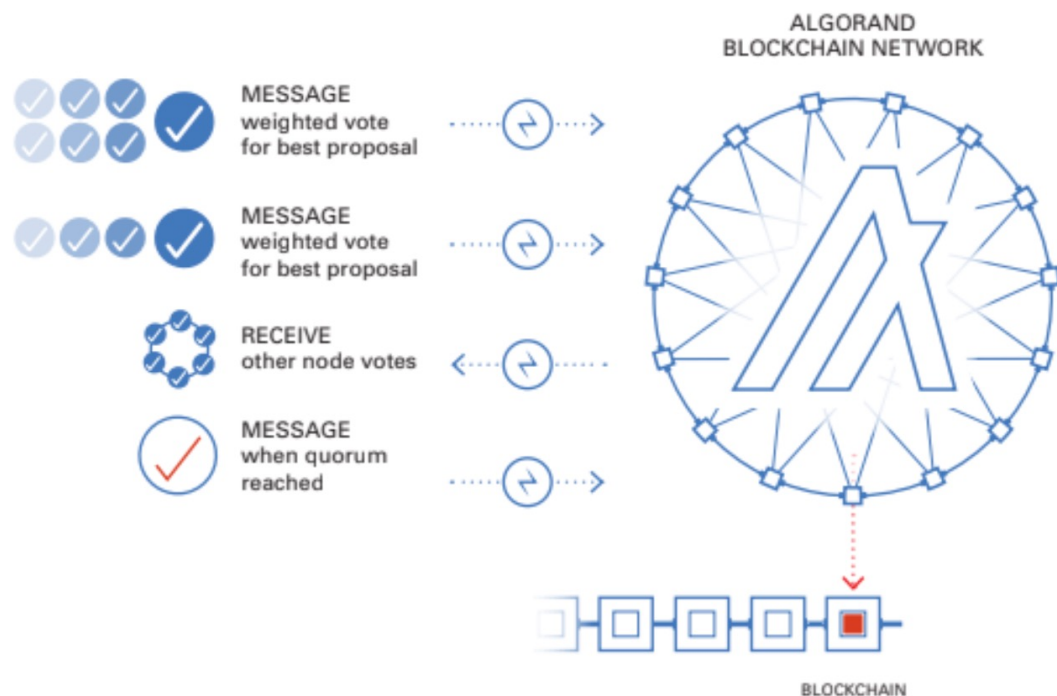
A NEXT GENERATION SMART CONTRACT & DECENTRALIZED APPLICATION PLATFORM

By Vitalik Buterin

When Satoshi Nakamoto first set the Bitcoin blockchain into motion in January 2009, he was simultaneously introducing two radical and untested concepts. The first is the "bitcoin", a decentralized peer-to-peer online currency that maintains a value without any backing, intrinsic value or central issuer. So far, the "bitcoin" as a currency unit has taken up the bulk of the public attention, both in terms of the political aspects of a currency without a central bank and its extreme upward and downward volatility in price.



The Algorand solution



Algorand co-chains

<https://algorandtechnologies.com/>

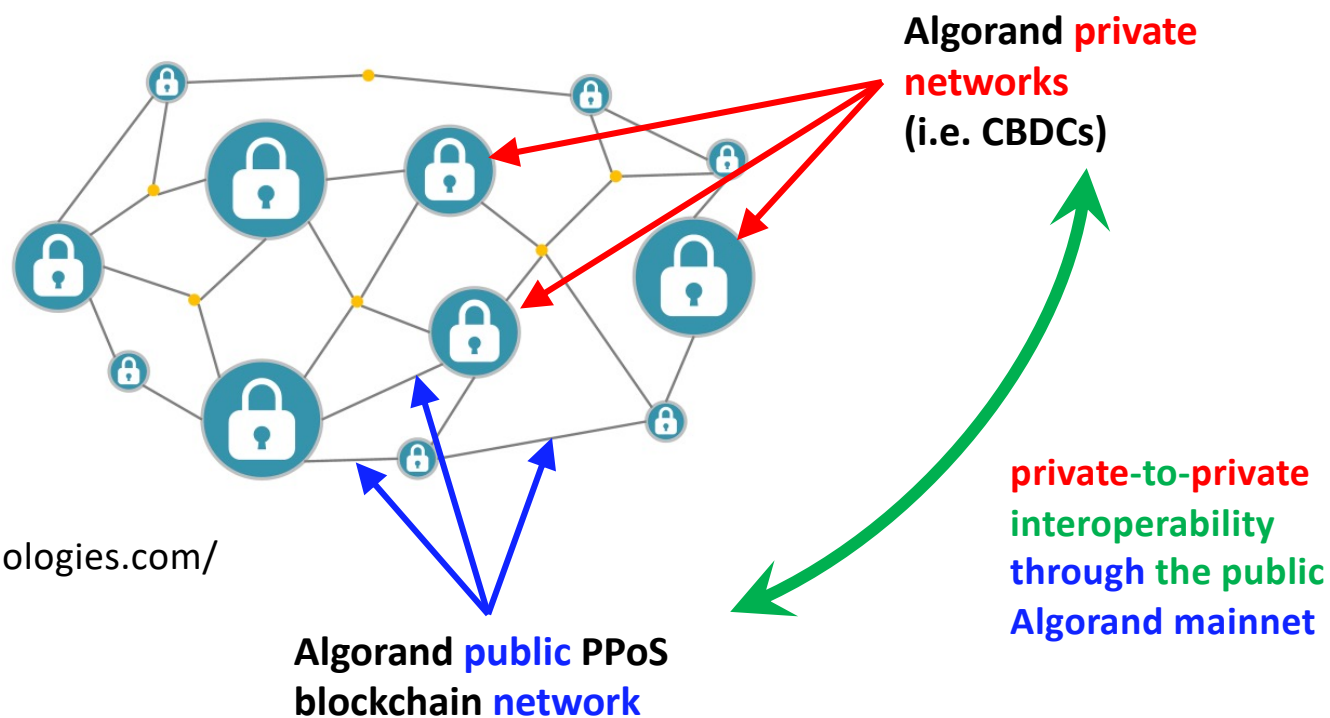
Can **Algorand** become the **final** solution?

I think **YES**:

- 1) **fees**: extremely low fees (0.001 ALGO, now **0.0002 \$**)
- 2) **scalability**: high scalability: up to **10 kTPS**
- 3) **upgrades**: only **4 main upgrades** regarding extension of functionalities
- 4) **full decentralization**: **PPoS** mechanism
- 5) **interoperability**: **full interoperability** between **private sub-networks** and **mainnet** through the **co-chains**
- 6) **peer-review**: paper published by S. Micali on ***Theoretical Computer Science***



Algorand co-chains concept



<https://algorandtechnologies.com/>

Main drawback of Algorand: **scarse adoption**

roughly **1/1000** of the Ethereum network as for **TVL**

<https://defillama.com/>



The big bet is: **Ethereum** or **Algorand**?

Algorand is far better from a **technical** point of view

Ethereum is (for now) far better from the **adoption** point of view

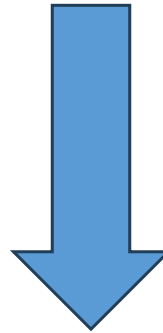
In theory **Algorand** should prevail on the long term race ...

... and in theory, too, there is no difference between theory and practice. But in practice yes ...

So, it could happen that **Ethereum** remains the queen!

The impact on the NiRvAna WP5 work package implementation

Be it one or the other, **Ethereum** or **Algorand**,
we need to rely on a **safe and reliable blockchain**,
validated by the scientific community.



The impact on the NiRvAna WP5 work package implementation

Remember some objectives of the NiRvAna project:

T5.1 - Compositional model of a private blockchain (months 7-24)

We will develop Markovian process algebra models of various aspects of blockchains such as distributed ledgers, consensus protocols, and peer-to-peer asynchronous networks as a stepping stone to get a complete compositional model of a private blockchain **written in a reversible variant of PEPA.**

T5.2 - Verification of the private blockchain model (months 25-36)

We will then assess correctness, security, and performance properties of the private blockchain model by using the PEPA Eclipse plug-in extended with our techniques for stochastic noninterference analysis as well as causal consistent reversibility integrated with time reversibility.

T5.3 - Implementation of a prototype of the verified model (months 25-36)

We will finally build together with BAX a prototype of the verified model of private blockchain in the server farm made available within the MIRACLE project funded by Regione Marche.

Final suggestion for the WP5 work package implementation:

**Use The Algorand blockchain as the standard of reference
for the three phases of the WP5 work package**

T5.1 - Compositional model of a private blockchain written in a reversible variant of PEPA.

T5.2 - Verification of the private blockchain model.

T5.3 - Implementation of a prototype of the verified model.