

# Crypto taxes and regulations in Portugal and Europe.

For our website

As of 2024

# Agenda for today.

---

- **1. An overview of crypto in Portugal and beyond.**
  - 1.1. About Portugal's status in the crypto world.
  - 1.2. About Portugal's emerging crypto ecosystem.
  
- **2. The new tax regime for cryptoassets in Portugal.**
  - 2.1. Some context about crypto taxes in the EU and beyond.
  - 2.2. An overview of Portugal's new crypto tax regime.
  
- **3. The new EU crypto regulations impacting CASPs.**
  - 3.1. Some context about crypto regulation in the EU and beyond.
  - 3.2. An overview of crypto regulation in the EU and its impacts.

# 0. Who we are and what is Instituto New Economy?

---

# Instituto New Economy is here to keep Portugal crypto friendly.

Our objectives

**Establish Portugal as a leading crypto and blockchain hub.**

**Develop a cryptoasset-friendly tax and regulatory environment in Portugal.**

Instituto New Economy was founded and is backed by leaders in the crypto and national academic and political scenes

A grid of logos for various organizations and institutions that support Instituto New Economy. The logos are arranged in three rows and six columns:

- Row 1: Gnosis, NEAR, RELAYZ, PRIVUS (PRIVATE. SECURE. SOVEREIGN.), CHORUS, CATOLICA LISBON (BUSINESS & ECONOMICS)
- Row 2: U.PORTO FEUP FACULDADE DE ENGENHARIA UNIVERSIDADE DO PORTO, brave, MORAIS LEITÃO GALVÃO TELES, SOARES DA SILVA & ASSOCIADOS, Immunefi, Kikimōra Labs, 3JANE
- Row 3: LUMINOUS FUTURES, bitscale capital, PYTH, Lightshift CAPITAL, Balancer, PSD PARTIDO SOCIAL DEMOCRATA

# To better engage with the government, we have partnered with key advocacy groups to create FACE, the "Portuguese crypto federation".

APBC,  
founded in 2017.



ALL2BC,  
founded in 2018.



Instituto New Economy,  
founded in 2021.



Associações portuguesas unem-se e criam Federação das Asso...

A Aliança Portuguesa de Blockchain, a Associação Portuguesa de Blockchain e Criptomoedas (APBC) e o Instituto New Economy uniram-se

<https://expresso.pt/economia/2022-09-08-Associacoes-portuguesas-...>



Associações portuguesas de cripto unem esforços e criam Fede...

A Aliança Portuguesa de Blockchain, a Associação Portuguesa de Blockchain e Criptomoedas (APBC) e o Instituto New Economy anunciaram

<https://www.forbespt.com/associacoes-portuguesas-de-cripto-unem-...>



[www.jornaldenegocios.pt](http://www.jornaldenegocios.pt)

<https://www.jornaldenegocios.pt/mercados/criptoativos/detalhe/setor-cripto-portugues-cria-federacao-para-ganhar-...>

Setor de ativos digitais cria federação de criptoconomia

A Aliança Portuguesa de Blockchain (APB), a Associação Portuguesa de Blockchain e Criptomoedas (APBC) e o Instituto New Economy (INE)

<https://www.dinheirovivo.pt/economia/setor-de-ativos-digitais-cria-fe-...>



# FACE

Federação Portuguesa das Associações  
da Cripto Economia

Associações portuguesas de cripto criam Federação das Associ...

A Aliança Portuguesa de Blockchain, a Associação Portuguesa de Blockchain e Criptomoedas (APBC) e o Instituto New Economy anunciaram

<https://executivedigest.sapo.pt/associacoes-portuguesas-de-cripto-c-...>



FACE: Defender a Economia Cripto em Portugal é prioridade da ...

As notícias de localização em Portugal de empresas e profissionais ligados à economia cripto sucedem-se e os números partilhados pela Chainalysis

<https://tek.sapo.pt/artigos/face-defender-a-economia-cripto-em-port-...>



Já há uma federação de cripto economia em Portugal

As três entidades, que são as principais associações nacionais deste segmento, pretendem assim, "a promoção da estabilidade nacional no

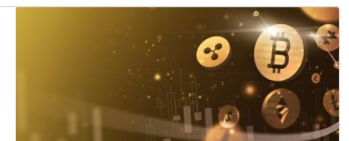
<https://24.sapo.pt/atualidade/artigos/ja-ha-uma-federacao-de-cripto-...>



Associações portuguesas unem-se e criam Federação das Asso...

A Aliança Portuguesa de Blockchain, a Associação Portuguesa de Blockchain e Criptomoedas (APBC) e o Instituto New Economy uniram-se

<https://www.dnoticias.pt/2022/9/8/327074-associacoes-portuguesas-...>



# Learn more about our work and get in touch in the future through our website.

## We defend the future of decentralised technology in Europe.

### 2021

We were only founded in 2021, but have been working in this space even before Bitcoin was born.

### 20

We started small, with 20 members, but are now ready to grow within the Portuguese community.

### Our strategy has three vectors.



#### Educate

Influence key stakeholders and the public.



#### Transform

Shape favourable regulation and legislation.



#### Help

Build strong relations, locally and globally

## neweconomy.institute

### Pelo desenvolvimento da cripto economia em Portugal.

Nascida da colaboração emergente entre as várias associações deste sector, a FACE tem como objectivo a promoção e desenvolvimento da cripto economia em Portugal, quer através de apoio na acção legislativa, quer através do esclarecimento e formação sobre a cripto economia e a tecnologia blockchain no seu todo.

Vivemos um momento crucial e de crescente ímpeto regulatório do sector, em particular em Portugal sob liderança da Europa. É por isso importante garantir que quaisquer políticas públicas sejam ponderadas de forma a elevar o impacto económico e potencial transformador que esta tecnologia já está a ter no nosso país.

fac3.pt

# **1. An overview of crypto in Portugal and beyond.**

---

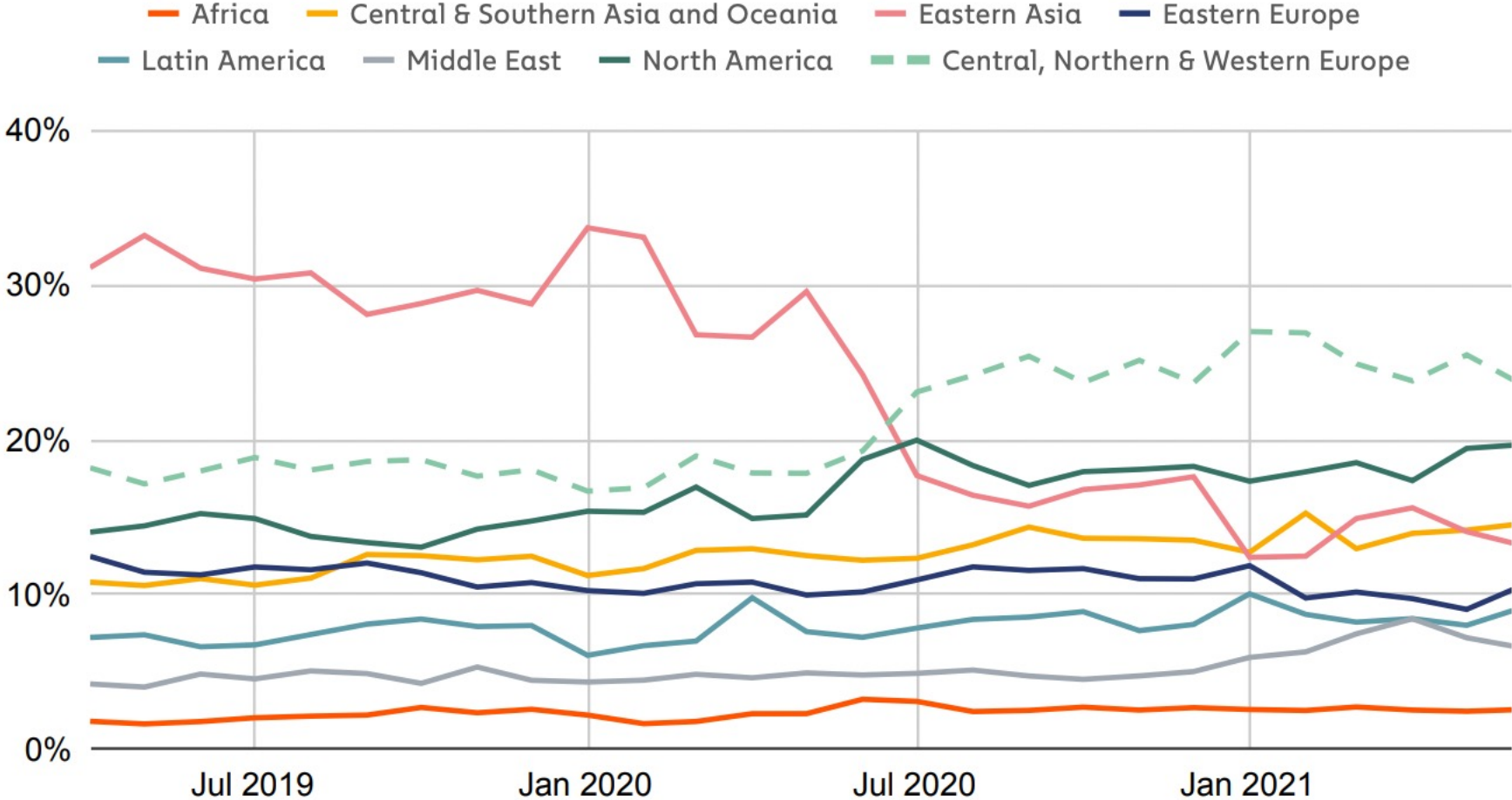
# **1.1. About Portugal's status in the crypto world.**

---



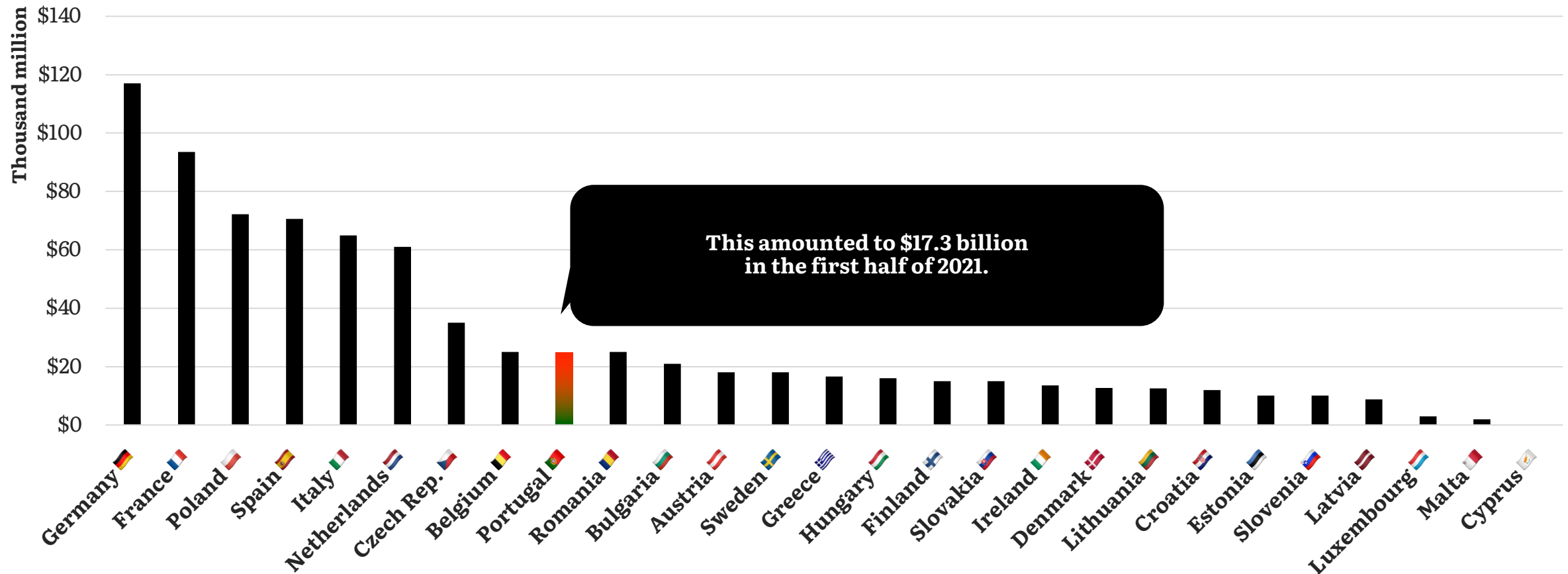
# Western Europe, which includes 21 EU countries plus the UK, CH, Norway and others, accounts for 25% of global crypto transactions.

Evolution of the volume of cryptoasset transactions received by region



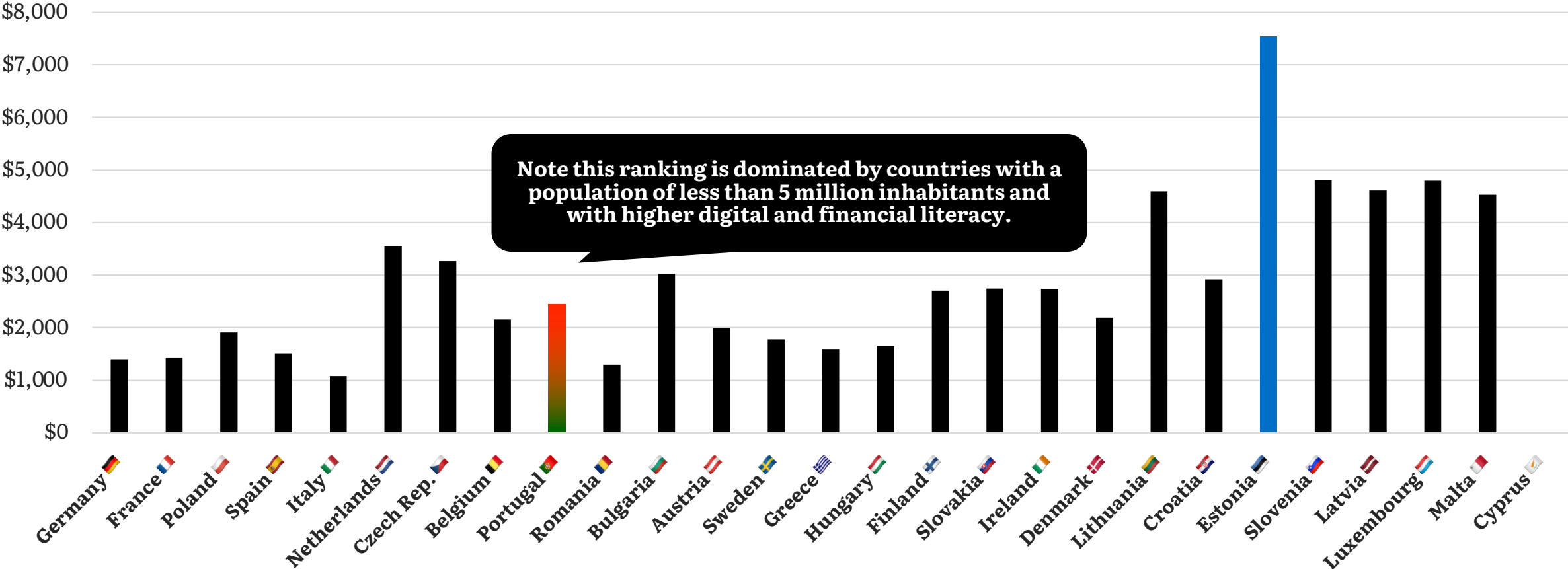
# Portugal has the eighth largest crypto economy in the European Union, having traded about \$25 billion in the first half of 2022.

Total value of cryptoassets received by addresses in the EU in 2022  
Data from January to June 2022 in USD



# Per capita and in the EU, Portugal stands in the 14th place, with a value of \$2,450 vs. \$2,750 eu average. Estonia is currently leading.

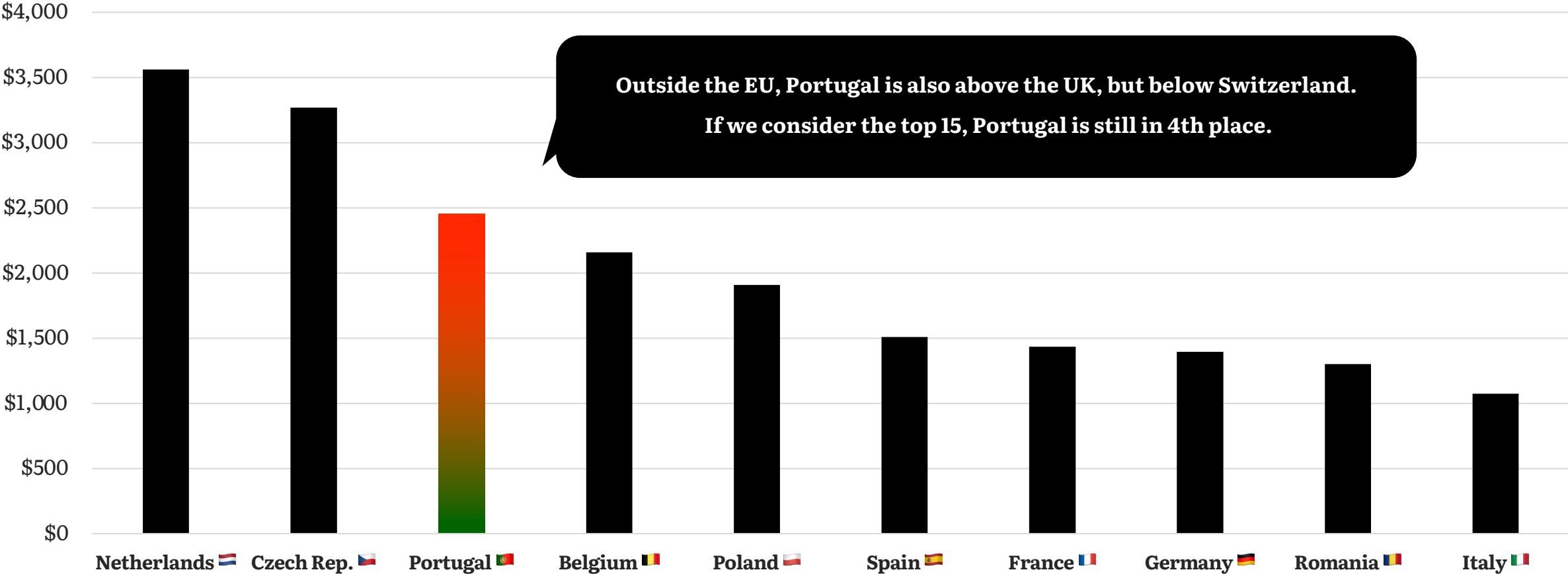
Per capita value of cryptoassets received by EU addresses in 2022  
Data from January to June 2022 in USD



Note this ranking is dominated by countries with a population of less than 5 million inhabitants and with higher digital and financial literacy.

# But if we consider only the 10 largest crypto economies at the absolute level, Portugal already occupies a prominent position: 3rd per capita.

Per capita value of cryptoassets received by EU addresses in 2022  
Data from January to June 2022 in USD - among the top 10 countries by absolute



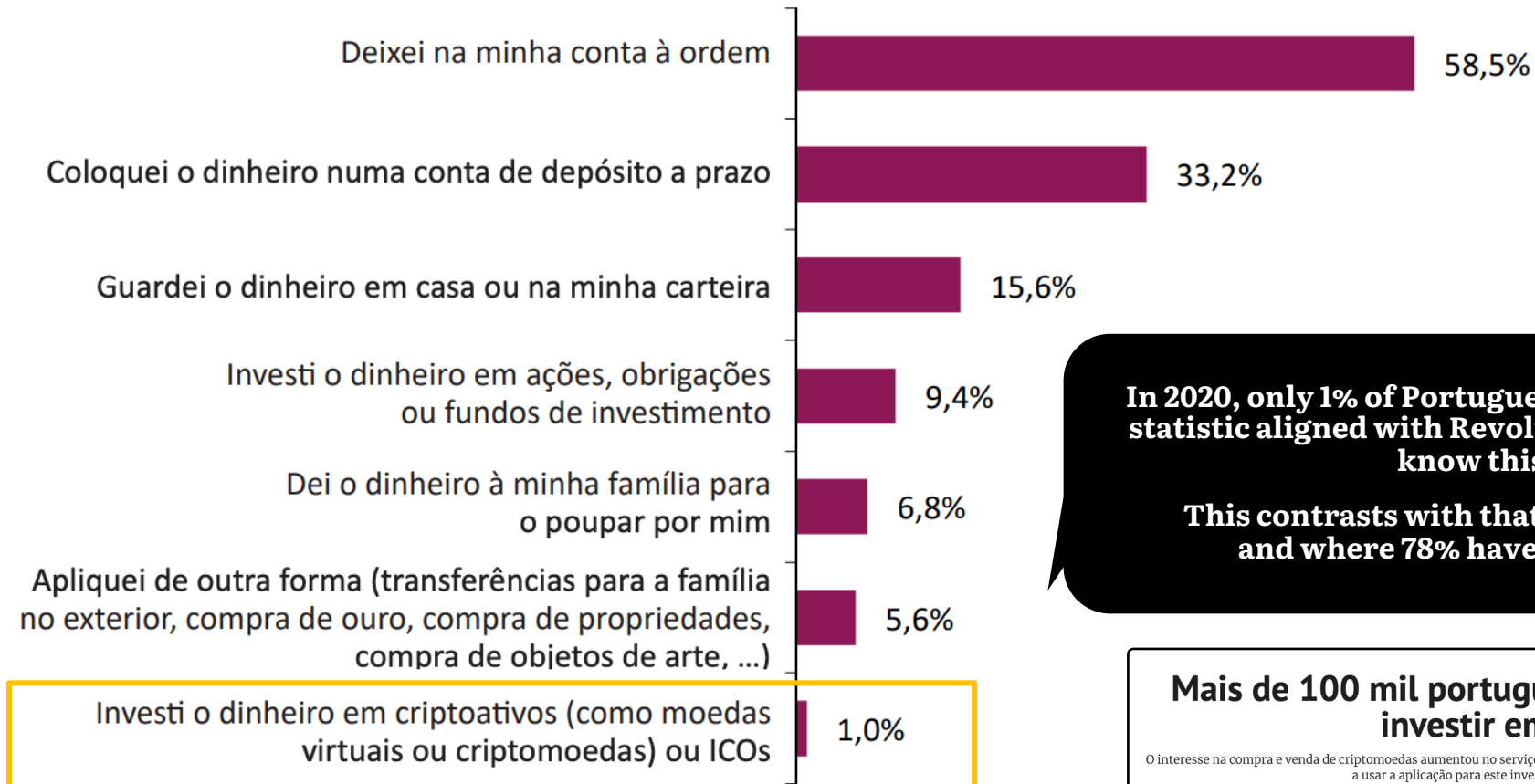
Source: Chainalysis, 2022 – private data.

## **1.2. About Portugal's emerging crypto ecosystem.**

---

# 2020 data suggests that the high value of the crypto economy in Portugal is due to foreign talent, since few nationals are invested.

Where did you invest your savings?  
2020 data, 977 replies



**In 2020, only 1% of Portuguese invested in cryptoassets, a statistic aligned with Revolut data. However, 35% already know this asset class.**

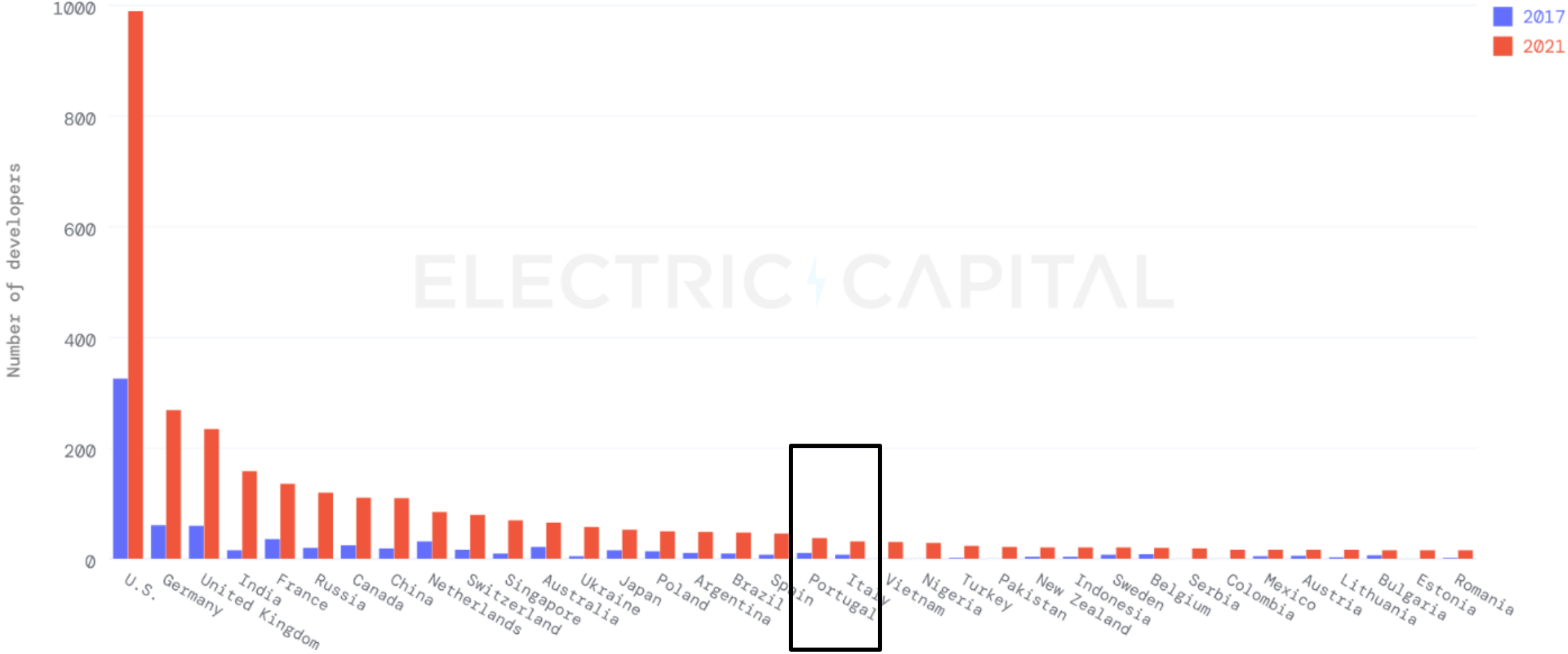
**This contrasts with that of the UK, where 5% owns and where 78% have heard of cryptoassets.**

MERCADOS  
**Mais de 100 mil portugueses já usaram Revolut para investir em criptomoedas**

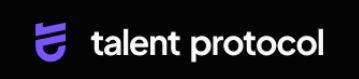
O interesse na compra e venda de criptomoedas aumentou no serviço da Revolut em todo o mundo e Portugal não é exceção, com o número de clientes a usar a aplicação para este investimento a crescer 15% no primeiro trimestre.

# The very high per capita ratio of crypto devs in Portugal is also aligned with the attraction of foreign talent to our cities.

Number of Web3 Developers per Country – 2017 vs 2021 – (Cut-Off > 15)

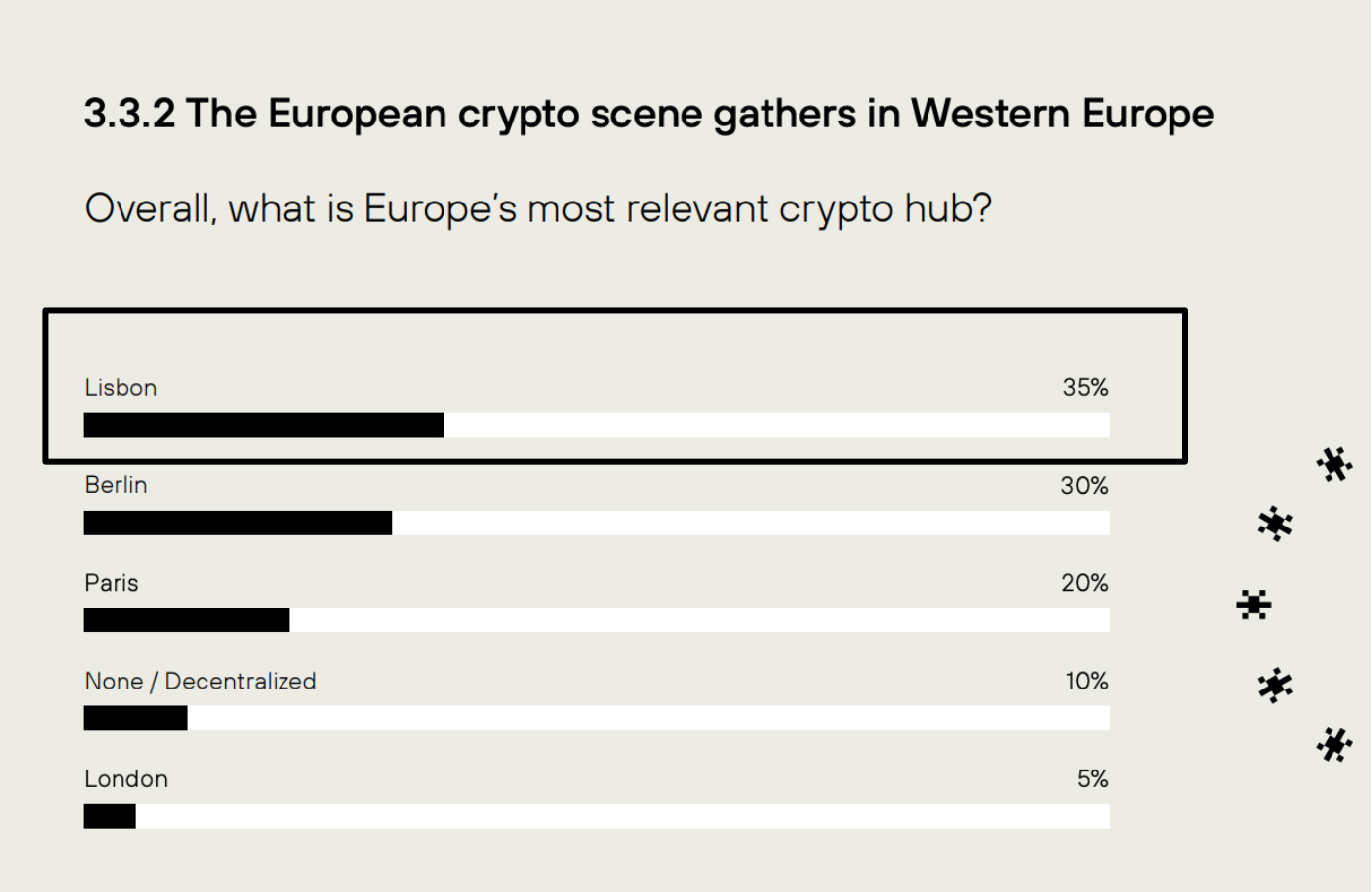
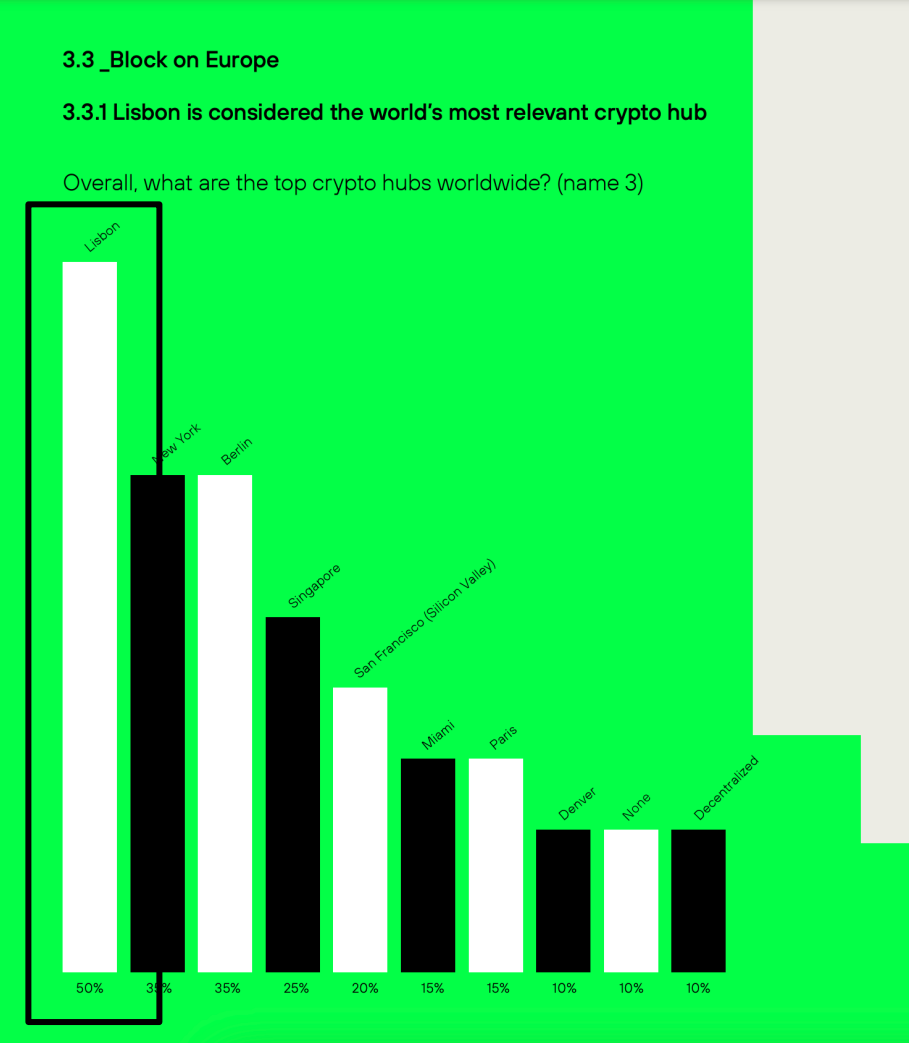


# All-in-all, the crypto start-up ecosystem is maturing and has some notable domestic and several foreign companies.





# This has led many founders to vote Lisbon as the world's and as Europe's most relevant crypto hub



## **2. The new tax regime for cryptoassets in Portugal.**

---

## **2.1. Some context about crypto taxes in the EU and beyond.**



















---

# Most EU countries frame crypto gains in Personal Income Tax, either subjecting them to the marginal rate of each taxpayer or to a "flat tax".

## Aggregation in personal income brackets

-  **Germany** (exemption for investments held > 1 year; tax rates up to 45%)
-  **Portugal** (new proposal just voted in with exemption > 1 year & more)
-  **Belgium** (rare exemption for "normally managed" assets, 33% otherwise)
-  **Luxembourg** (exemption for investments held > 6 months \*, up to 42%)
-  **Slovakia** (without special treatment, up to 25%)
-  **Denmark** (no special treatment except for non-speculation, up to 52%)
-  **Lithuania** (pioneer in clarifying the taxation of cryptoassets, up to 32%)
-  **Malta** (exemption for "value reserves", encompassed for others up to 35%)
-  **Cyprus** (exemption for securities, crypto not encompassed, up to 35%)
-  **Spain** (in addition to PIT up to 26%, crypto is still subject to wealth tax)
-  **Netherlands** (suffers from the particular case of taxation of unrealised gains via wealth taxation except for miners and traders, but this is accepted)

## "Flat tax" for cryptoassets.

-  **Slovenia** **10%** (voted against recently, so 0%)
-  **Romania** and  **Bulgaria** **10%** (some of the most competitive)
-  **Croatia** **12%** (or 18% if in Zagreb)
-  **Czech Republic** **15%** (or 23% if value > -€76k)
-  **Greece** and  **Hungary** **15%**
-  **Poland** **19%** (or 24% for > 1M PLN)
-  **Estonia** and  **Latvia** **20%**
-  **Italy** **26%** (if assets > -€51k > 7 days)
-  **Austria** **27.5%** (partial exemption <2022)
-  **Portugal** **28%** (or 0% if held > 1 year)
-  **France** **30%** (or more in some cases)
-  **Finland** and  **Sweden** **33%**
-  **Belgium** and  **Ireland** **33%**

# Some countries offer clear exemptions for cryptoassets, in an approach which contrasts with the simpler regimes of Romania and Bulgaria.

## Germany

- **Capital gains exempt if asset is held for > 1 year.**
  - Also valid for staking or lending, but not for mining.
  - Crypto-to-crypto is not exempt and reporting requirements are complicated.

## Austria

- **Before March 2022, Austria also exempted capital gains if asset was held for > 1 year.**
  - But now realised gains are subject to a 27.5% tax, something that is already negatively impacting the industry.

## Italy

- **Capital gains exempt if the total value of the assets of an individual is not valued at > €51.6k for more than 7 consecutive working days.**
  - A new regime for foreigners will allow the payment a fixed tax of €100k, allowing unlimited withdrawals.

## Slovenia

- **Just like in Portugal before, Slovenia has a legal void so capital gains aren't currently taxed (in PIT) unless they are considered a professional activity.**
  - The parliament recently debated a 10% "flat withdrawal tax" but it was voted against.

**In addition to these, many investors appreciate the simplicity of the Romanian or Bulgarian regimes. Note that Bulgaria is already discussing raising its flat tax from 10% to 15%.**

# Conversely, several countries have put forward very unattractive tax frameworks which hurt the local crypto industry and community.

## Belgium

- There's a planned exemption for "the normal management of one's assets", but it's rarely applicable and is part of a complex system.
- So, most cases fall under a 33% flat tax for capital gains, with professional trades subject to marginal tax rates that can go up to 50%.

## France

- Professional investors and miners pay 45%.
  - Occasional investors "just pay" 30%, but this is still unattractive.
  - The French Finance minister recently announced they will share plans for a new tax regime in Q1 2023 to make France very attractive to the industry.

## Netherlands

- Tax on wealth above €50k according to the value of one's assets on January 1st, except for miners and traders (regular income).
  - This tax goes from ~1.9% to assets up to €100k and ~5.7% for assets above €950k.
  - This wealth tax is levied annually and is applicable to all kinds of assets.

## Denmark

- Crypto gains must be aggregated in one's overall income, which is then subject to marginal tax rates up to 52%.
  - Crypto owned for "non-speculative uses" is not subject, but buying and selling crypto is considered speculative.
  - The system is quite complex and in 2019 the authorities notified 20k Danish people for an investigation.

**In most cases, capital gains are subject to PIT when crypto is converted to fiat or transacted against other cryptoassets. But in some countries a taxable event only occurs when one effectively cashes out to a bank account.**

# Outside the EU, countries with better fiscal frameworks have attracted investment and managed to reap more benefits of the crypto ecosystem.



## United Kingdom

“The Government set out a plan to make the UK a global crypto hub. (...) We want to be there leading from the front, seeking out the greatest economic opportunities.”



## Switzerland

“There’s an open-door policy where you can pick up the phone, sit down with [Finma] and effectively make your views known. You feel and they’re trying to work with you”.



## UAE and Dubai

“The Dubai Blockchain Strategy will usher in economic opportunity for all sectors in the city, and cement Dubai’s reputation as a global technology leader”.



## Liechtenstein

“The country is not putting any financial incentives in place, but it is making it really easy to incorporate. You can open a company without a bank account, just by using BTC or ETH”.



## Singapore

“The digital asset ecosystem comprises an entire range of crypto services, and we are working hard to enable a conducive environment for such activities to flourish.”

10% or 20% on capital gains.

Reasonable wealth taxation regime (0.5% to 0.8%)

Capital gains are not taxed (for now, ongoing discussion).

12.5% flat rate for capital gains.

Capital gains are not taxed, but others (e.g. trading) pay 22%.

## **2.2. An overview of Portugal's new crypto tax regime.**

---



# Portugal's position on the taxation of crypto capital gains in regard to PIT has been unclear and expert opinion on the matter long diverged.

<https://eco.sapo.pt> > 2021/03/01 > bit... · Translate this page

Bitcoin não paga IRS, mas “é aconselhável” manter registo de ...

Mar 1, 2021 — ... um ponto de situação sobre a tributação das moedas virtuais em Portugal. ... a imposto sobre o rendimento volta a estar na ordem do dia.

<https://www.jornaldenegocios.pt> > mercados > detalhe

Portugal é crypto-friendly por omissão na lei e juristas alertam ...

13/02/2022 — Tal como refere Luís Leon, cofundador da consultora ILYA “Portugal não tem qualquer regra sobre o regime fiscal de criptomoedas”, sendo a ...

<https://eco.sapo.pt> > 2021/12/20 > finanças-a-espera-do... >

Finanças à espera do Parlamento para poder taxar ... - ECO

20/12/2021 — O Governo entende que não pode taxar as criptomoedas sem que o Parlamento altere o Código do IRS, um tema que pode vir a ser discutido na ...

<https://www.publico.pt> > 2022/02/09 > opiniao > opiniao >

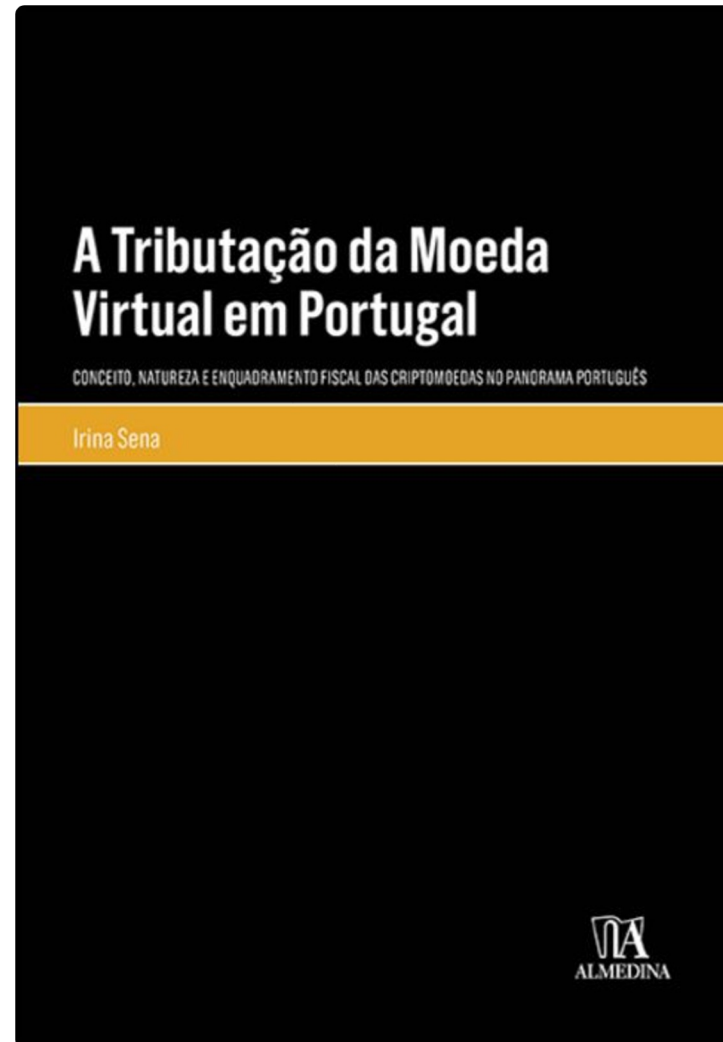
Criptomoeda: deixará Portugal de ser um “paraíso fiscal”?

09/02/2022 — Urge legislar sobre os ganhos relativos a criptomeodas, para que estes se possam assemelhar, fiscalmente falado, aos outros ganhos ...

<https://eco.sapo.pt> > 2021/12/21 > bloco-de-esquerda-p... >

Bloco de Esquerda propõe alargar IRS às criptomoedas - ECO

21/12/2021 — A isenção de imposto sobre as criptomoedas é particularmente difícil de justificar num país onde as mais-vallas da venda de ativos financeiros ...



**By chance, Portugal became the one of the “friendliest” crypto countries in the OECD.**

**But the regulatory environment was uncertain, creating risks for the industry that has formed.**

**Lawyers and law firms even used to advise their clients that they should pay taxes on their cryptoassets gains just to feel safer.**

# But, last September, we heard the government was rushing a proposal for a new crypto tax regime and arranged some meetings.

## Sobre a tributação de criptoactivos em Portugal e na Europa.

Setembro de 2022

v1

### FACE

Federação Portuguesa das Associações da Cripto Economia

#### MERCADOS • CRIPTOATIVOS

### Já com estudo da AT, Medina chama setor para discutir tributação cripto

O Ministério das Finanças já se sentou à mesa para debater a tributação cripto com os representantes do mercado. Na secretária de Fernando Medina já está também o estudo concluído pela Autoridade Tributária sobre o tema, segundo fonte do setor.



O Ministério liderado por Fernando Medina está a discutir a tributação sobre criptomonedas com os organismos representativos do setor no país. Marilene Alves

Exclusivo

ECONOMIA

### Fisco propõe taxar criptomoedas entre 28% e 50%. Governo deverá engavetar



Governo não deverá alinhar na proposta da Autoridade Tributária, dada a crescente importância do setor. Proposta de Orçamento do Estado deve ter solução mais branda

In the meetings, the government told us about the results of the AT study, made public later in October, which proposed a 28% to 50% tax.

In a nutshell, we recommended the government should follow one of two approaches either the German model or a low flat tax, which was also under parliamentary debate in Slovenia, and offered to redact a proposal of the law, which we did.

# The taxation proposal presented in October within the 2023 Budget followed one of our two recommendations, i.e. the Germany model.

## • Personal Income Tax summary – Original October proposal

- Capital gains: 28% or 0% if asset held for  $\geq 365$  days.
- Gains from regular activities, aka Category B: 0.15% coefficient.
  - Staking and mining with a maximum tax rate of 7.2% up to €200k

- Other notes: Portuguese VASPs need to report crypto transactions.

## • Corporate Tax summary – Original October proposal

- Taxed under corporate income tax brackets (currently 21% or 17%).

## • Stamp Duty summary – Original October proposal

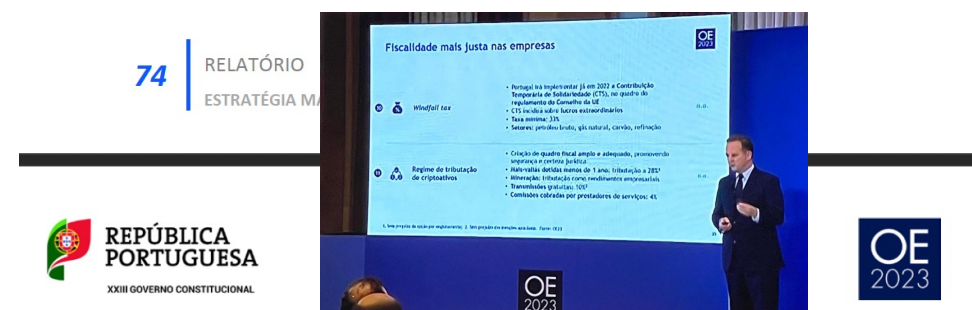
- VASPs have to levvy a 4% tax on the commissions they charge.
- Donations and non-family inheritances are subject to a 10% tax.

### Novo regime de tributação de criptoativos

Destinatário: Ecossistema de criptoativos

Pretende-se criar um quadro fiscal amplo e adequado aplicável aos criptoativos, em sede de tributação de rendimento e de património.

Em sede de IRS, propõe-se a tributação dos rendimentos provenientes de operações com criptoativos como rendimentos empresariais e profissionais (no caso, por exemplo, de emissão de criptoativos, como seja por via da atividade de mineração) ou como incremento patrimonial



(mais-valias), sem prejuízo do enquadramento nas restantes categorias, consoante os casos. Às mais-valias referentes a criptoativos detidos por período inferior a um ano aplica-se a taxa de 28% (sem prejuízo da opção de englobamento), estando as mais-valias referentes a criptoativos detidos por mais de 365 dias isentas de tributação.

No plano do património, prevê-se, expressamente, a tributação das transmissões gratuitas de criptoativos, bem como a incidência de Imposto do Selo sobre as comissões cobradas na intermediação de operações relativas a criptoativos, sujeitando estas a uma taxa de 4% (em linha com a generalidade das operações financeiras).

Neste sentido, confere-se segurança e certeza jurídica ao criar um regime próprio que visa fomentar a criptoeconomia. Deste modo, pretende projetar-se a transição digital e exponenciar a economia 4.0, enquanto vetores de desenvolvimento económico e capacitação do mercado de trabalho nacional ao nível das competências digitais.

# Still, the original 2023 budget proposal ignited lot of uncertainty about the consolidation of Portugal's status as an emergent crypto hub.

 **itsphil.nft** @NotTheDrPhil · 10 Oct  
Replying to @WatcherGuru  
That's the sound of Portugal falling off the crypto map...

4 2 142


 **Hexer.SOL** 🙏 {313} (33.3%) @HexerSol · 19 Oct  
Oh gosh Portugal gonna add crypto tax?


So I ain't moving there

2 4

 **Thomas Kralow** 🗳️ @TKralow · 11 Oct  
Portugal, which is considered to be the most friendly #Crypto country in Europe has made a U-turn and now plans to start taxing gains from #Crypto. NOTE: The draft hasn't been approved by parliament just yet.

38 24 89

 **unfolded.** @cryptounfolded · 26 Oct  
Norway steps into metaverse with Decentraland tax office



 **Wojtas** 🌟 @mihal\_wojtas · 24 Oct  
The UK's new Prime Minister @RishiSunak is bullish on crypto! Just before @NFT\_NYC in London 🤖

Will the UK become the new Portugal for Web3 people from Europe? 🤔

 **Rishi Sunak** ✓ @RishiSunak · Apr 4  
We're working to make the UK a global cryptoassets hub. We want to see the businesses of tomorrow, and the jobs they create, here in the UK.

Today @JohnGlenUK set out how we are going to encourage crypto investment and technology in UK markets. 📌

 **Digital Asset Research** @DAR\_crypto · 19 Oct  
France plans to explore new options for taxation on crypto.

Finance Minister Bruno La Maire stated, "A straightforward alignment with the taxation of stocks is not necessarily a desirable goal."

[coindesk.com/policy/2022/10...](https://coindesk.com/policy/2022/10...)

3/



# To mitigate this, we made our concerns heard in various media outlets, highlighting the specific problems with the proposal.

OE2023

## Taxar criptoativos? Setor diz que proposta do governo "carece de desenvolvimentos"

Proposta de OE2023 prevê a criação de uma taxa de 28% sobre os ganhos com criptoativos detidos há menos de um ano e a criação de um imposto de sele para as corretoras.



Exclusivo

ORÇAMENTO DO ESTADO 2023

Alterações fiscais às criptomoedas agradam ao setor, mas incerteza já fez estragos: "Houve até pessoas que já saíram do país"



As criptomoedas têm proliferado. Além da conhecida bitcoin, também são faladas as ethereum ou dogecoin. Dado Ruvic

"Houve até algumas pessoas que saíram do país durante o verão e não voltaram para Portugal quando se abriu a possibilidade de tributar", disse Hugo Volz Oliveira, porta-voz da Federação Portuguesa das Associações da Criptoeconomia, ao Expresso

# Additionally, we met again with the government and parliament to provide a detailed critique and an alternative to the original proposal.

## Definitions

- Exclusion of securities was not comprehensive enough.
- Conflicts if crypto represents other assets.

## Staking

- Additional problems in the staking definition.
- German regime also exempts staking if held > 1 year.

## Crypto-Crypto

- Comprehensive crypto-to-crypto transfers would make reporting cumbersome and overly bureaucratic to taxpayers (and for AT investigations) without benefits to the state coffers.
- Additionally, the October proposal provided no clarity regarding such reporting requirements.

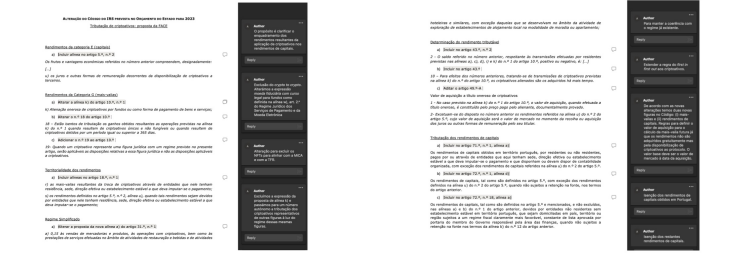
## NFTs

- MiCA and TFR do not apply to most NFTs so it would also make sense to clarify non-fungible tokens fall outside the scope of this tax regime. After all, what matters is the underlying asset that the NFT represents.

## Incentives

- France is attracting large investments from Binance and Cripto.com with tax incentives.
- The French Finance Minister announced that France should be "the" European crypto hub.

A FACE disponibiliza em anexo uma proposta de revisão com o que entende serem as alterações possíveis no contexto político.



Queremos ajudar a construir um sistema fiscal atractivo para os investidores e que resolve as incertezas criadas pela proposta original. Acreditamos que importa definir bem os conceitos e obrigações entre as várias partes interessadas para que a fiscalidade seja simples e fácil de cumprir. O que mais assusta os participantes da cripto economia não é a possibilidade de tributação, desde que justa, mas sim a incoerência e as dúvidas sobre como tributar e declarar estes rendimentos ou mais-valias.

# The Socialist Party heard the industry's demands and integrated them in a new proposal. But added some new ideas at the last minute.

The crypto-to-crypto exemption was a key improvement as it makes the law simpler.

The MPs introduced “anti-abuse laws”, which are fine, but also a problematic “exit tax.”

MERCADOS • CRIPTOATIVOS

## Setor pede mudanças à tributação cripto. Quer isenção para NFT e trocas entre criptoativos

A associação que representa o setor cripto em Portugal pede a clarificação do conceito de NFT e a sua isenção assim como uma definição mais concreta que explique quais os tipos de "staking" abrangidos por este regime. A FACE quer ainda isenção em sede de IRS das transações de cripto para cripto.



FINANÇAS PÚBLICAS • ORÇAMENTO DO ESTADO

## Isenção nas mais-valias de criptoativos não se aplica se não houver troca de informações

PS avança com normas anti-abuso quando os envolvidos nas transações de criptoativos são de países sem troca de informações com Portugal ou quando sejam residentes em paraísos fiscais. A tributação será feita com a conversão em moeda legal e a mineração será penalizada, por questões ambientais.



Dado Ruvic/Reuters

# This led to a final round of meetings with the government and with key PS MPs to explain the problems with those last-minute additions.

## Minor definition issues.



Proposta de Lei n.º 38/XV/1.\*

Comentários à proposta do Partido Socialista sobre o novo regime de tributação de criptoativos - 1477C.

A FACE, Federação Portuguesa das Associações da Cripto Economia, nota que a proposta do Partido Socialista sobre o novo regime de tributação de criptoativos foi, de forma geral, bem recebida pela indústria. Louvamos em particular a integração dos comentários anteriores realizados sobre a exclusão de tributação do cripto-para-cripto e a clarificação do critério FIFO, assim como o alinhamento com o MICA e a categorização do staking.

No entanto, importa ainda resolver um número reduzido de temas que a indústria considera críticos para se "criar um regime próprio que fomente a cripto economia".

Relativamente à revisão do código do IRS prevista na proposta de alteração 1477C.

### 1. Sobre a definição de valores mobiliários.

- Alterar a alínea k) do artigo 10.º, n.º 1

Para "Alienação onerosa de criptoativos que não constituam instrumentos financeiros." Pois a aplicação do termo "instrumentos financeiros" é mais abrangente que "valores mobiliários", o que permitirá dissipar dúvidas jurídicas que possam surgir quando há conflitos entre classes de activos.

## The so-called "exit tax".

### 2. Sobre a tributação "à saída", ou "exit tax", nas mais-valias com criptoativos.

- Excluir o número 22 do Artigo 10.º

Na proposta de Orçamento do Estado para 2023 o Governo propõe incluir em sede de tributação das mais-valias adquiridas com a alienação de criptoativos uma disposição que equipara a perda da qualidade de residente em território português à alienação onerosa de criptoativos, criando, ficcionando, assim, um momento de realização das potenciais mais-valias (proposta de n.º 22 do artigo 10.º do Código do IRS).

Esta disposição, para além de ser incompatível com o direito europeu, cria uma situação de desvantagem do investidor perante outros, quer por ficcionar um momento de realização, quer por consubstanciar um tratamento onerosamente diferente daquele que é dado aos investidores em ativos semelhantes.



### l) Incompatibilidade com o direito europeu.

A temática do exit tax tem sido amplamente discutida na doutrina e nos tribunais europeus, sendo unânime que estas disposições, quando aplicáveis a sujeitos passivos que mudem a sua residência fiscal para outro Estado-Membro, consagram um obstáculo à liberdade de estabelecimento. O Tribunal de Justiça da União Europeia pronunciou-se, por diversas vezes, neste sentido, sendo exemplo as decisões relativas aos processos TJEU, C-9/02, de 11 de março de 2004 e TJEU, C-470/04, de 07 de setembro de 2006.

Em ambos os casos os Estados-Membros da residência dos sujeitos passivos (França e Países Baixos respetivamente) consagravam na sua legislação fiscal a tributação de mais-valias resultantes da alienação de valores mobiliários, sendo considerado evento de realização a alteração da residência fiscal para outro Estado. Ainda que o pagamento do imposto pudesse ser diferido no tempo, o sujeito passivo estaria sempre obrigado a prestar uma garantia ao Estado.

Em ambos os casos o TJUE considerou estar a ser criado um obstáculo à liberdade de estabelecimento que nem a tentativa de combate à elisão fiscal (arguida pelos Estados) seria suficiente para o justificar. Este entendimento tem sido unânime e confirmado em várias decisões posteriores.<sup>6</sup>

Também o Governo português já se viu confrontado com este entendimento do TJUE. No processo C-503/14, de 21 de dezembro de 2016, o TJUE considerou contrário ao direito europeu as disposições que previam que, quando se verificava uma permuta das partes sociais, em território nacional, e a tributação sobre as mais-valias era deferida até à efetiva alienação, era equiparada a este momento a transferência de residência do sujeito passivo para fora do território nacional.<sup>7</sup>

## Renewable mining.

### 3. Sobre a penalização da actividade da mineração nos regimes simplificados.

- Alterar a alínea d) do número 1 do Artigo 31.º

Para "0,95 aos rendimentos provenientes da mineração de criptoativos, excepto quando estes utilizem exclusivamente electricidade de fontes renováveis, aplicando-se então ao alínea a) deste número, (...)". Pois apesar da mineração em Portugal ter pouca expressão, teríamos benefícios em promover esta actividade quando esta não polui, uma política alinhada com os princípios da Comissão Europeia.

P/la FACE

Federação Portuguesa das Associações da Cripto Economia

fac3.pt

<sup>6</sup> Cf. Brauner, Yarik, "A good Old Habit, or Just an Old One? Preferential Tax Treatment for Reorganizations", Brigham Young University Law Review, Provo (Utah), 2004, p. 4.

Unfortunately, due to the nature of the budget process, there was no chance to have these changed unless the Socialist Party would vote against their own proposal. But this is something we'll keep advocating for in the future.



# In a nutshell, the new Portuguese crypto tax regime was approved on Nov. 28th and has been applicable since January 1st, 2023, onwards.

## Major implications.

- **Crypto-to-crypto transactions excluded in IRS (PIT).**
- **Personal Income Tax summary.**
  - **Capital gains:** 28% or 0% if asset held for  $\geq 365$  days.
  - **Capital income:** 28% or 0% if asset held for  $\geq 365$  days.
  - **Gains from regular activities, aka Category B:** various coefficients.
    - 15% :: “**solo staking**” with a maximum tax rate of 7.2% up to €200k.
    - 15% :: “**pro trading**” with a maximum rate of 7.2% up to €200k.
    - 95% :: **mining** with a maximum rate of 45.6% up to €200k a year.
- **Corporate Tax summary.**
  - Taxed under corporate income tax brackets (currently 21% or 17%).

## Minor implications.

- **VASPs reporting.**
- **Stamp Duty 4% or 10%.**
- **Anti-abuse laws.**
- **The so-called exit tax.**

# In a nutshell, the new Portuguese crypto tax regime was approved on Nov. 28th and has been applicable since January 1st, 2023, onwards.

## Major implications.

- **Crypto-to-crypto transactions excluded in IRS (PIT).**
  - NFTs kind of. They are not considered cryptoassets so there's a void.
  - Confirmation of FIFO criteria for other accounting purposes.
- **Personal Income Tax summary.**
  - **Capital gains:** 28% or 0% if asset held for  $\geq 365$  days.
    - E.g.: increases in one's wealth through an investment.
    - Losses can be carried for 5 years and used to offset future gains. \*
  - **Capital income:** 28% or 0% if asset held for  $\geq 365$  days.
    - E.g. **staking-as-a-service**, e.g. through exchanges or pools, or **dPoS**.
  - **Gains from regular activities, aka Category B:** various coefficients.
    - 15% :: "**solo staking**" with a maximum tax rate of 7.2% up to €200k a year (+ other simplified regime requirements) and after that it's subject to PIT's marginal rates (exemption unclear here \*\*).
    - 35% :: "**pro trading**" with a maximum rate of 16.8% up to €200k (tbc).
    - 95% :: **mining** with a maximum rate of 45.6% up to €200k a year.
- **Corporate Tax summary.**
  - Taxed under corporate income tax brackets (currently 21% or 17%).
    - Simplified regime okay up to €200k, e.g. 0.15 staking, 0.95 mining.

## Minor implications.

- **VASPs reporting.**
  - Portuguese VASPs need to report crypto transactions every January from 2024 onwards.
  - All European VASPs will have to do the same from 2026 onwards (new DAC8 directive).
- **Stamp Duty 4% or 10%.**
  - VASPs have to levy a **4% tax on the commissions** they charge (e.g. 4% \* 0.5%).
  - Donations and non-family inheritances are subject to a 10% tax. **Airdrops** may qualify here.
- **Anti-abuse laws.**
  - One can't benefit from the exemptions or carry losses if they also have residency in a jurisdiction deemed an offshore or tax haven or if they are gaining a capital income from a company headquartered in such jurisdictions.
- **The so-called exit tax.**
  - If you lose your tax residency, for tax purposes it is considered that you have "sold" your assets.

# And, today, Feb. 2<sup>nd</sup>, the government published the new forms that we'll have to use in April to declare our crypto gains – or not – in 2023.



Diário da República, 1.ª série

N.º 24

2 de fevereiro de 2024

Pág. 56-(2)

## FINANÇAS

Portaria n.º 39-B/2024

de 2 de fevereiro

Sumário: Aprova os modelos de impressos destinados ao cumprimento da obrigação declarativa prevista no n.º 1 do artigo 57.º do Código do IRS e respetivas instruções de preenchimento.

Nos termos do artigo 57.º do Código do Imposto sobre o Rendimento das Pessoas Singulares (Código do IRS), os sujeitos passivos devem apresentar anualmente uma declaração de modelo oficial relativa aos rendimentos do ano anterior, de modo que a Autoridade Tributária e Aduaneira (AT) possa proceder à liquidação do imposto.

Considerando, em especial, as alterações introduzidas ao Código do IRS e ao Estatuto dos Benefícios Fiscais (EBF):

a) Pela Lei n.º 12/2022, de 27 de junho, quanto ao englobamento obrigatório do saldo entre as mais-valias e menos-valias, relativas à alienação onerosa de partes sociais e outros valores mobiliários, detidos por um período inferior a 365 dias, por sujeitos passivos com rendimento coletável igual ou superior ao valor do último escalão do n.º 1 do artigo 68.º do Código do IRS, que entrou em vigor em 1 de janeiro de 2023;

b) Pela Lei n.º 19/2022, de 21 de outubro, que aprovou, no seu artigo 3.º, um apoio extraordinário à tributação dos rendimentos prediais decorrentes de contratos de arrendamento, auferidos em 2023;

c) Pela Lei n.º 24-D/2022, de 30 de dezembro (lei do Orçamento do Estado para o ano de 2023) no que respeita à consagração do regime de tributação dos **criptoativos**, as alterações ao regime das mais-valias imobiliárias auferidas por não residentes, ao regime do justo impedimento de contabilista certificado, bem como ao aditamento do incentivo fiscal à valorização salarial;

d) Pela Lei n.º 21/2023, de 25 de maio, que aprovou o regime aplicável às *startups* e *scaleups* e introduziu alterações ao artigo 72.º do Código do IRS e ao artigo 43.º-C do EBF; e

e) Pela Lei n.º 56/2023, de 6 de outubro, que aprovou medidas no âmbito da habitação e introduziu alterações ao regime de tributação de rendimentos prediais e das mais-valias imobiliárias, criou um regime transitório de exclusão de tributação dos ganhos provenientes da transmissão onerosa de terrenos para construção ou de imóveis habitacionais que não sejam destinados a habitação própria e permanente e consagrou um regime de suspensão do prazo de reinvestimento previsto na alínea b) do n.º 5 do artigo 10.º do Código do IRS.

Mostra-se necessário reformular a declaração modelo 3 e alguns dos seus anexos em conformidade, bem como atualizar as respetivas instruções de preenchimento, cuja última atualização foi operada pela Portaria n.º 47/2023, de 15 de fevereiro.

Assim, manda o Governo, pelo Secretário de Estado dos Assuntos Fiscais, nos termos do artigo 8.º do Decreto-Lei n.º 442-A/88, de 30 de novembro, o seguinte:

17 INFORMAÇÕES COMPLEMENTARES												
Se assinalou o Q8B.C04 do rosto (Não Residente) e preencheu o Q4 ou o Q7, indique o total dos rendimentos obtidos no estrangeiro [art.º 22.º, al. a) do n.º 3 e n.º 10, do CIRS]											1	
18 ALIENAÇÃO ONEROSA DE CRIPTOATIVOS QUE NÃO CONSTITUAM VALORES MOBILIÁRIOS												
A ALIENAÇÃO ONEROSA DE CRIPTOATIVOS QUE NÃO CONSTITUAM VALORES MOBILIÁRIOS DETIDOS POR UM PERÍODO INFERIOR A 365 DIAS OU CUJO DETENTOR TENHA PERDIDO A QUALIDADE DE RESIDENTE EM TERRITÓRIO PORTUGUÊS [art.º 10.º, n.º 1, al. k), n.º 19 e n.º 22, do CIRS]												
TITULAR	ENTIDADE GESTORA		Realização				Aquisição				Despesas e encargos	País da contra-parte
	NIF Português	País	Ano	Mês	Dia	Valor	Ano	Mês	Dia	Valor		
18001						. . ,				. . ,	. . ,	
18002						. . ,				. . ,	. . ,	
SOMA						. . ,				. . ,	. . ,	
B ALIENAÇÃO ONEROSA DE CRIPTOATIVOS QUE NÃO CONSTITUAM VALORES MOBILIÁRIOS, INDEPENDENTEMENTE DO PERÍODO DE DETENÇÃO, QUANDO UMA DAS PARTES FOR NÃO RESIDENTE, MAS RESIDENTE FORA DA U.E. OU DO EEE E NÃO EXISTIR ADT APLICÁVEL [art.º 10.º, n.º 1, al. k) e n.º 21, do CIRS]												
TITULAR	ENTIDADE GESTORA		Realização				Aquisição				Despesas e encargos	País da contra-parte
	NIF Português	País	Ano	Mês	Dia	Valor	Ano	Mês	Dia	Valor		
18501						. . ,				. . ,	. . ,	
18502						. . ,				. . ,	. . ,	
SOMA						. . ,				. . ,	. . ,	

7 CRIPTOATIVOS QUE NÃO CONSTITUAM VALORES MOBILIÁRIOS DETIDOS POR PERÍODO SUPERIOR OU IGUAL A 365 DIAS - ALIENAÇÃO ONEROSA [art.º 10.º, n.º 1, al k) e n.º 19, do CIRS] / PERDA DA QUALIDADE DE RESIDENTE EM TERRITÓRIO PORTUGUÊS [art.º 10.º, n.º 1, al k) e n.ºs 19 e 22, do CIRS]												
TITULAR	ENTIDADE GESTORA		Realização				Aquisição				Despesas e encargos	País da contra-parte
	NIF Português	País	Ano	Mês	Dia	Valor	Ano	Mês	Dia	Valor		
18001						. . ,				. . ,	. . ,	
18002						. . ,				. . ,	. . ,	
SOMA						. . ,				. . ,	. . ,	

More updates soon!

# **3. The new EU crypto regulations impacting PT.**

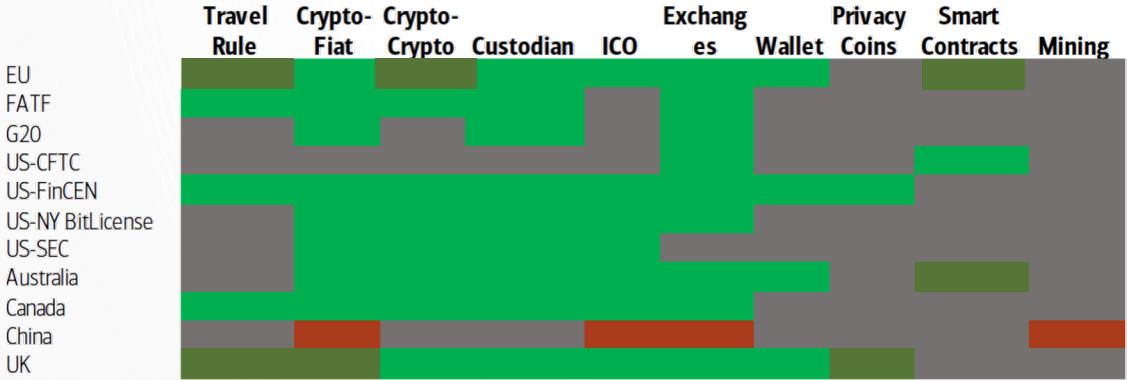
---

## **3.1. Some context about crypto regulation in the EU and beyond.**

---

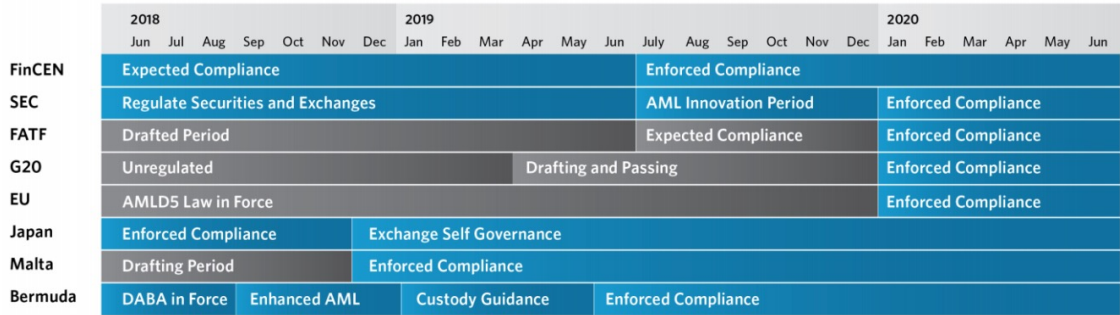
# The world lacks a common regulatory regime for cryptoassets, and different watchdogs and regulators fail to cooperate on key policy.

## Cryptoasset regulation in major jurisdictions As of September, 2021 – updated for the EU



- 1 Regulation/Guidance Exists
- 2 Regulation/Guidance In Progress
- 3 Banned
- 4 No Regulations/Guidance Found

## Global AML regulation applicable to cryptoassets As of Q4, 2018



**Europe has already finalised the AMLD6 and the new AMLR**

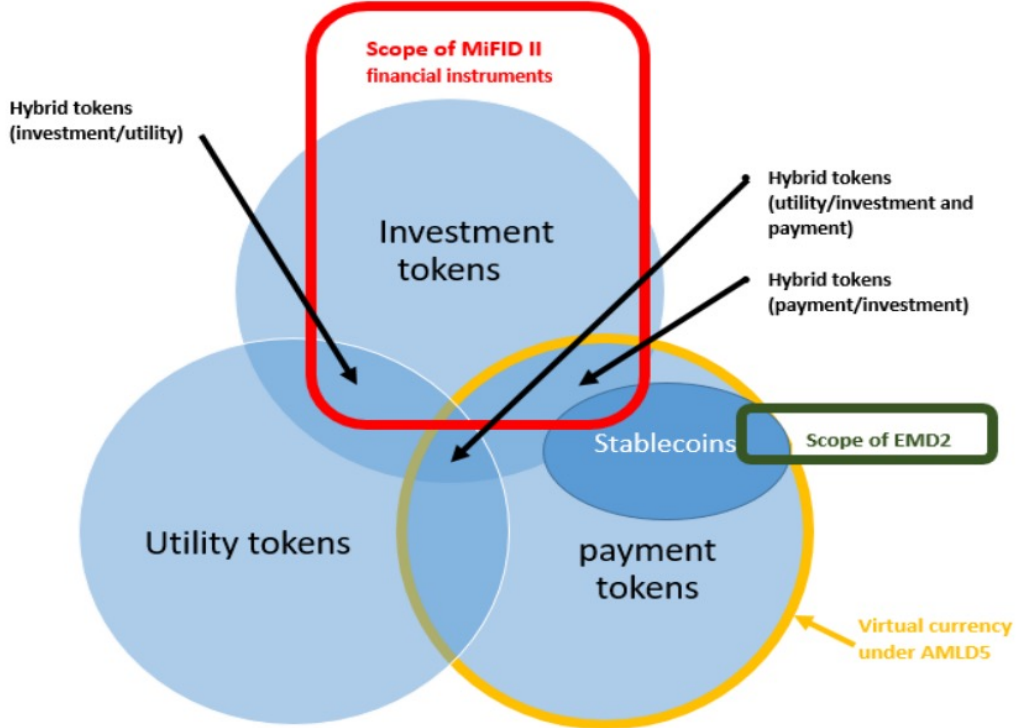
# Meanwhile, European countries have various regulatory approaches to crypto, with different levels of maturity and sophistication.



Source: European Union Blockchain Observatory & Forum, 2021

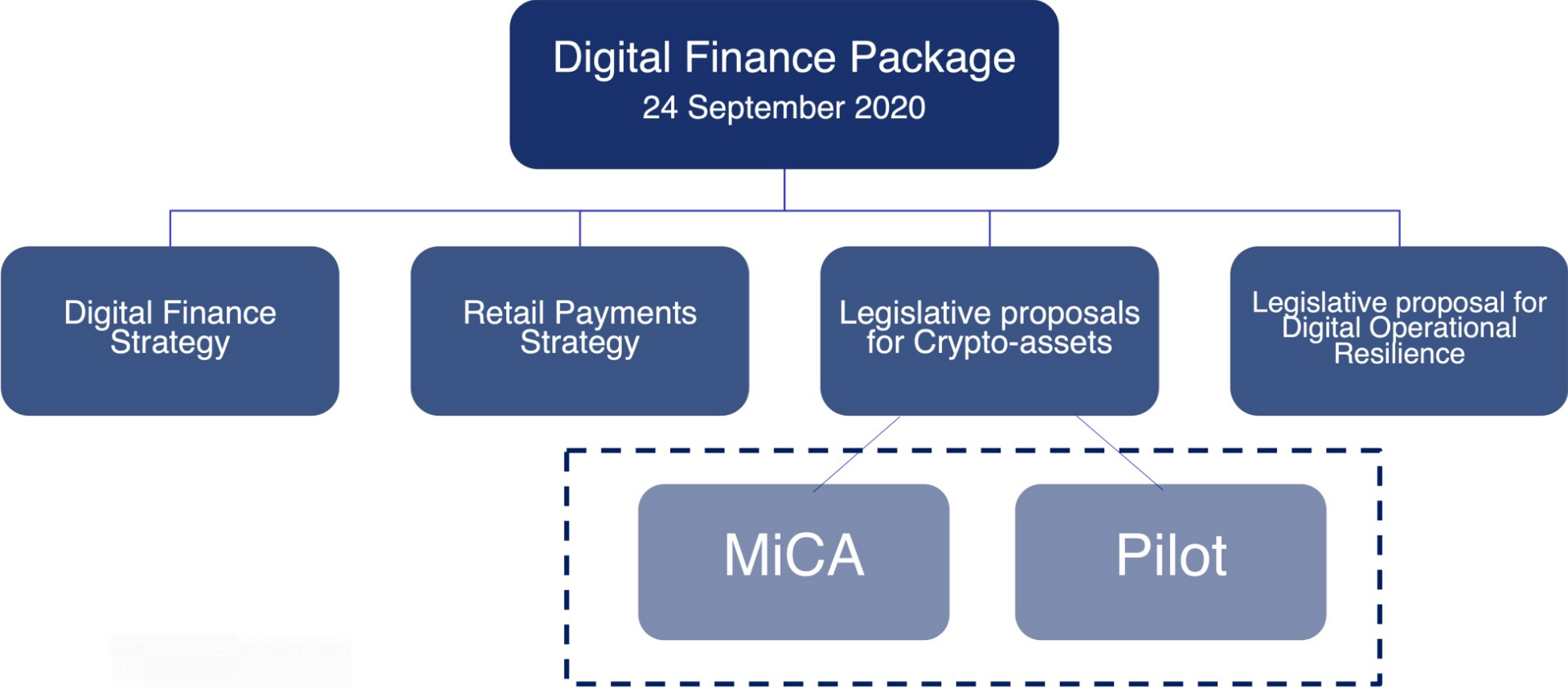
# After all, in the EU many tokens already fell under some kind of regulation, be it AML/CTF or for traditional financial instruments.

EU-wide regulations applicable to cryptoassets  
As of September, 2021





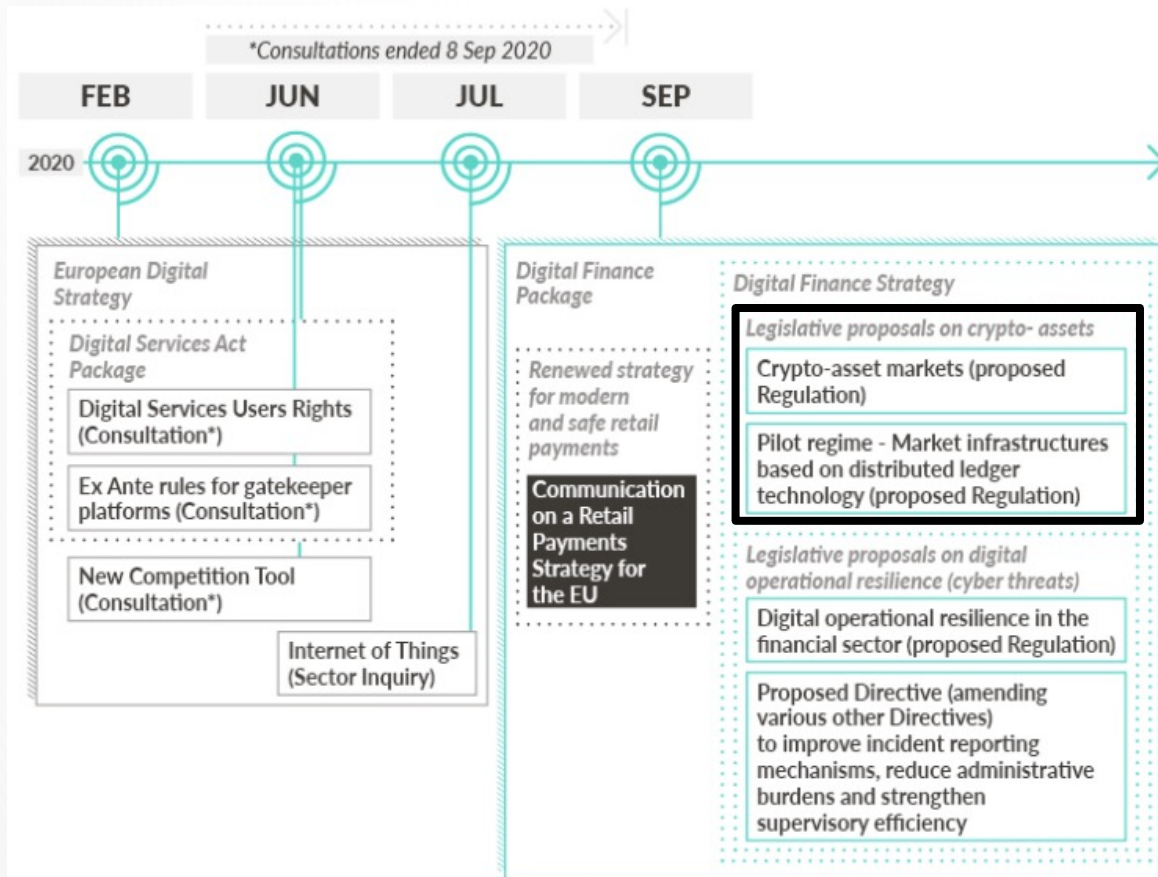
# That's why the EU has tried to mitigate that problem with a common regulatory framework, MiCA, part of its digital finance package.



# This regulation proposal started as a reaction to Facebook's Libra, but grew into a wider, comprehensive regulatory framework

The MiCA license will be passportable so CASPs only need one license for all the EU.

It was partly inspired in Lichtenstein's pioneering Blockchain Act (TVTG).



MiCa	TVTG
<b>SERVICE PROVIDERS</b>	
Issuer*	Token Issuer
Custody and administration	TT Key Depository
Exchange (Fiat/CA; CA/CA)	TT Exchange Service Provider
Trading Platform CA	TT Price Service Provider
Execution of orders CA	no equivalent Service Provider
Placing of orders CA	no equivalent Service Provider
Reception and transmission of orders CA	Physical Validator
Providing advice CA	Verifying Authority
no equivalent Service Provider	TT Token Depository
no equivalent Service Provider	Token Generator
no equivalent Service Provider	Identity Service Provider
* MiCa differentiate depending on the type of crypto-asset	
<b>CIVIL LAW PROVISIONS AND TOKEN CLASSIFICATION</b>	
Definition of Token	Definition of Token
Classification of Token	Classification of Token
	Power of Disposal vs Right of Disposal
	Disposal over Token
	Effects of disposal (transfer of represented right)
	Unregistered securities (Security Token)
<b>DUE DILLIGENCE</b>	
Due Diligence requirements	Due Diligence requirements

**Lichtenstein started working on TVTG in 2016 and aims to become a "token economy"**

# Okay, but what's MiCA in a nutshell? It's a comprehensive framework focused on implementing a coherent regime across all EU countries.

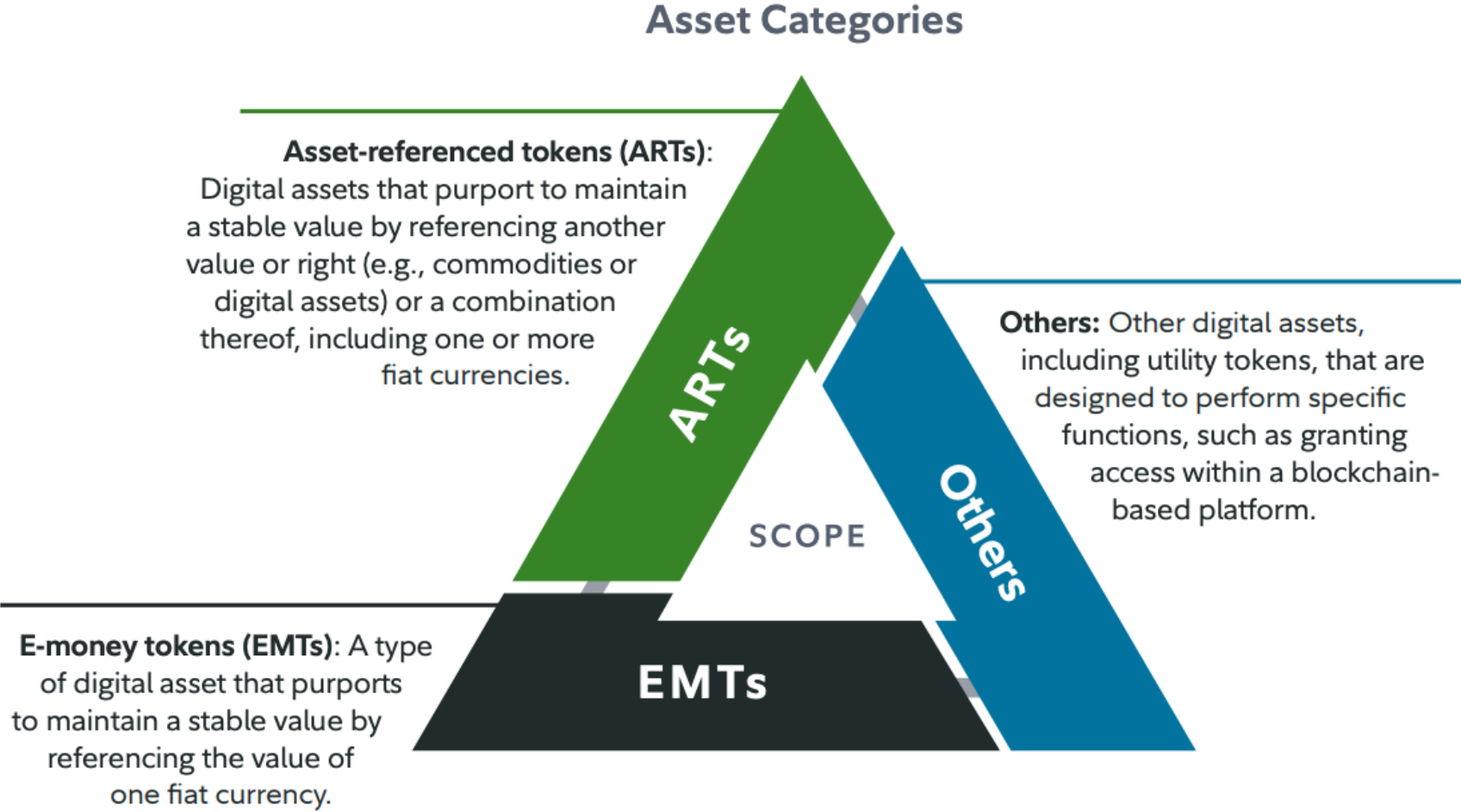
For 1)

**the public offering of  
cryptoassets and stablecoins.**  
excluding really fungible NFTs.

And 2)

**for cryptoasset  
service providers (aka CASPs),**  
including exchanges and  
custody providers, but not only.

# What tokens are included in MiCA’s scope? It’s mostly about stablecoins vs. everything else, i.e. shitcoins or “utility tokens”.



# And which persons or what organisations qualify as cryptoasset service providers in addition to custodians and exchanges?

---

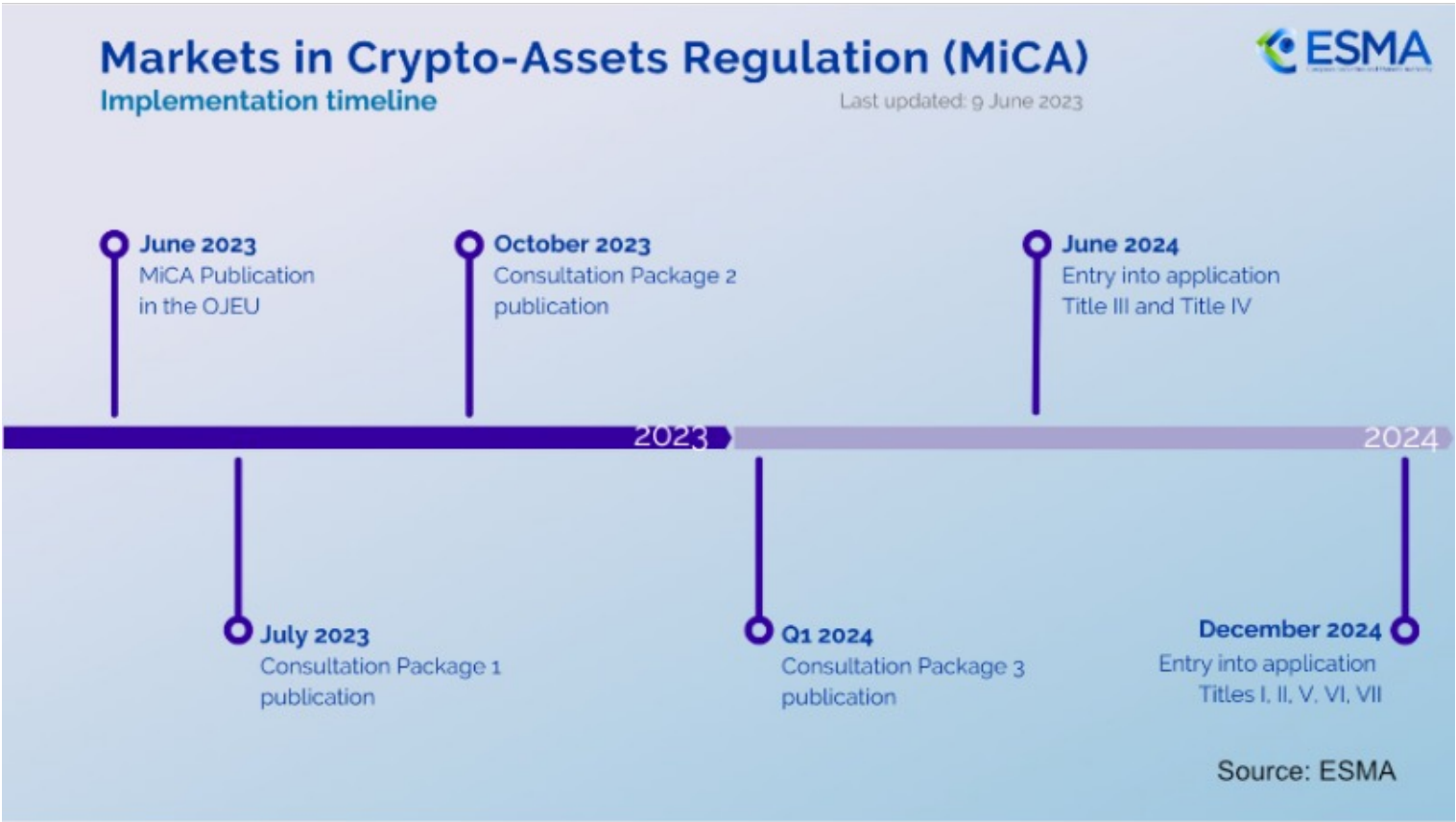
## Authorisation and supervision of crypto-asset service providers

Subject to exceptions, persons who provide one or more crypto-asset services which fall within the scope of MiCA must obtain authorisation as CASPs from their national competent authorities. There are 10 such crypto-asset services in total:

1. Providing custody and administration of crypto-assets on behalf of clients
2. Operation of a trading platform for crypto-assets
3. Exchange of crypto-assets for funds
4. Exchange of crypto-assets for other crypto-assets
5. Execution of orders for crypto-assets on behalf of clients
6. Placing of crypto-assets
7. Reception and transmission of orders for crypto-assets on behalf of clients
8. Providing advice on crypto-assets
9. Providing portfolio management on crypto-assets
10. Providing transfer services for crypto-assets on behalf of clients

# Lastly, MiCA entered into force on June 29<sup>th</sup>. It's applicable 12 months after for stablecoins and 18 months after for CASPs & token offerings.

**MiCA's timeline**  
EU Regulations follow an equivalent timeline



Existing licenses may be valid until June 2026 if a given country allows it.

## **3.2. An overview of crypto regulation in the EU and its impacts.**

---

# After MiCA, EU bureaucrats entered into a regulatory bull market, having since pushed for new legislation – some specific to crypto.

Acronym and original name.	Purpose and scope.	Expected effects.	Compliance Costs.
<b>MiCA, Markets in Crypto Assets Regulation</b>	Entities engaged in cryptoasset issuance, including stablecoins and services (CASPs). NFTs and DeFi mostly out of scope for now.	Clear stablecoin regulation except for payments. Strong controls for exchanges & custodians (CASPs).	High for CASPs and stablecoins. More clarity needed from Nat. Comp. Authorities.
<b>TFR, Transfer of Funds Regulation</b>	Implementation of FATF's travel rule. Impacts mostly exchanges & custodians (CASPs).	Share user information about crypto transfers. Screen such info for sanctions and do DD on CASPs.	High for CASPs, but not higher than what already are for the past years.
<b>AMLR, Anti-Money Laundering Regulation</b>	Harmonisation of EU's AML/CTF laws. Complement the TFR.	Close loopholes (e.g. crypto vs. cash payments). Establish new AML Authority and update AMLD.	High for CASPs, but not higher than what already are for the past years.
<b>DLT Pilot Regime Regulation</b>	Allow financial instruments to be traded on a blockchain under a sandbox (or DLT).	Up to six-years regulatory exemption from parts of MiFID, MiFIR, and CSDR for such projects.	None, although only closed blockchains can be used.
<b>Data Act Regulation</b>	Connected devices, IoT and "data sharing. Smart contracts used in this context.	Force IoT crypto devs to ensure smart contracts are robust, have a kill switch and respect a kind of GDPR.	If all goes well, inexistent. If our lobbying fails, it will only impact "vendors".
<b>DORA, Digital Op. Resilience Act Regulation</b>	Make finance more resilient. CASPs and some stablecoin issuers (ARTs).	Improve IT security of CASPs. Mitigate other operational and governance risks.	High for CASPs, but not higher than what already is given our industry's standards.
<b>DAC8, 8<sup>th</sup> Directive on Admin. Cooperation</b>	Cooperation between tax authorities. Implementation of OECD's crypto reporting rules.	Due-diligence and reporting of crypto transactions. Mitigate tax evasion in crypto across the EU.	Limited impact expected for CASPs unless they suffer from penalties for non-reporting.
<b>Other ongoing initiatives</b>	Product Liability Directive. Cyber Resilience Directive. European Blockchain Regulatory Sandbox.	Being expanded to include software products. Smart contracts devs could be liable for damages. EBSI-focused sandbox.	Will have more clarity once these mature. Free benefits for those which join the sandbox.



**All-in-all, crypto regulation is here to stay and, unfortunately, it's only becoming more complex. Can the EU keep it simple and clear?**



**Thank you. It's Q&A time!**

---

**P.S. Here's a guide you can share with your friends.**

---

# Because you won't find gems on Coinbase these days.

---

## Educational resources.

---

- Security guides – [link](#)
- Legit news sources – [link](#)
- Two great podcasts – [link](#)
- a16z's crypto cannon – [link](#)
- Good overview of Bitcoin – [link](#)
- Valuation of DeFi protocols – [link](#)
- Crypto valuation frameworks – [link](#)
- Token metrics you should know – [link](#)
- Some advanced VC tips from a friend - [link](#)

## Hands-on deep-dive.

---

- Start by using the Brave browser – [link](#)
- Consider investing on (or joining) a DAO – [link](#)
- Buy your first speculative NFTs on Solana – [link](#)
- Buy your first meme token on a Solana DEX – [link](#)
- Go deep by using these DeFi and Web3 dapps – [link](#)
- Supply liquidity to a token pool pair on a DEX – [link](#)
- See how play-to-earn games generate revenue – [link](#)
- Fall down the rabbit hole of DeFi yield farming - [link](#)
- Take a chance at potentially lucrative airdrops – [link](#)

**P.S.S. Additional context in case they're even more curious.**

---

# Executive summary.

---

1. An overview of crypto in Portugal and beyond.
2. The new tax regime for cryptoassets in Portugal.
3. The new crypto regulations impacting Europe.
4. Questions and answers and resources.
5. **Additional context in case they're even more curious.**
  - An introduction to **blockchain technology** and **crypto**.
  - Some additional background on **blockchains** and **Bitcoin**.
  - Some additional background on **transactions** and **mining**.
  - Some additional background on the **different cryptoassets**.
  - Some additional background on **Decentralised Finance** and **web3**.
  - Some additional background on **institutional exposure to crypto**.
  - Some additional background on **VC investment in crypto**.

# **An introduction to blockchain technology and crypto – part I**

---

*Bitcoin and the workings of a blockchain.*

# Bitcoin's whitepaper was published on October 31<sup>st</sup>, 2008, and its open-source blockchain was released on January 3<sup>rd</sup>, 2009.



## Bitcoin P2P e-cash paper

Satoshi Nakamoto [satoshi at vistomail.com](mailto:satoshi@vistomail.com)  
Fri Oct 31 14:10:00 EDT 2008

- Previous message: [Fw: SHA-3 lounge](#)
- Messages sorted by: [\[date\]](#) [\[thread\]](#) [\[subject\]](#) [\[author\]](#)

I've been working on a new electronic cash system that's fully peer-to-peer, with no trusted third party.

The paper is available at:  
<http://www.bitcoin.org/bitcoin.pdf>

The main properties:  
Double-spending is prevented with a peer-to-peer network.  
No mint or other trusted parties.  
Participants can be anonymous.  
New coins are made from Hashcash style proof-of-work.  
The proof-of-work for new coin generation also powers the network to prevent double-spending.

Bitcoin: A Peer-to-Peer Electronic Cash System

**Abstract.** A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without the burdens of going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as honest nodes control the most CPU power on the network, they can generate the longest chain and outpace any attackers. The network itself requires minimal structure. Messages are broadcasted on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

Full paper at:  
<http://www.bitcoin.org/bitcoin.pdf>

Satoshi Nakamoto

```

.....
.....;EiYz{.²zÇ,>
gv.a.È.Ã^ŠQ2:Y,ª
K.^J)«_Iÿÿ...¬+|
.....
.....ÿÿÿÿM.ÿÿ..
..EThe Times 03/
Jan/2009 Chancel
lor on brink of
second bailout f
or banksÿÿÿÿ..ð.
*....CA.gŠÿ°pUH'
.gñ;q0. \Ö" (à9. |
ybàè.ad¶I0¼?Lÿ8Ä
óU.â.Á.Ð\8M+0..W
ŠLp+kñ._¬....
    
```

Its development was no coincidence – it was created in reaction to the 2007 financial crisis by Satoshi Nakamoto, a pseudonymous for the person or group who developed the project.



**To put it simply, Bitcoin is a computer network that enables users to exchange *bitcoin* currency without an intermediary, also known as:**

---

**peer-to-peer...**

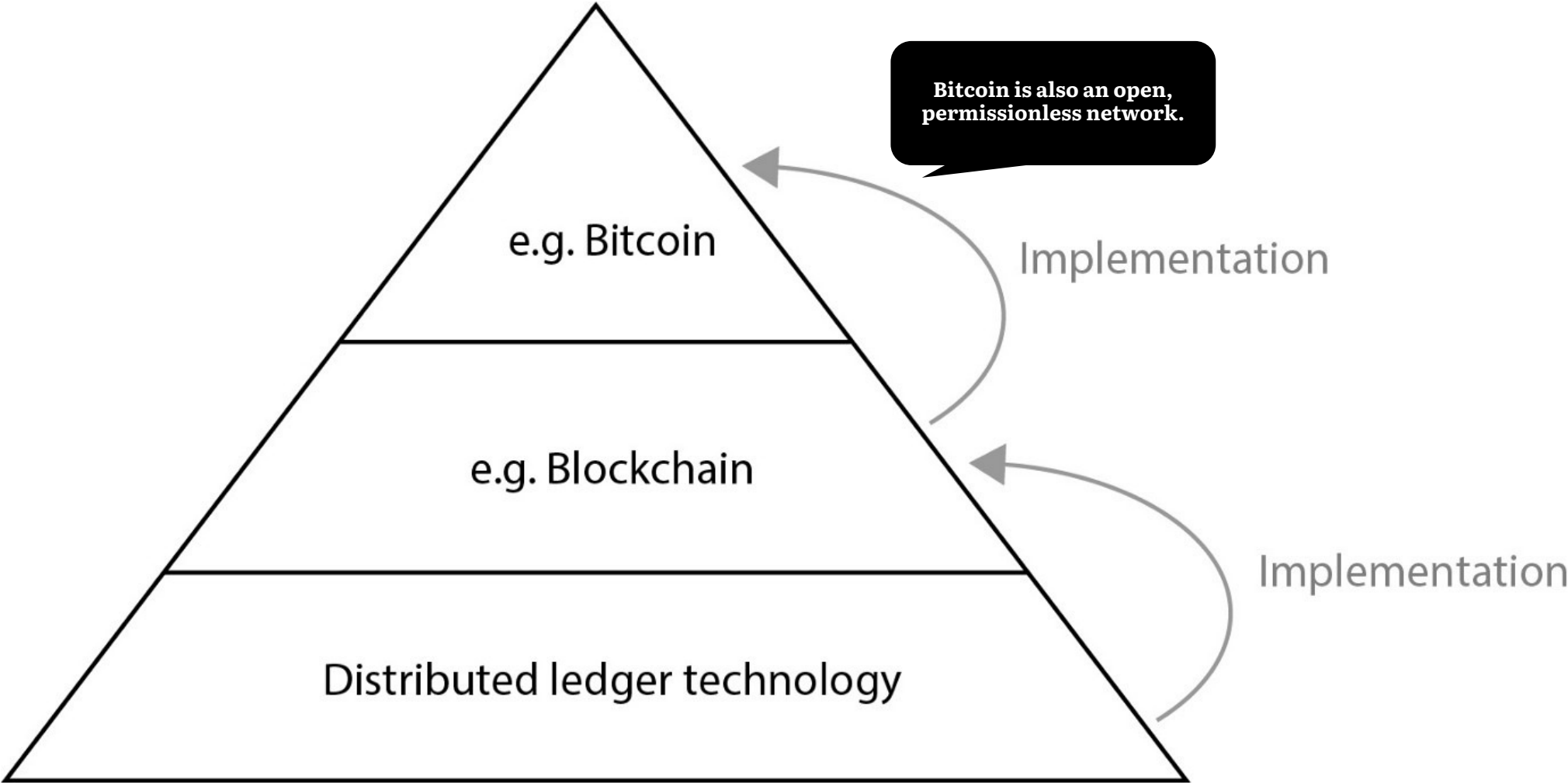
**...digital cash.**

# What's so special about this P2P digital money? And what does blockchain have to do with it?

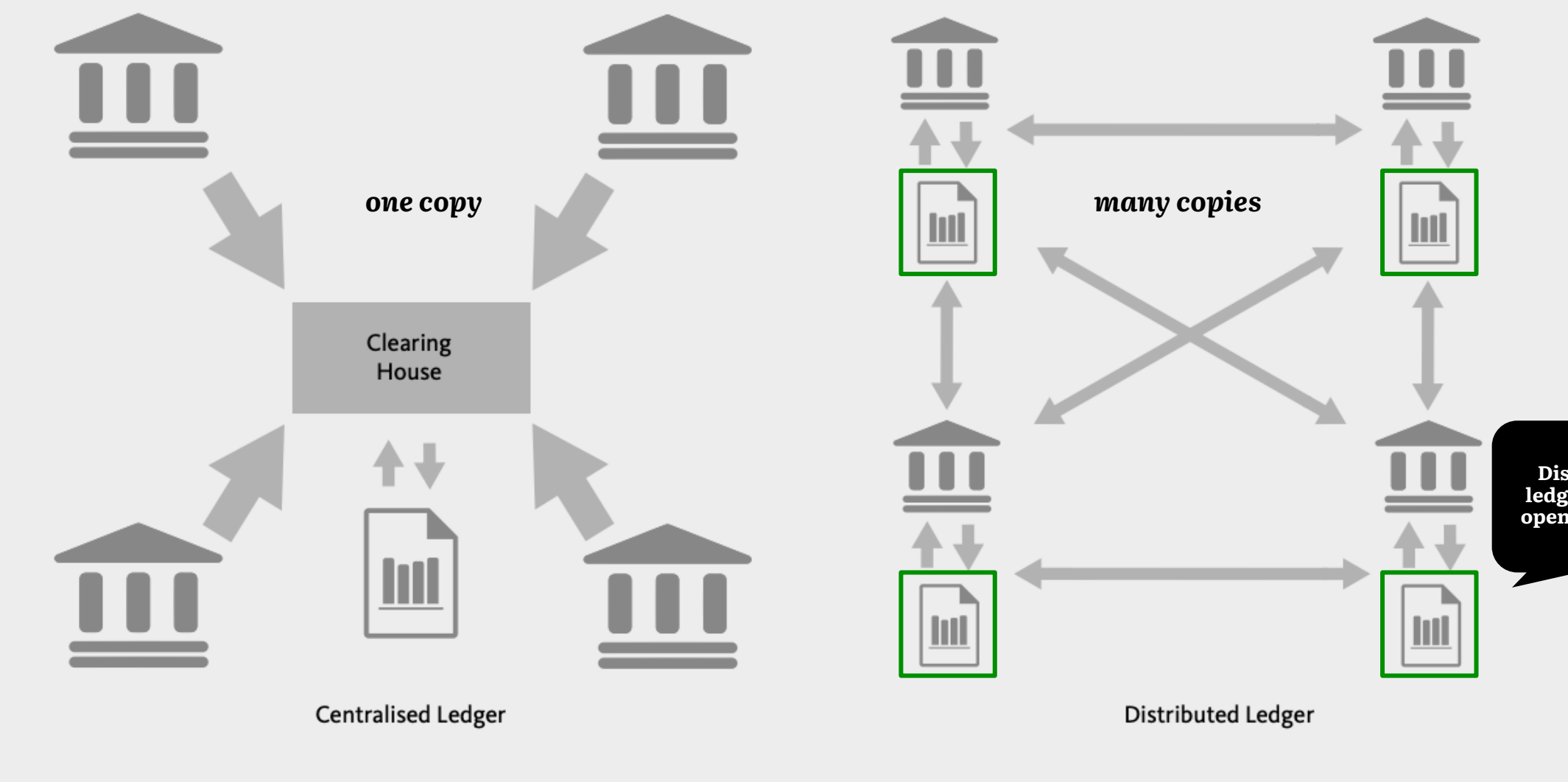
---



# Bitcoin was the first major implementation of a blockchain, which in turn is the most popular application of distributed ledger technology.

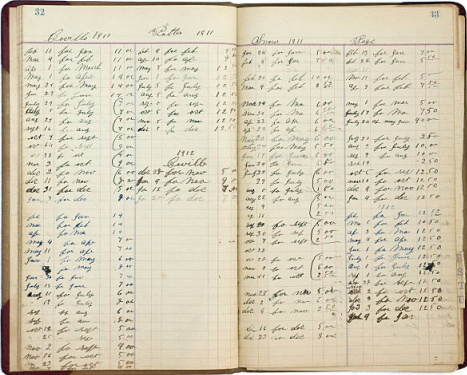
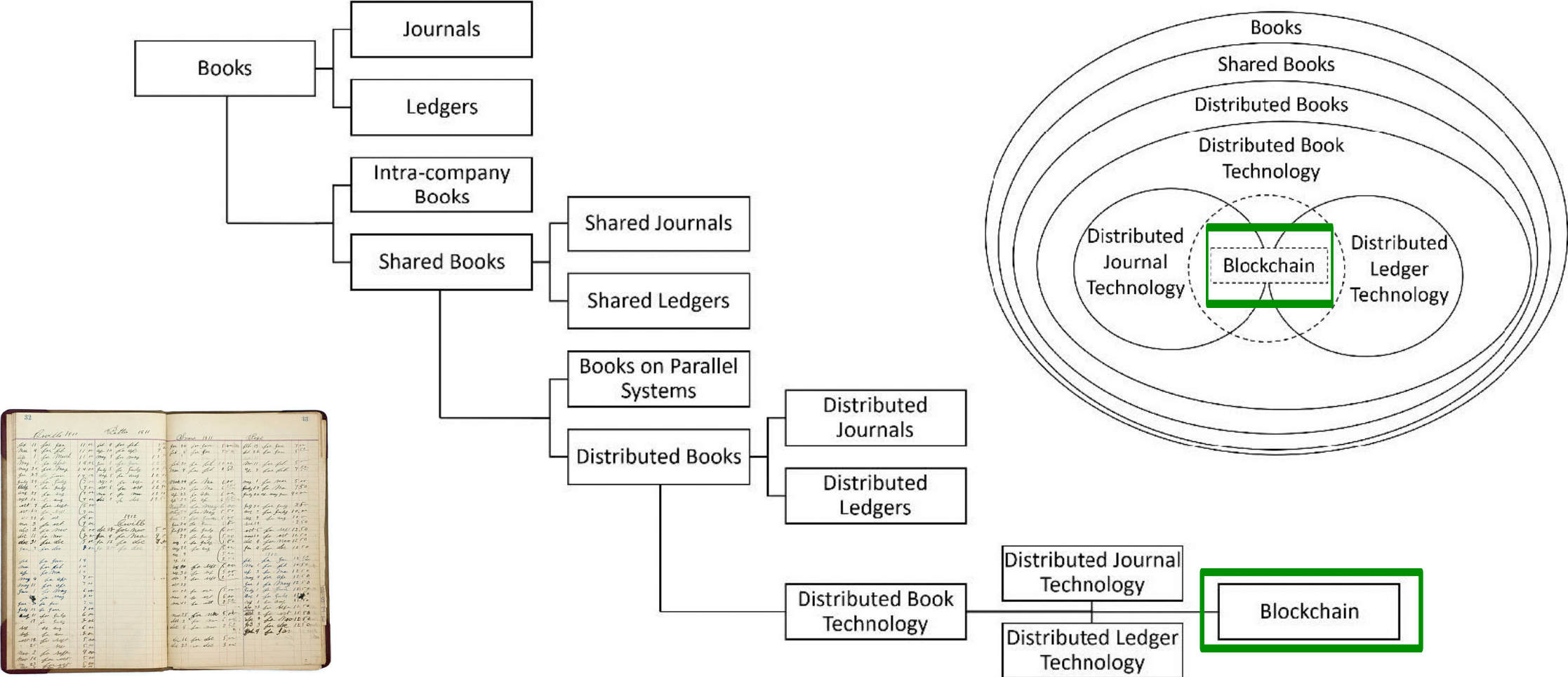


# What's a distributed ledger? It's a shared database which records data transfers in a practically immutable way, without a central authority.

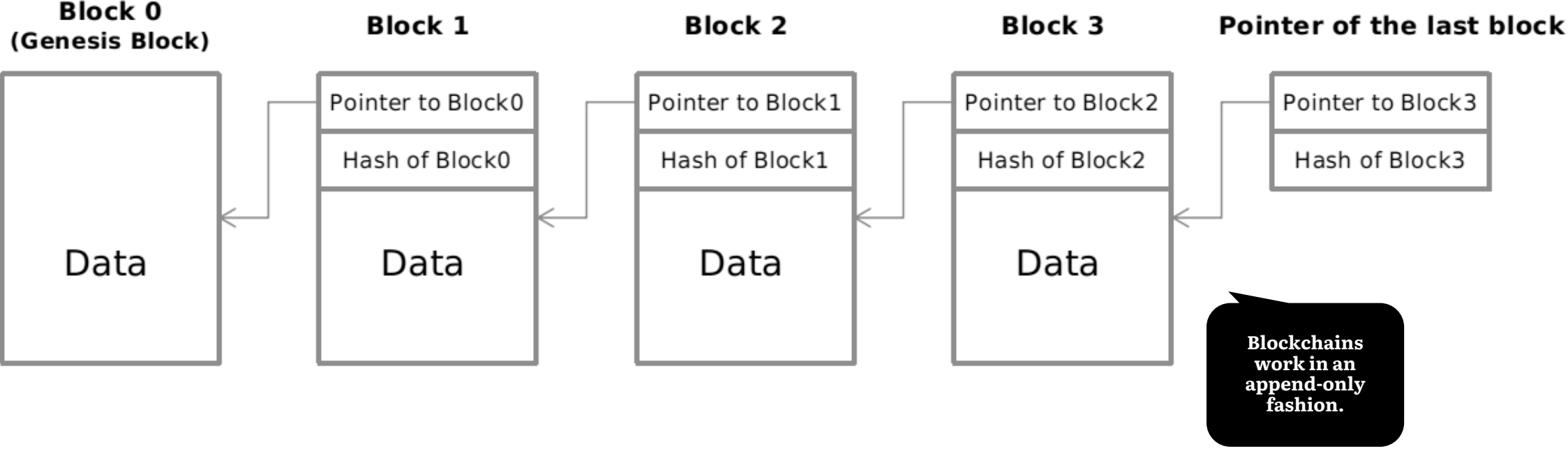


# In the end, blockchain is just a particular type of distributed ledger, and both are the latest step in the history of bookkeeping.

Family tree of bookkeeping technology

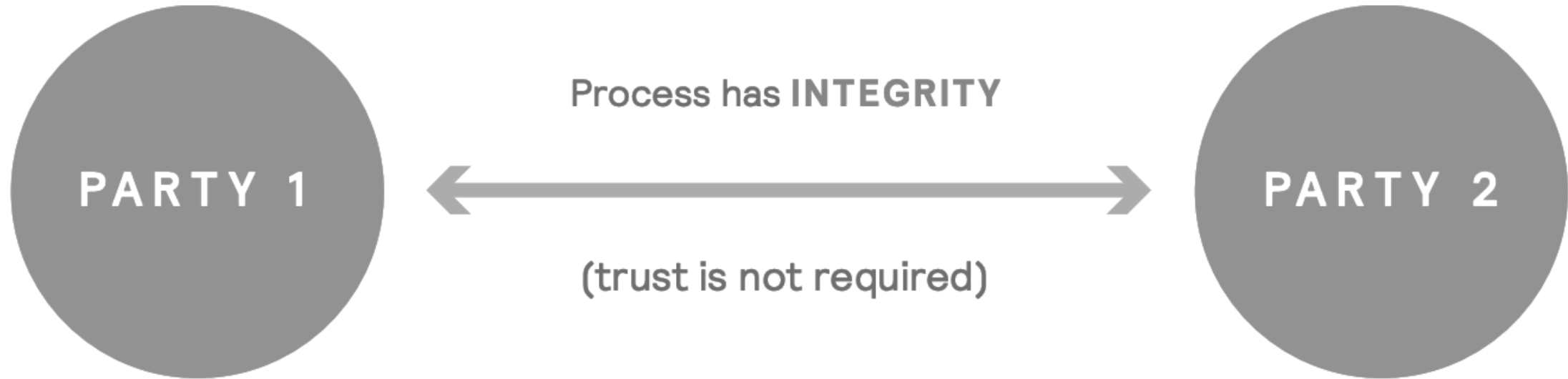


# The distributed ledger of a blockchain is organised as a series of blocks containing sets of transactions, hence the apt naming.





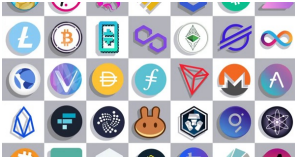
**This data structure allow processes run on a blockchain to have integrity, so its users don't need to rely on a trusted third party.**

---





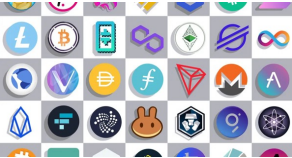
**Let's see how a blockchain based on the Proof-of-Work model achieves such integrity without a middleman.**

# To be specific, a blockchain is a peer-to-peer computer network which follows certain rules to reach agreement over shared data.



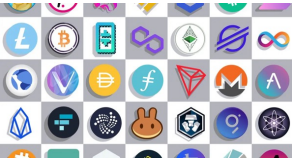
	<b>1. P2P network</b>	<b>2. Follows rules</b>	<b>3. Shared data</b>
 <p><b>Blockchain</b></p>	Some kind of computers (nodes).	Some consensus mechanism.	Some kind of transactions.
 <p><b>Bitcoin</b></p>			
 <p><b>Others</b></p>			



# In the case of Bitcoin, the rules are quite simple but produce powerful incentives to securing the network and processing transactions.

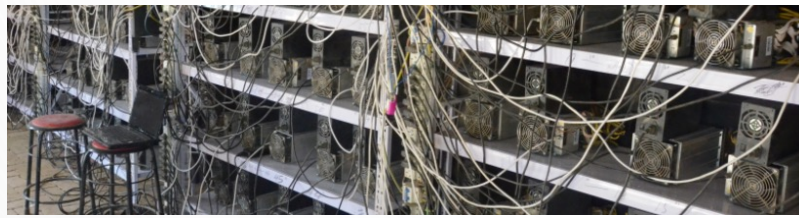
	<b>1. P2P network</b>	<b>2. Follows rules</b>	<b>3. Shared data</b>
 <p><b>Blockchain</b></p>	Some kind of computers (nodes).	Some consensus mechanism.	Some kind of transactions.
 <p><b>Bitcoin</b></p>	<p><b>Miners and full nodes</b>            (the computers that run the Bitcoin protocol, maintaining the blockchain and organising its transactions.)</p>	<ol style="list-style-type: none"> <li>1. You can't create bitcoins unless you successfully mine a new block.</li> <li>2. Every ~10m one of the mining nodes will have the chance to order transactions in a new block (mining).</li> </ol>	<p><b>Transactions of</b>            bitcoin currency.</p>
 <p><b>Others</b></p>			

# In the case of other blockchains, everything can change and there's a lot of experimentation with rules – which also increases the risks.

	<b>1. P2P network</b>	<b>2. Follows rules</b>	<b>3. Shared data</b>
 <b>Blockchain</b>	Some kind of computers (nodes).	Some consensus mechanism.	Some kind of transactions.
 <b>Bitcoin</b>	<b>Miners and full nodes</b> (the computers that run the Bitcoin protocol, maintaining the blockchain and organising its transactions.)	<ol style="list-style-type: none"> <li>1. You can't create bitcoins unless you successfully mine a new block.</li> <li>2. Every ~10m one of the mining nodes will have the chance to order transactions in a new block (mining).</li> </ol>	<b>Transactions of</b> bitcoin currency.
 <b>Others</b>	<b>GPU or CPU?</b> <b>Full or light?</b>	<b>Open or closed?</b> <b>Public or private?</b>	<b>Transactions of</b> identity data, votes, all kinds of assets, financial settlement, health records, apps data, art...

# The computers of a blockchain may perform different roles, but one can distinguish two main categories: mining and non-mining nodes.

Typical mining nodes.

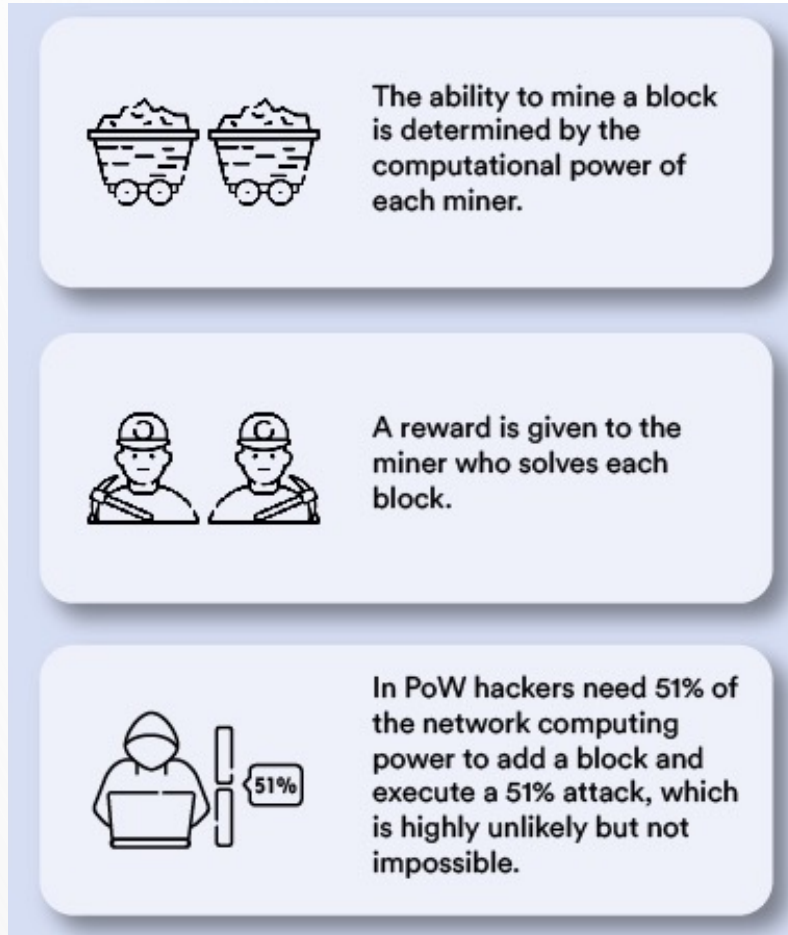


Typical non-mining nodes.

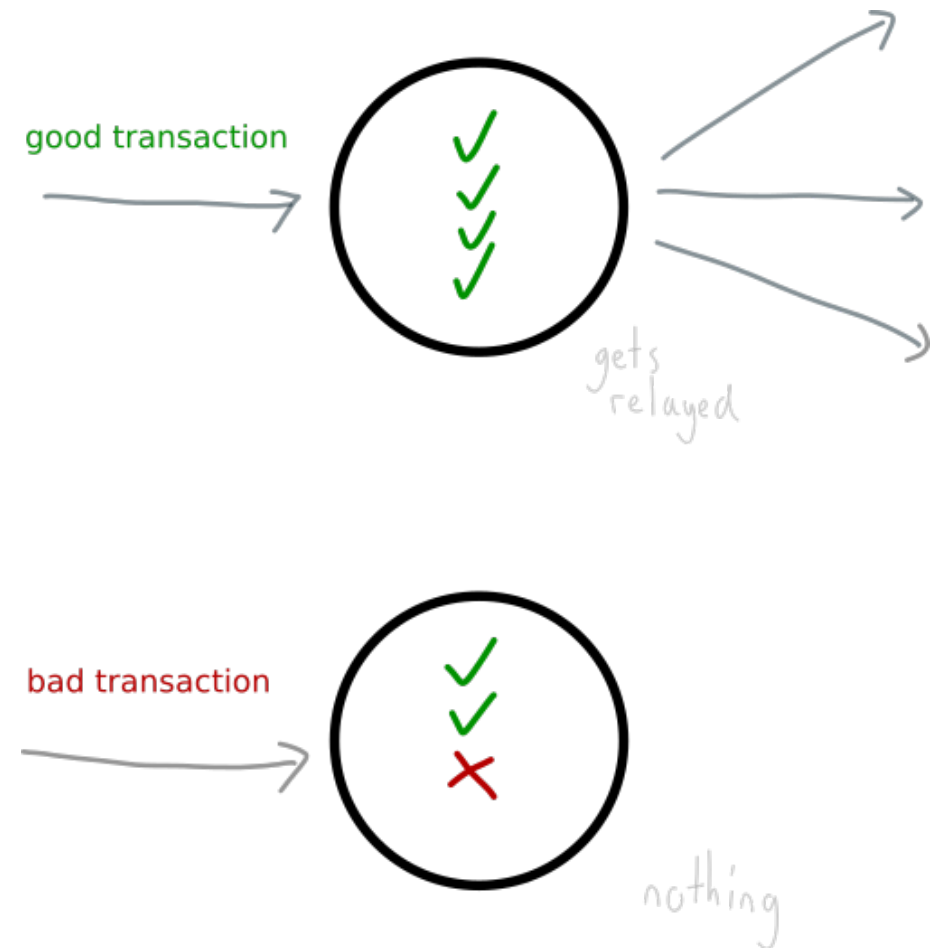


# To put it simply, miners specialise in processing transactions and the other nodes in validating them.

**Mining nodes compete to add transactions to the blockchain (and for its reward).**

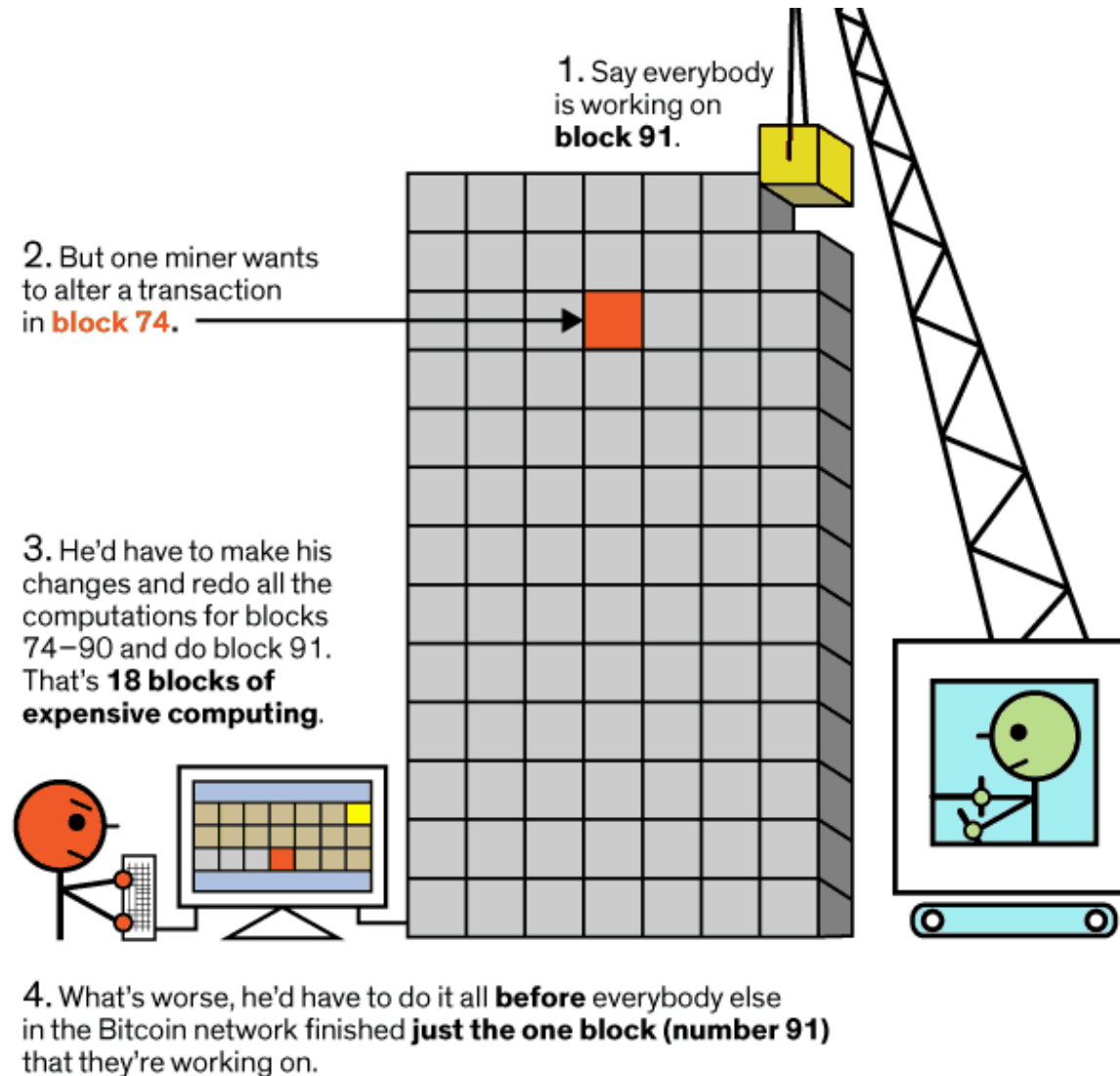


**Non-mining nodes verify the rules, relay information and keep a copy of the blockchain.**



# Competition between miners protects the network. As all blocks are linked, a rogue miner would have to re-do all previous blocks too.

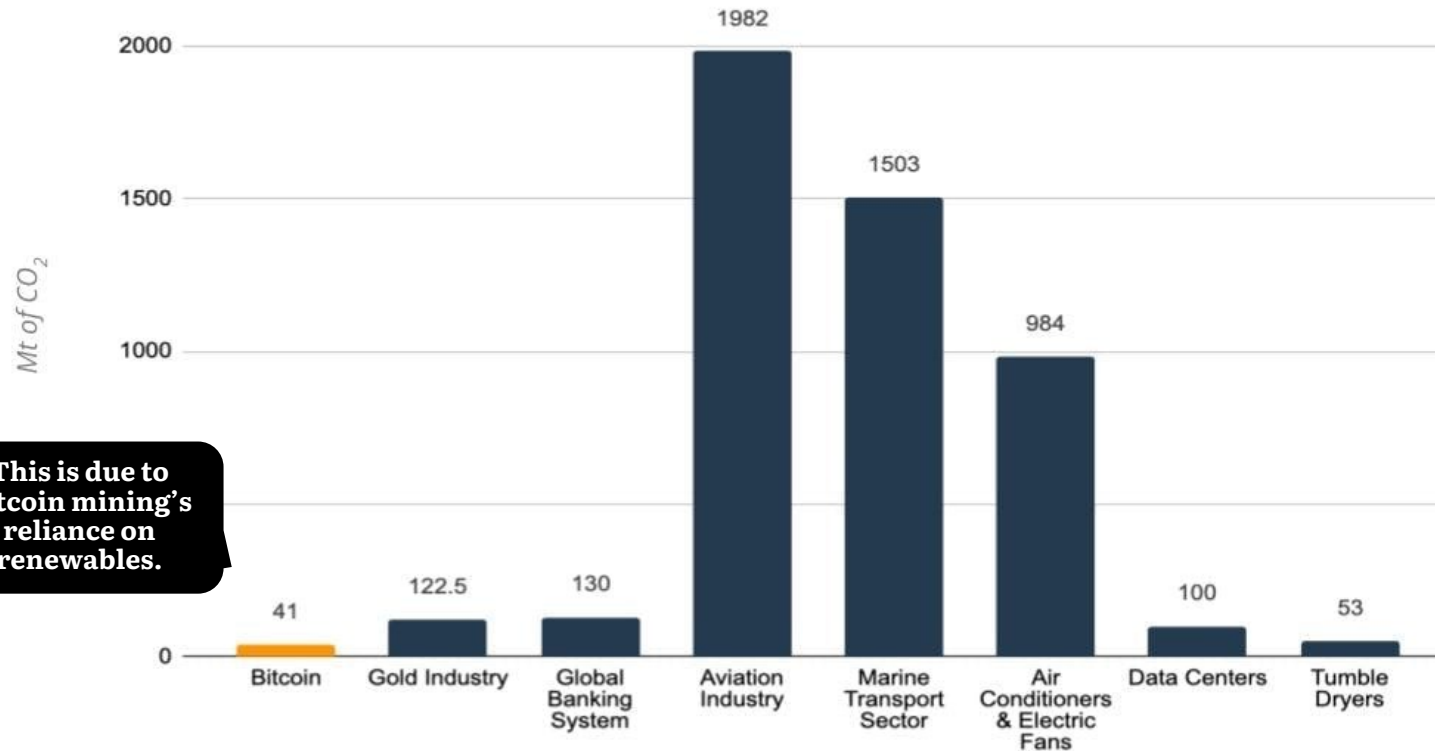
That's why Bitcoin mining requires a lot of electricity. Because the market values such a global network of decentralised money and therefore is willing to invest in its security. Check the appendix for more on this.



# If we look at carbon emissions instead of electricity consumption, one sees how Bitcoin mining isn't the climate's enemy the media says it is.

## Carbon Emissions of Bitcoin Compared to Other Industries

In 2021, the Bitcoin network emitted an estimated 41 metric tons of CO<sub>2</sub> which is lower than the global banking industry, gold industry, and every other industry shown below.



This is due to Bitcoin mining's reliance on renewables.

Data as of: Jan. 2022  
Source: CoinShares

Note: Data was pulled from CoinShares' report released in Jan. 2022 which references multiple data sources from various dates.

### Key Bitcoin electricity stats

**162,194 TWh<sup>i</sup>**  
TOTAL ENERGY GENERATED WORLDWIDE

**50,000 TWh<sup>ii</sup>**  
ENERGY LOST DUE TO INEFFICIENCIES

**189 TWh<sup>iii</sup>**  
ENERGY CONSUMED BY BITCOIN MINING ON THE WORLD'S ELECTRIC GRID

**GLOBAL BITCOIN MINING CONSUMES 0.1% OF THE WORLD'S ENERGY PRODUCTION**

**GLOBAL BITCOIN MINING CONSUMES 0.4% OF THE WORLD'S ENERGY WASTED**

# **An introduction to blockchain technology and crypto – part II**

---

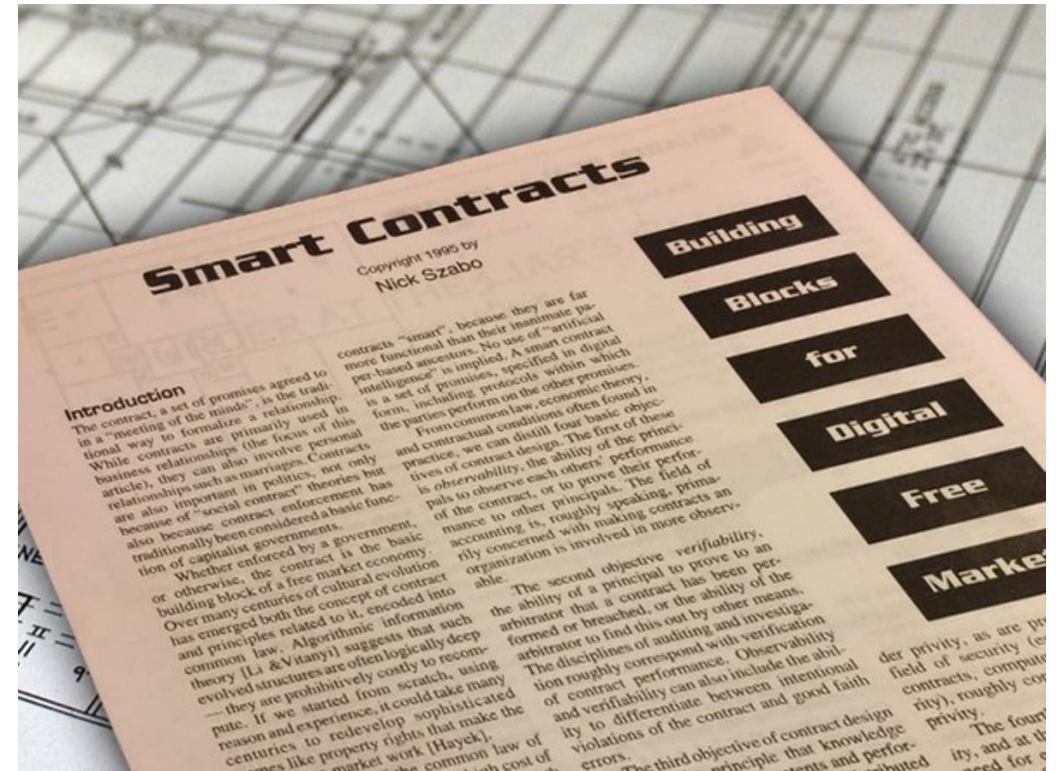
*The rise of smart contracts and Web3.*

# Smart contracts were first described by Nick Szabo, back in 1996, as the next step in the digital transformation of the paper ones.

“New institutions, and new ways to **formalize the relationships that make up these institutions**, are now made possible by the digital revolution.

I call these new contracts "**smart**", because they are far more **functional** than their inanimate paper-based ancestors.

But no use of **artificial intelligence** is implied”.





# More recently, Nick Szabo even argued “the humble vending machine is the original form of a smart contract”.

## VENDING MACHINE

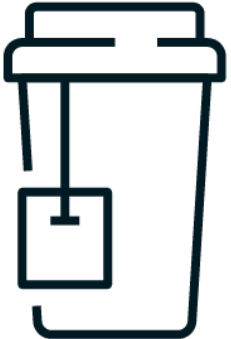
Analogy to a smart contract



Funds go in (Input)



Predefined actions triggered



Product (Output)

# But, today, smart contracts are computer programs that run on a blockchain and are intended to automatically execute its terms.



### Pre-Defined Contract

Terms and conditions are agreed by all the parties involved.



### Events

Execution of the contract is triggered by an event.



### Execution

The smart contract is executed automatically.



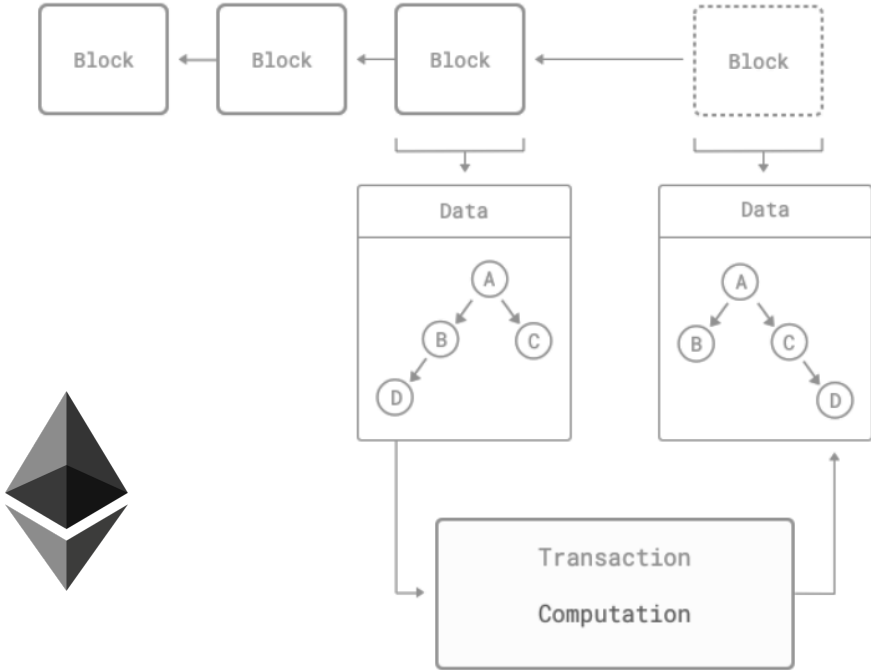
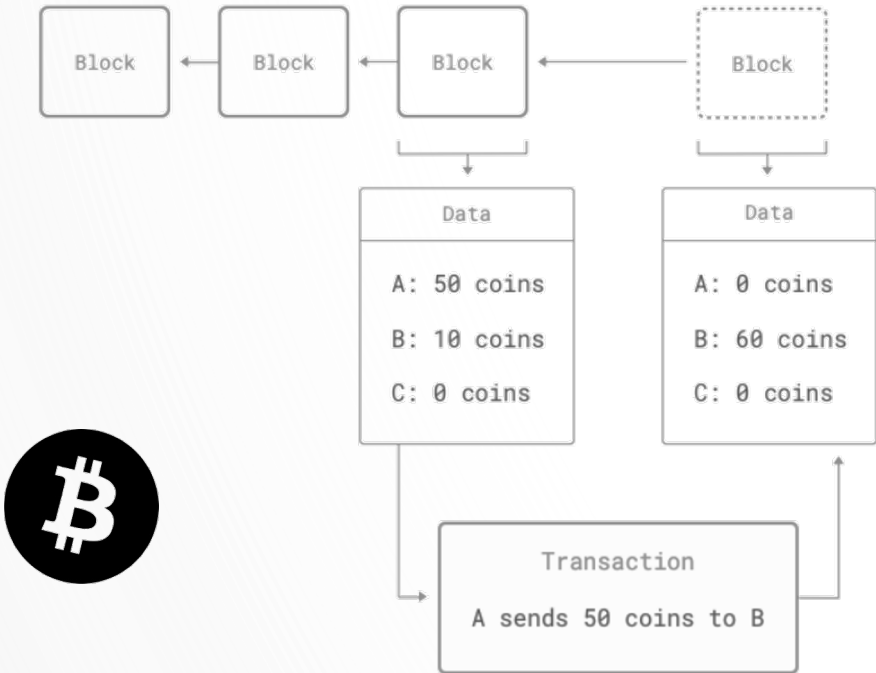
### Settlement

All the settlements are executed quickly and efficiently.

# In 2013, Ethereum's whitepaper laid the groundwork for the first major implementation of a blockchain for smart contracts.

**While Bitcoin is focused on payments.**

**Ethereum is focused on code (running smart contracts).**



# Ethereum's founder, Vitalik Buterin, believes these contracts can eventually replace modern platforms, from AirBnB & Uber to Spotify.

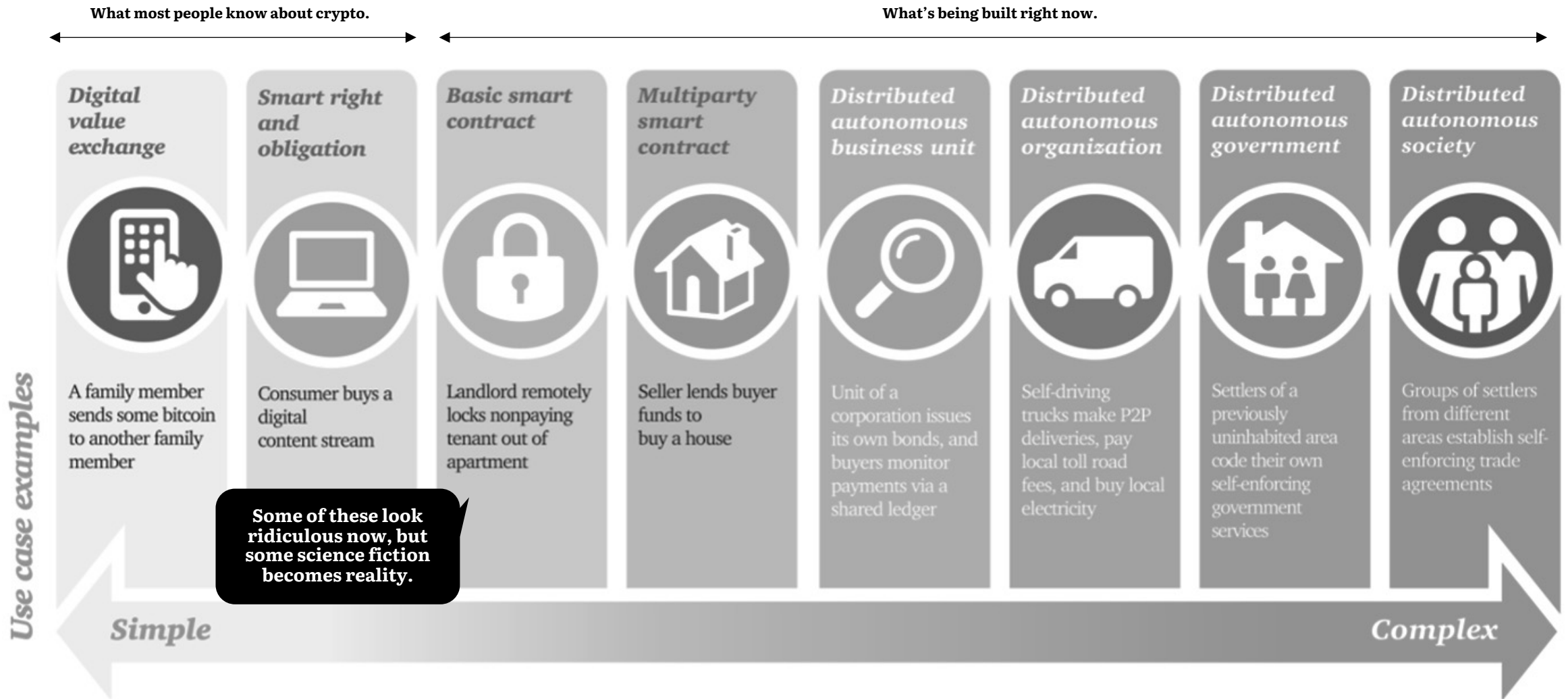
---

“Whereas most technologies **tend to automate workers on the periphery doing menial tasks**, blockchains **automate away the centre**.”

Instead of putting the taxi driver out of a job, **blockchain puts Uber out of a job** and lets the taxi drivers **work with the customer directly**”.

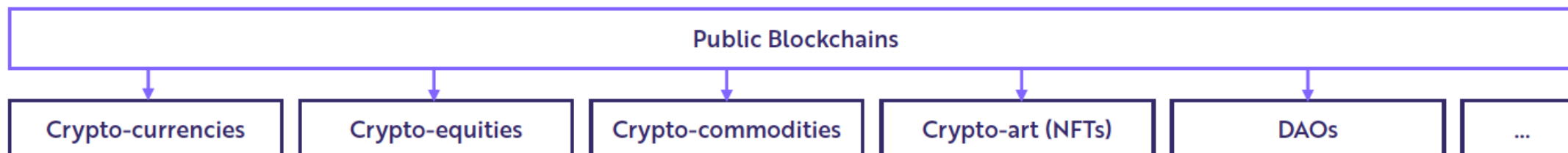


# That's because smart contracts have the potential to reduce transaction costs and enhance efficiency in a myriad of use cases.

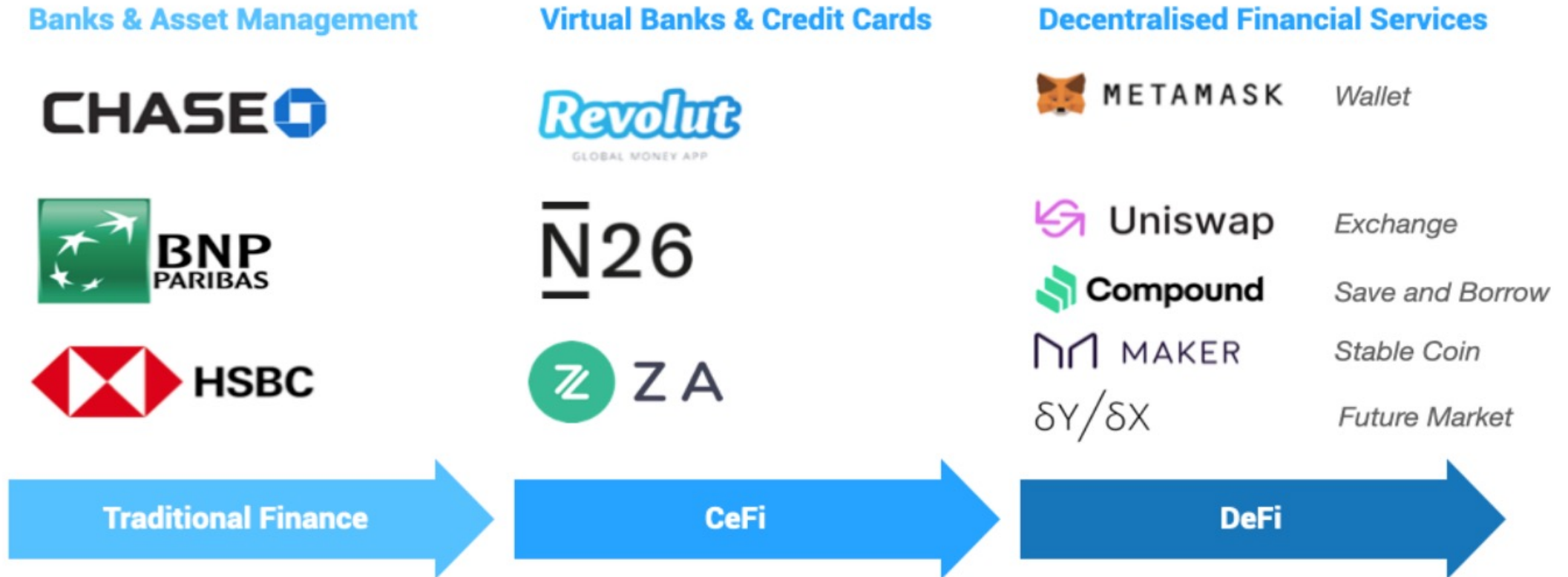


# Why? Even though crypto is recognised as a distinct asset class, it also has the potential to impact all other traditional asset classes.

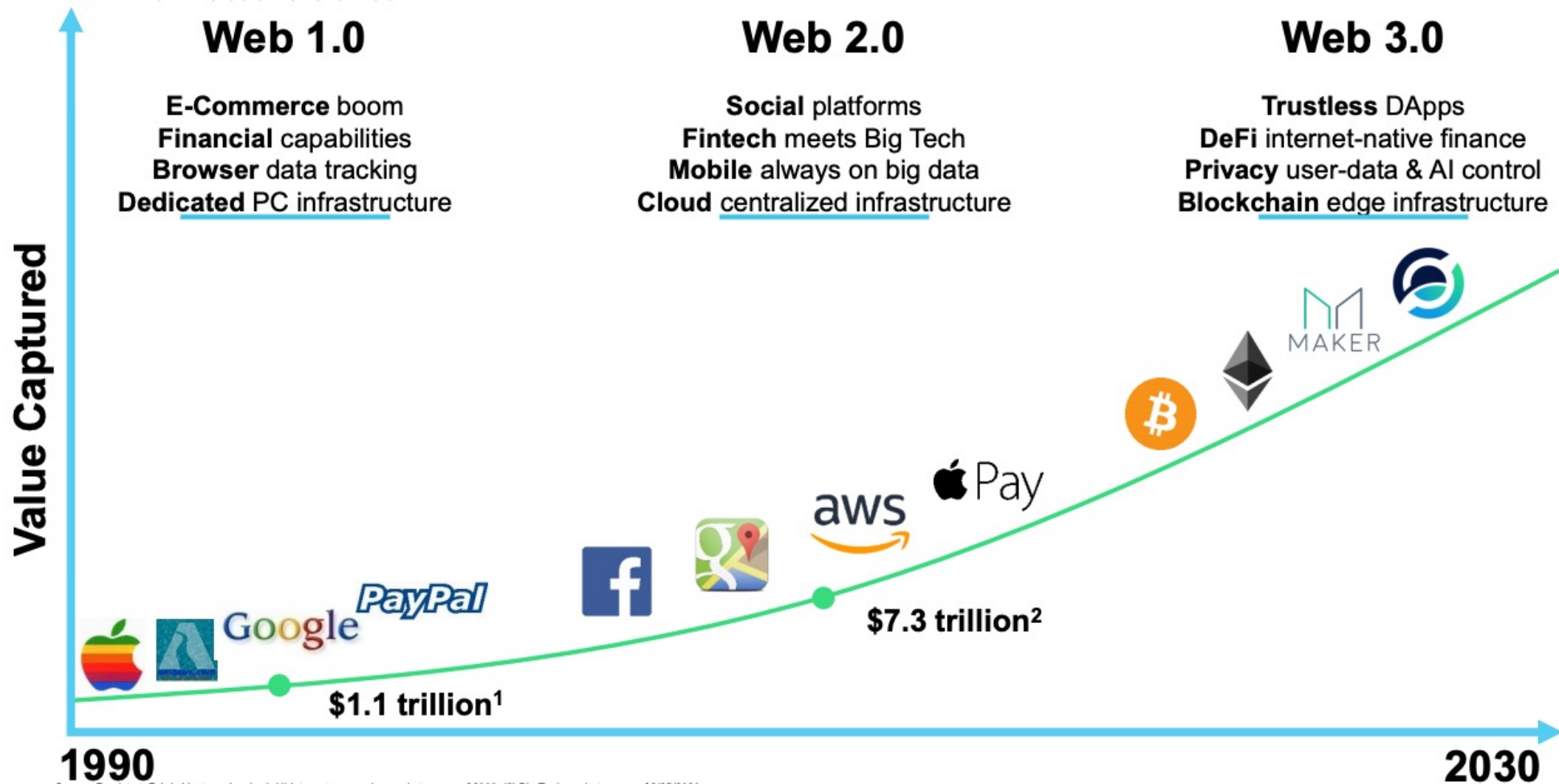
Similarly, cryptoassets issued on public blockchains are likely to impact *all* asset classes. Just as the internet turned information into packets online, public blockchains are likely to turn all assets into transactions on-chain.



# Take the case of Open Finance, or DeFi, which leverages the power of crypto to address some of the challenges of TradFi & FinTechs.

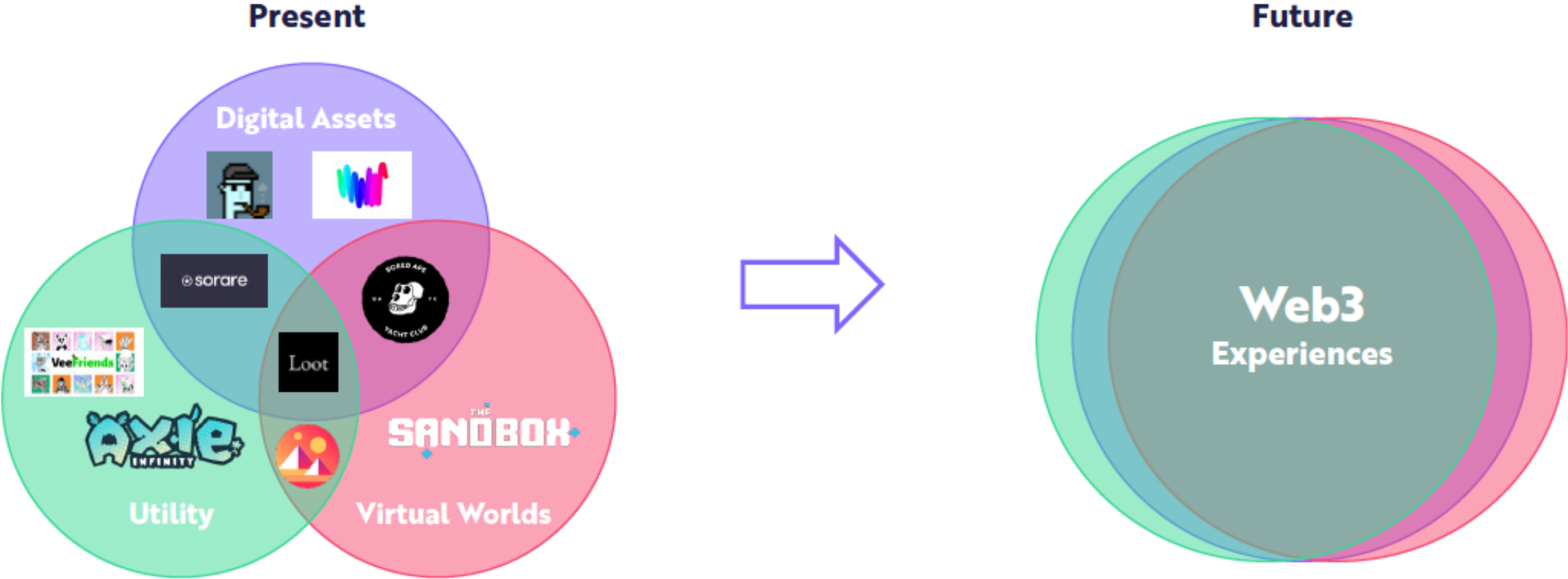


# And it was the DeFi revolution which ignited a wider technological change, now powering the next generation of the internet, or web3.





# Web3 and the so-called metaverse aims to blur the lines between the types of consumption and investment we already do digitally.



# **Some additional background on blockchains and Bitcoin.**

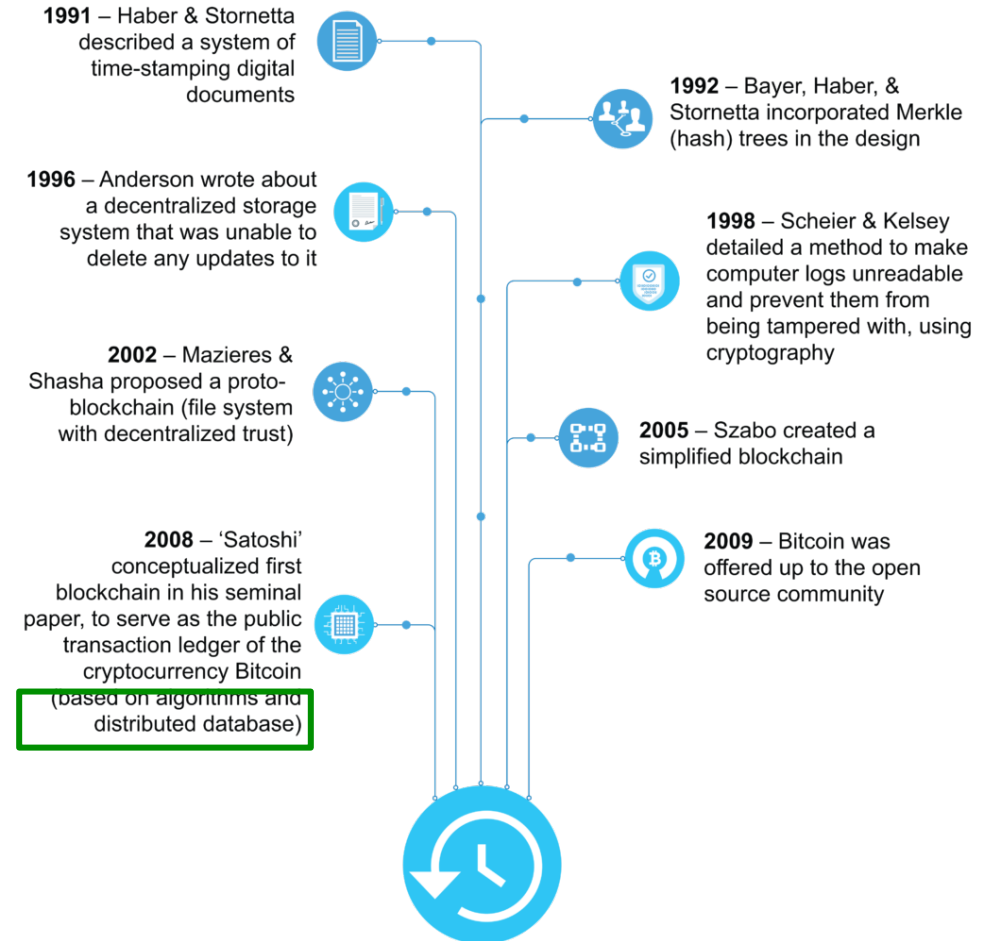
---

# Bitcoin was the first prominent implementation of a blockchain, even if the history of this technology goes back to the early 1990s.

One can say blockchain was first ideated at an offshoot of the innovative Bell Labs.



Cryptographers toyed with the concept for years until “Satoshi” put it all together.



**And what's a blockchain after all? To begin, Satoshi didn't use the word in Bitcoin's whitepaper, although block and chain occur often.**

---

**block**

67 times

**chain**

28 times

# However, in a 2009 email, Satoshi suggested that “block chain” was a better name for the distributed ledger that underlies Bitcoin.

Satoshi Nakamoto <satoshin@gmx.com>  
To: Mike Hearn <mike@plan99.net>

Mon, Apr 13, 2009 at 11:00 PM

Mike Hearn wrote:

My best guess - it is the length of the global chain, and the rapid advance at the start is as the software downloads and verifies the preceding blocks in the chain as being valid.

Right. I'm trying to think of more clear wording for that, maybe "%d network blocks" or "%d block chain".

Curiously, Hal Finney, another crypto pioneer who some believe to be Satoshi or part of the Satoshi collective, also used “block chain” in an email from 2008.

Cryptography Mailing List

Bitcoin P2P e-cash paper

2008-11-09 01:58:48 UTC - [Original Email](#) - [View in Thread](#)

Hal Finney wrote:

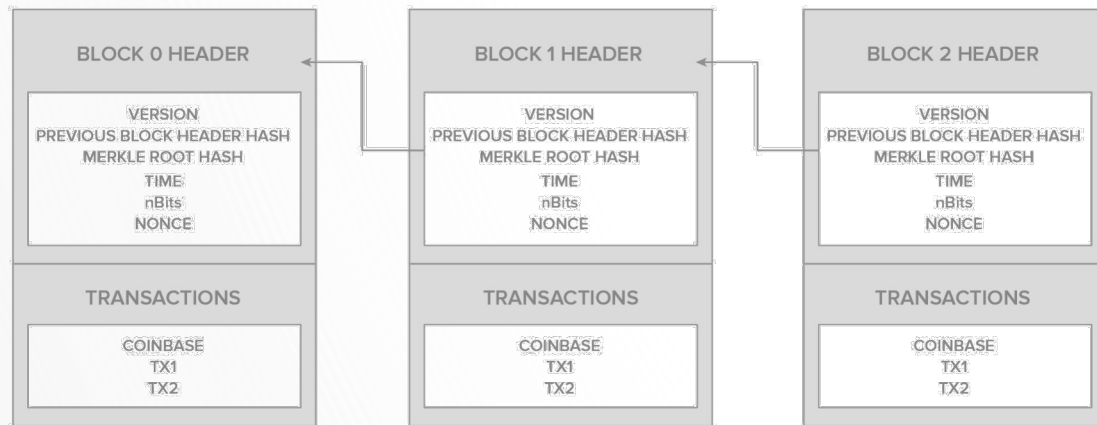
```
> it is mentioned that if a broadcast transaction does not reach all nodes,  
> it is OK, as it will get into the block chain before long. How does this  
> happen - what if the node that creates the "next" block (the first node  
> to find the hashcash collision) did not hear about the transaction,  
> and then a few more blocks get added also by nodes that did not hear  
> about that transaction? Do all the nodes that did hear it keep that  
> transaction around, hoping to incorporate it into a block once they get  
> lucky enough to be the one which finds the next collision?
```

# Bitcoin's blocks are linked to each other through a cryptographic hash, but there are other non-linear distributed ledger technologies.

Bitcoin's data structure is organised in a linear sequence.

Note there are other types of distributed ledger that don't rely on hash-linked blocks.

Each block has a unique hash (a cryptographic output) that is dependent on the previous block. This is a key element in Bitcoin's security.

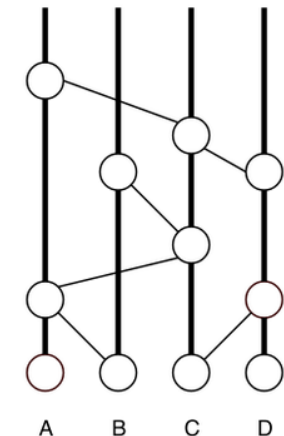
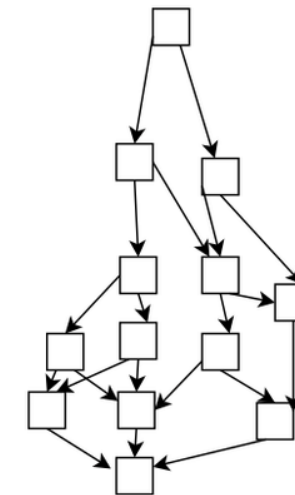
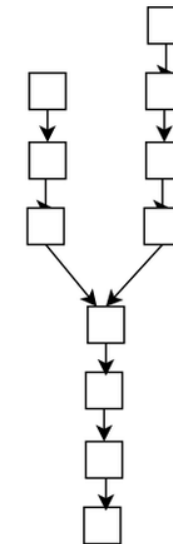


Blockchain

Tangle

Hashgraph

Time ↑

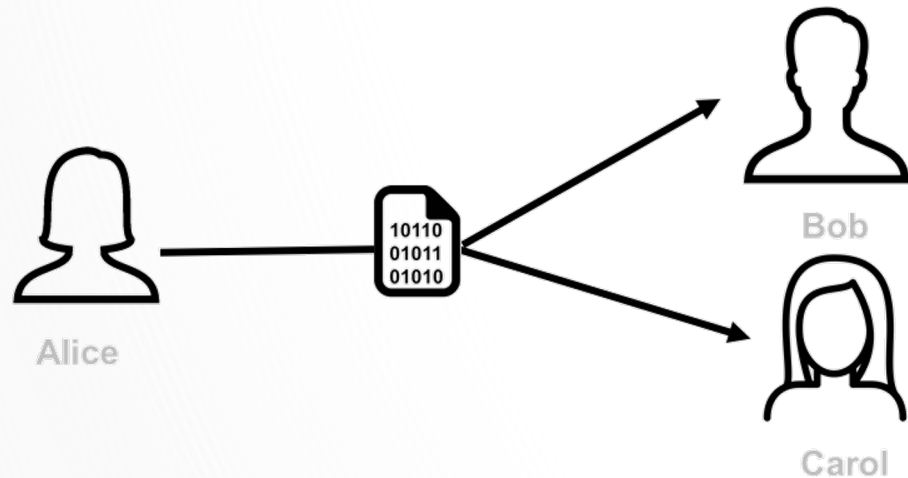


# **Some additional background on transactions and mining.**

---

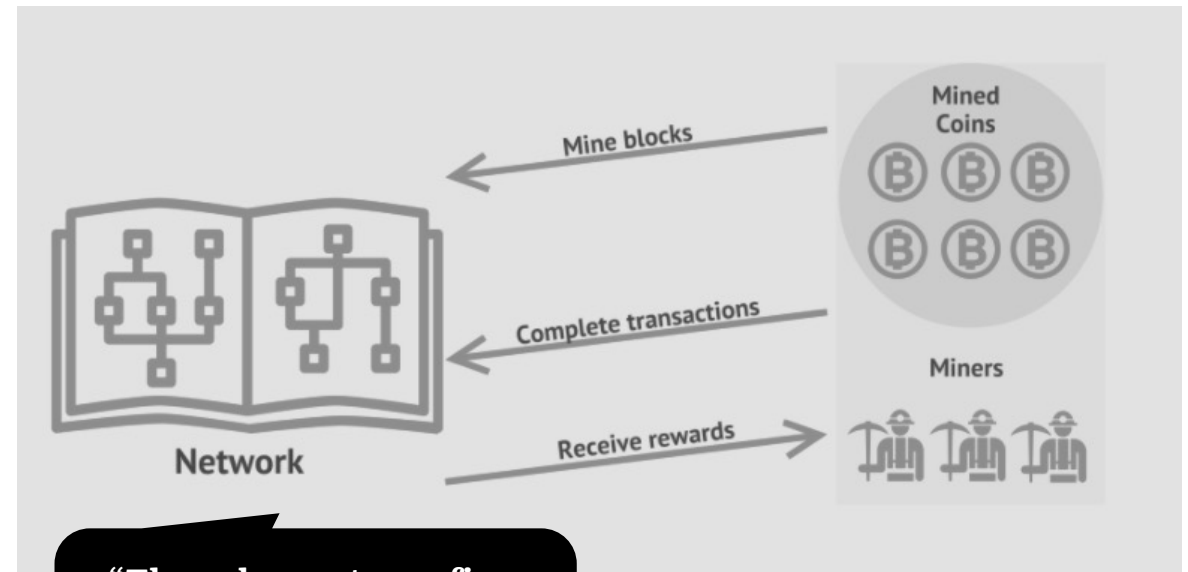
# The rules (and the incentives they create) are what makes a blockchain safe(r). In Bitcoin's case, it's all about its unique Nakamoto consensus.

Previously, digital cash required an intermediary to prevent double spending.



**Double-Spending Problem:** If Alice sends money in digital format to Bob, Bob cannot know for sure if Alice has deleted her copy of the file and she can choose to send the same file to Carol.

Bitcoin solved it by incentivising nodes to dedicate resources to keep an accurate ledger.



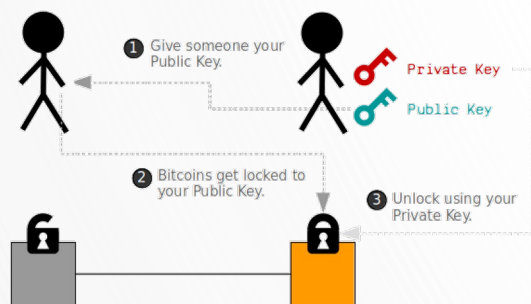
**“The only way to confirm the absence of a transaction is to be aware of all transactions”.**



# The Nakamoto consensus combines four key pieces which incentivises miners to compete for its security.

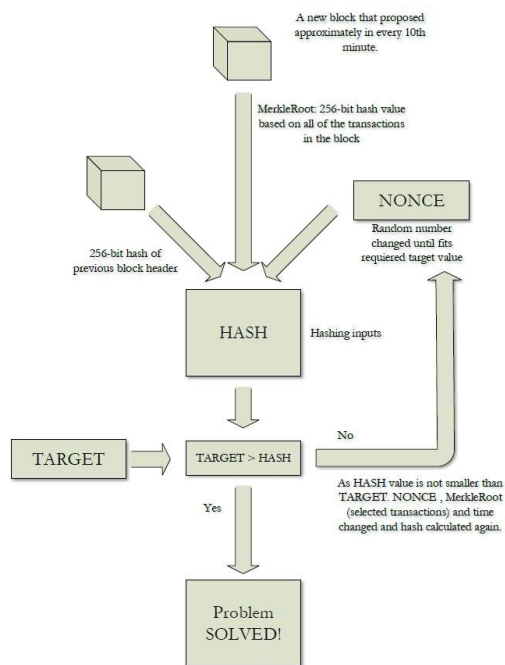
## Basic validation.

- Transactions signed cryptographically.
- Users can only spend the bitcoins they have at a given time.
- Compatible hash.
- Correct block size.



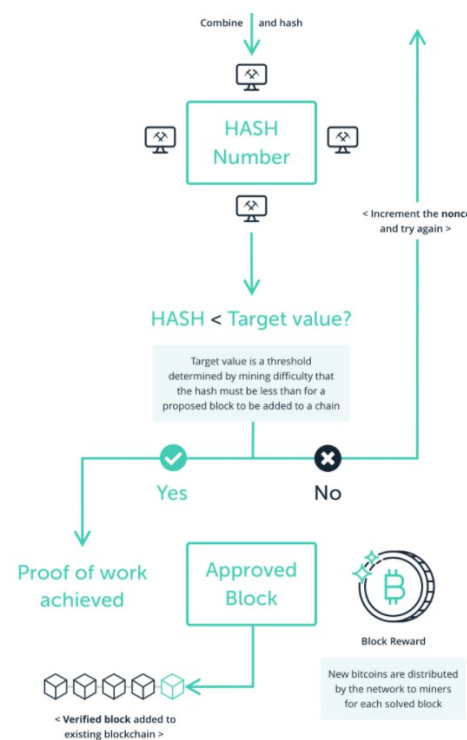
## Proof-of-Work algo.

- Defines the difficulty of a hard computational problem (work) which grants the privilege of extending the chain.



## “Block selection” race.

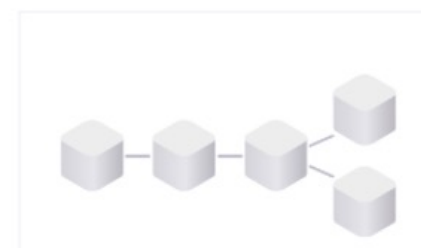
- The fastest miner to get lucky broadcasts its solution and if verified then it wins a reward.



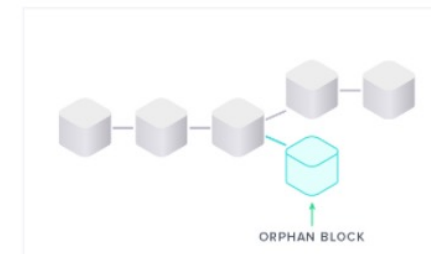
## “Longest chain” rule.

- Nodes accept the longest chain, i.e. the one with the most computational work and so the most secure.

Two valid blocks found and broadcasted at the same time



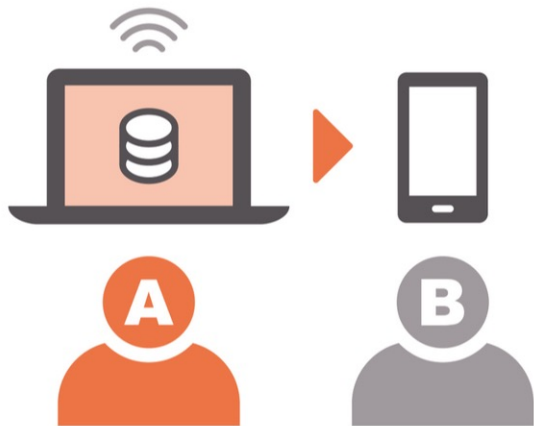
The next block that is found breaks the tie



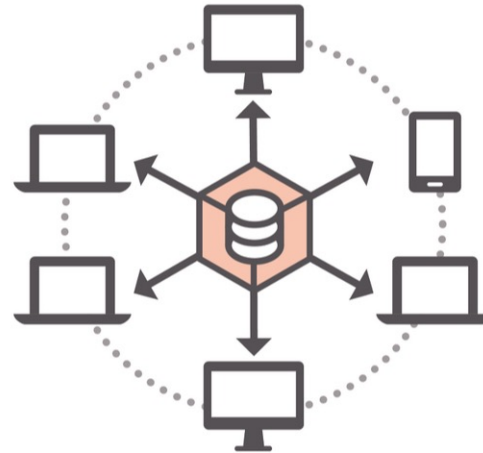
# To begin, a transaction is submitted and nodes check if it was signed cryptographically and if it is only trying to spend what its user has.



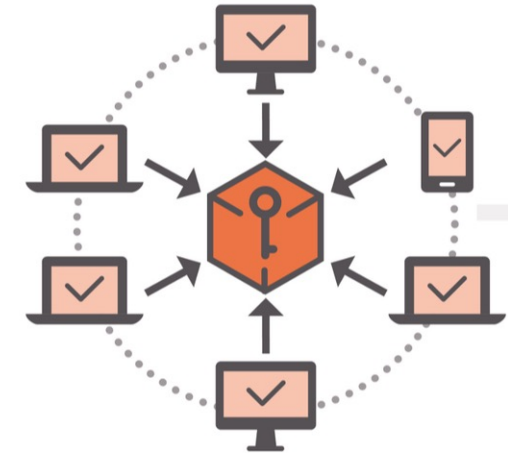
A transaction is requested



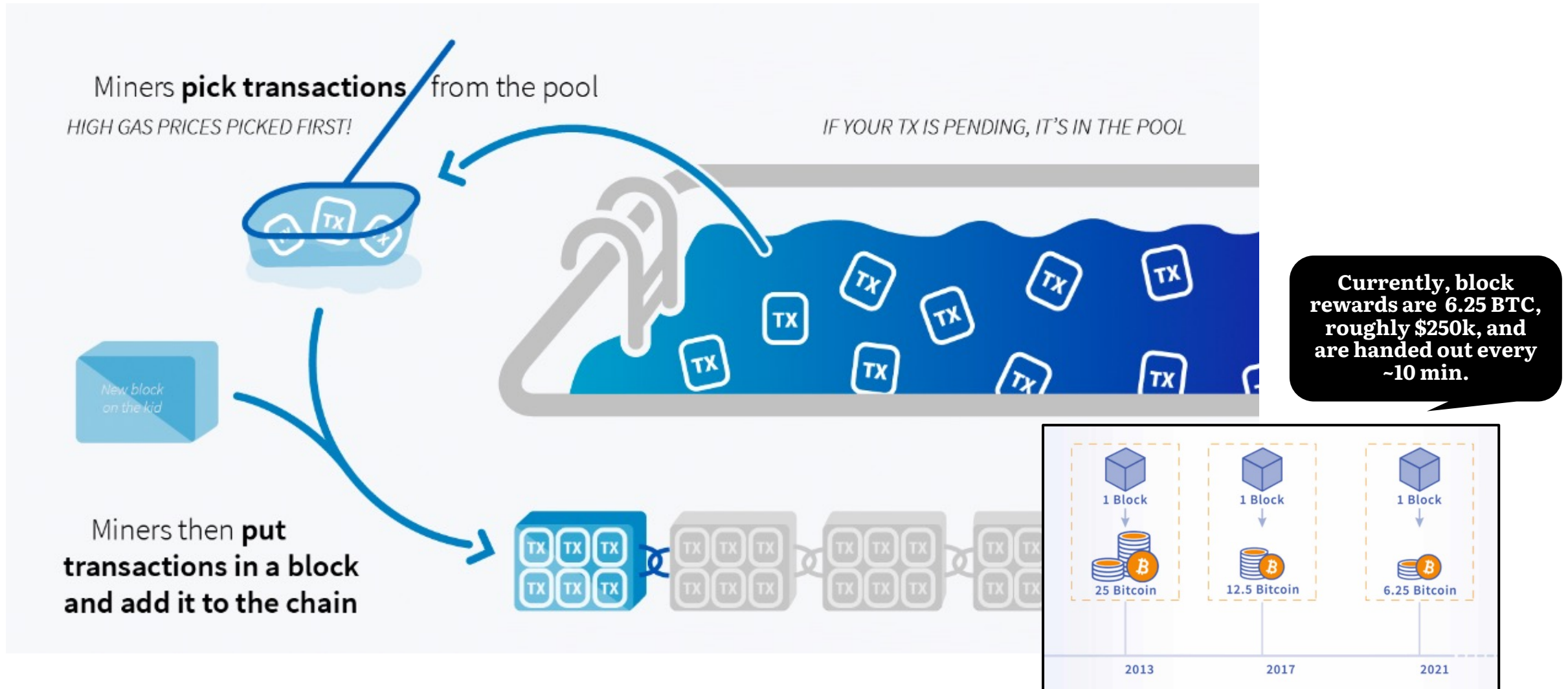
The transaction is broadcasted to a network of nodes



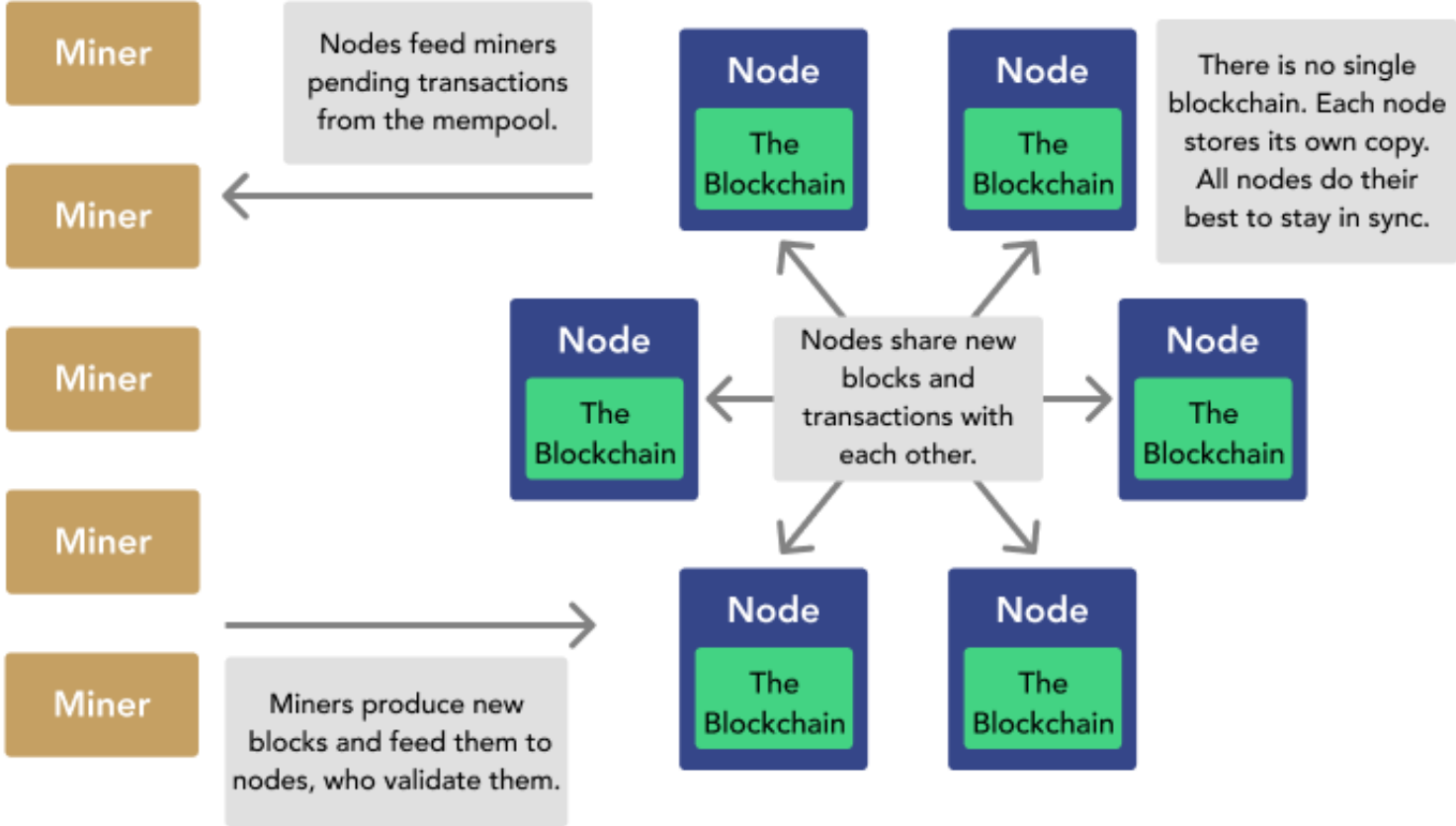
The network validates the transaction using known algorithms



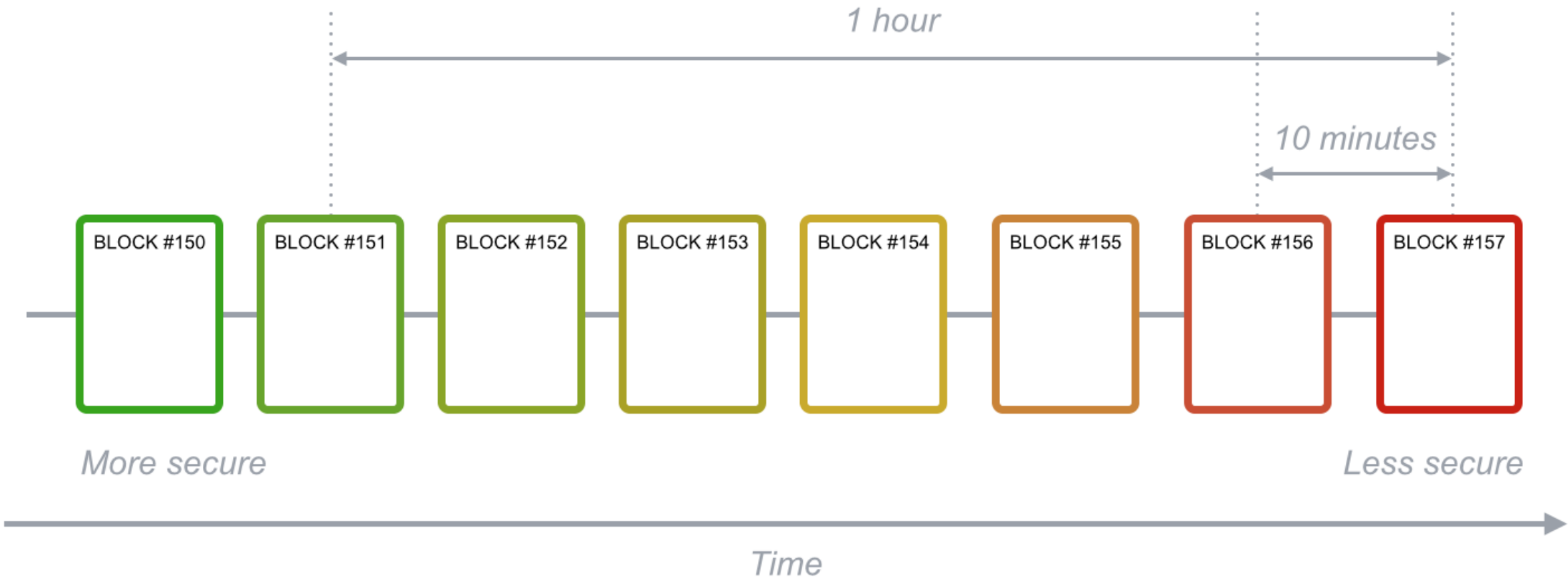
# Then, miners compete to solve a mathematical problem. The first is rewarded to organise pending transactions into a new batch: a block.



# To conclude, nodes confirm again if the block is valid and relay it to other nodes, which then update their copies of the blockchain.



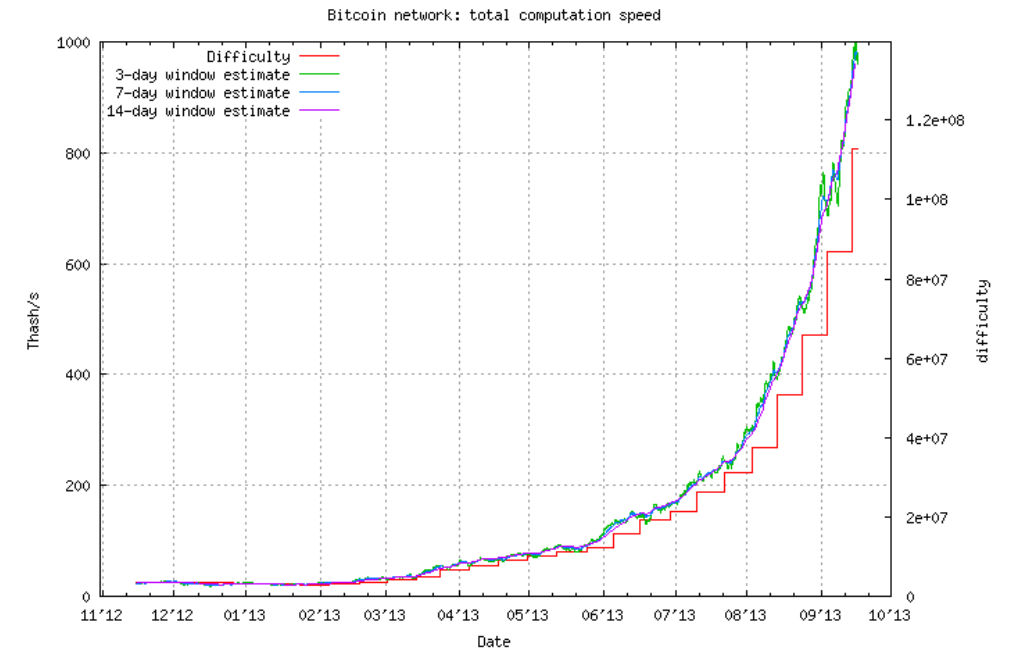
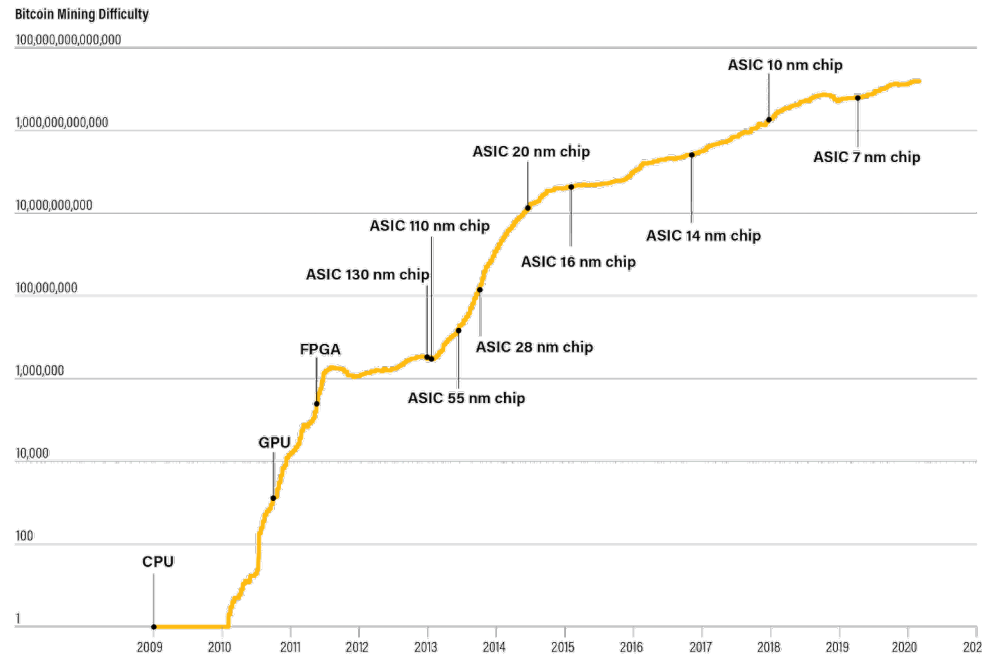
# The transaction is then sent, but it is advised to wait for some more blocks to come through before a given block is “set in stone”.



# Mining's computational power costs electricity and the level of computational power required rises with the network's growth.

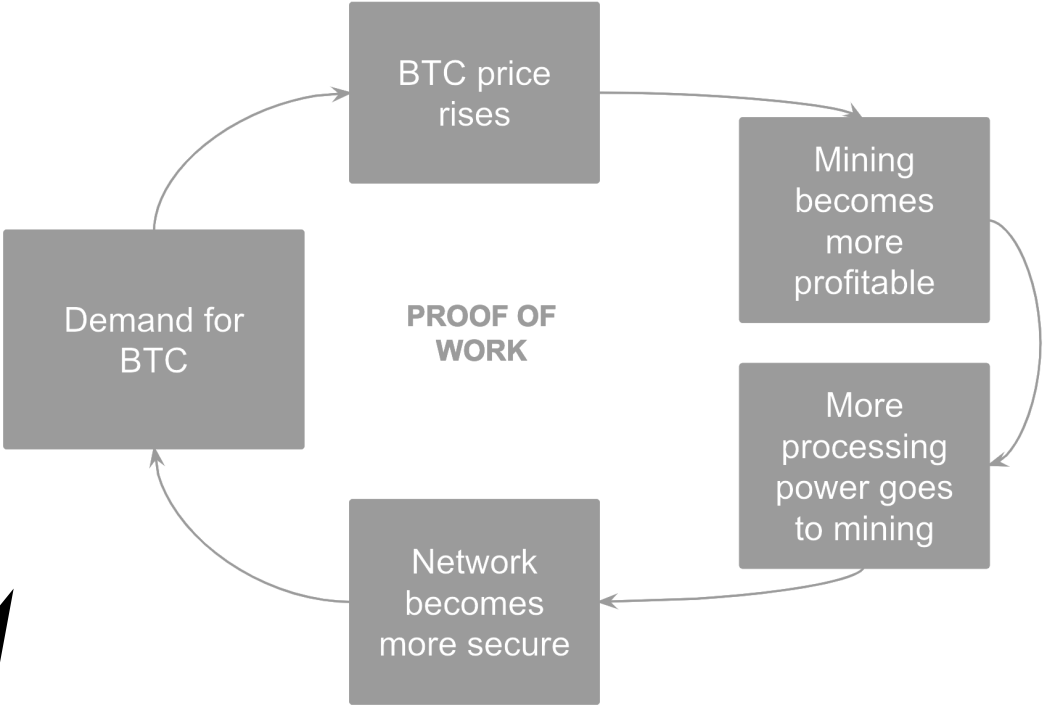
As miners try to get more efficient to spend less electricity, they build better chips.

But mining gets more difficult as more miners dedicate computational power to it.



**This is an equilibrium mechanism to ensure a Bitcoin block is mined every ~10 minutes.**

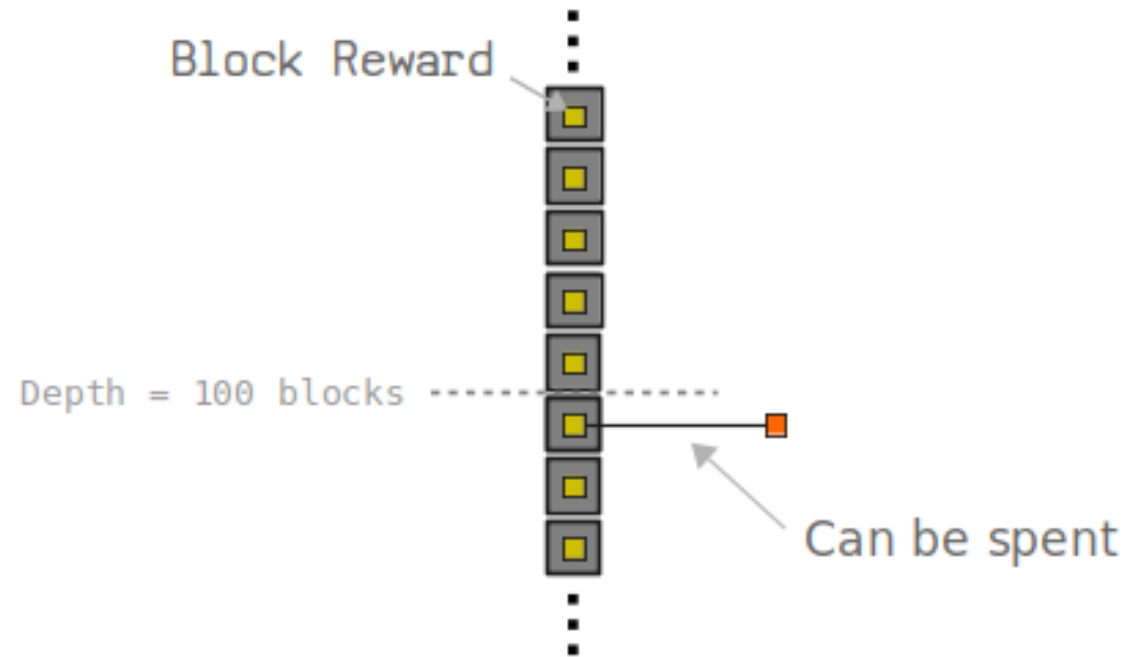
# Therefore, the more mining power there is the more secure the network tends to be, which attracts more users to its ecosystem.



**This is valid in Proof-of-Work based blockchains. There are other security models, but they fall outside the scope of this session.**


# The longest chain rule incentivises miners to cooperate so they can claim rewards to pay for the electricity. But it's also a major deterrent.

*A block reward can only be spent after 100 blocks have been mined.*





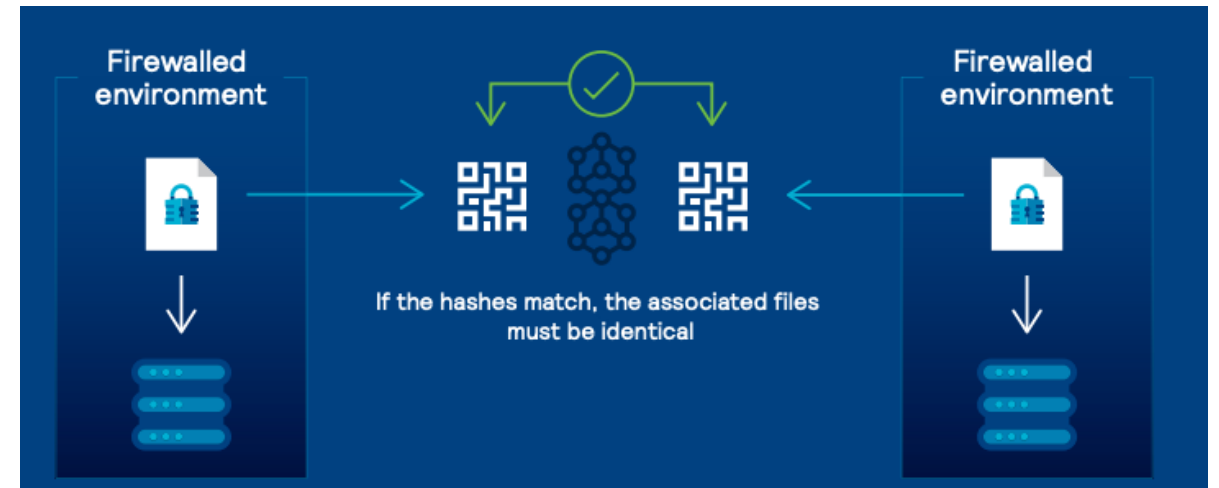
# Hashing provides a critical service to the security of a blockchain.



**One way:** The INPUT cannot be derived from the OUTPUT.

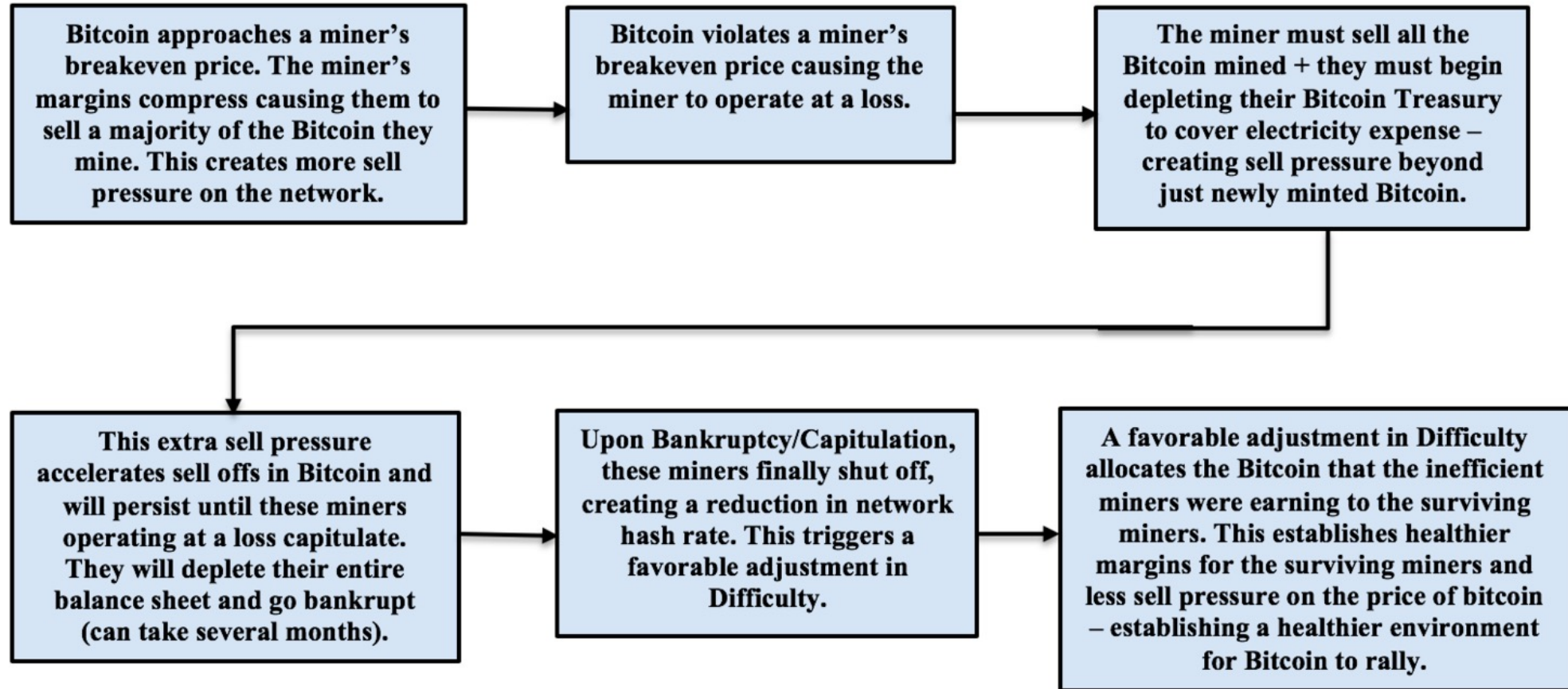
**Repeatable:** A given data input will always have exactly the same output each time it is run through a hash function. It's not random.

**Unique:** If just one bit of data in the input file is changed, the resulting hash output will be completely different.



**Hashing allows verification without scooping.**

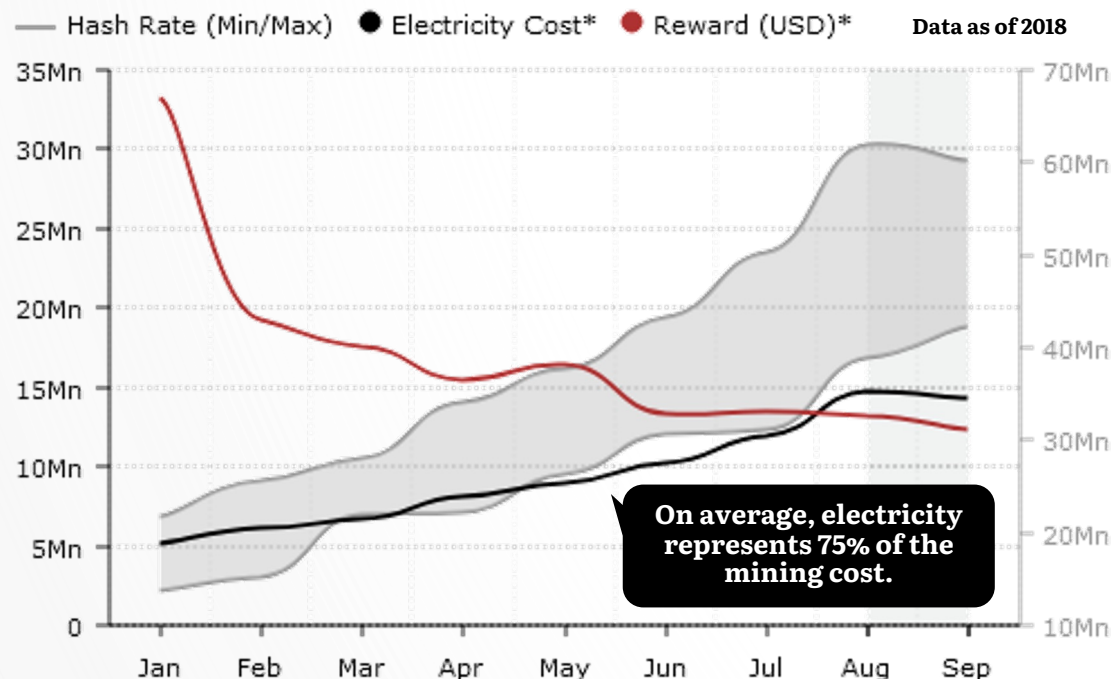
# **Sell pressure from unprofitable miners has a negative short-term impact on price, but ultimately supports the network in the long-term.**



# Conversely, if prices drop miners may lose their profits, even if the cost of production has provided some floor to BTC's price over time.

Mining rewards vary with the price, so in bear markets some miners can't break even.

Bitcoin rarely trades below its average cost of production as unprofitable miners collapse.



# Lastly, despite being often criticised for its massive electricity consumption, it's important to understand mining's true footprint.

Mining relies heavily on non-rival electricity.

Mining relies heavily on renewables.

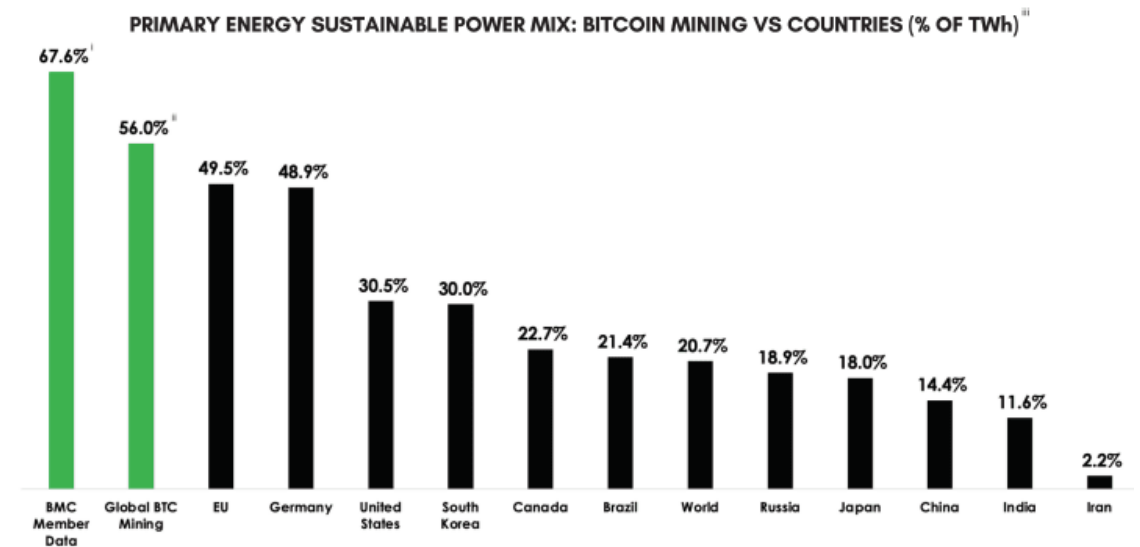
**162,194 TWh**<sup>i</sup>  
TOTAL ENERGY GENERATED WORLDWIDE

**50,000 TWh**<sup>ii</sup>  
ENERGY LOST DUE TO INEFFICIENCIES

**189 TWh**<sup>iii</sup>  
ENERGY CONSUMED BY BITCOIN MINING  
ON THE WORLD'S ELECTRIC GRID

**GLOBAL BITCOIN  
MINING CONSUMES  
0.1%**  
OF THE WORLD'S ENERGY PRODUCTION

**GLOBAL BITCOIN  
MINING CONSUMES  
0.4%**  
OF THE WORLD'S ENERGY WASTED



Moreover, Bitcoin consumes less than 50% of the electricity used by the top 100 bank data centres and that used by gold mining.

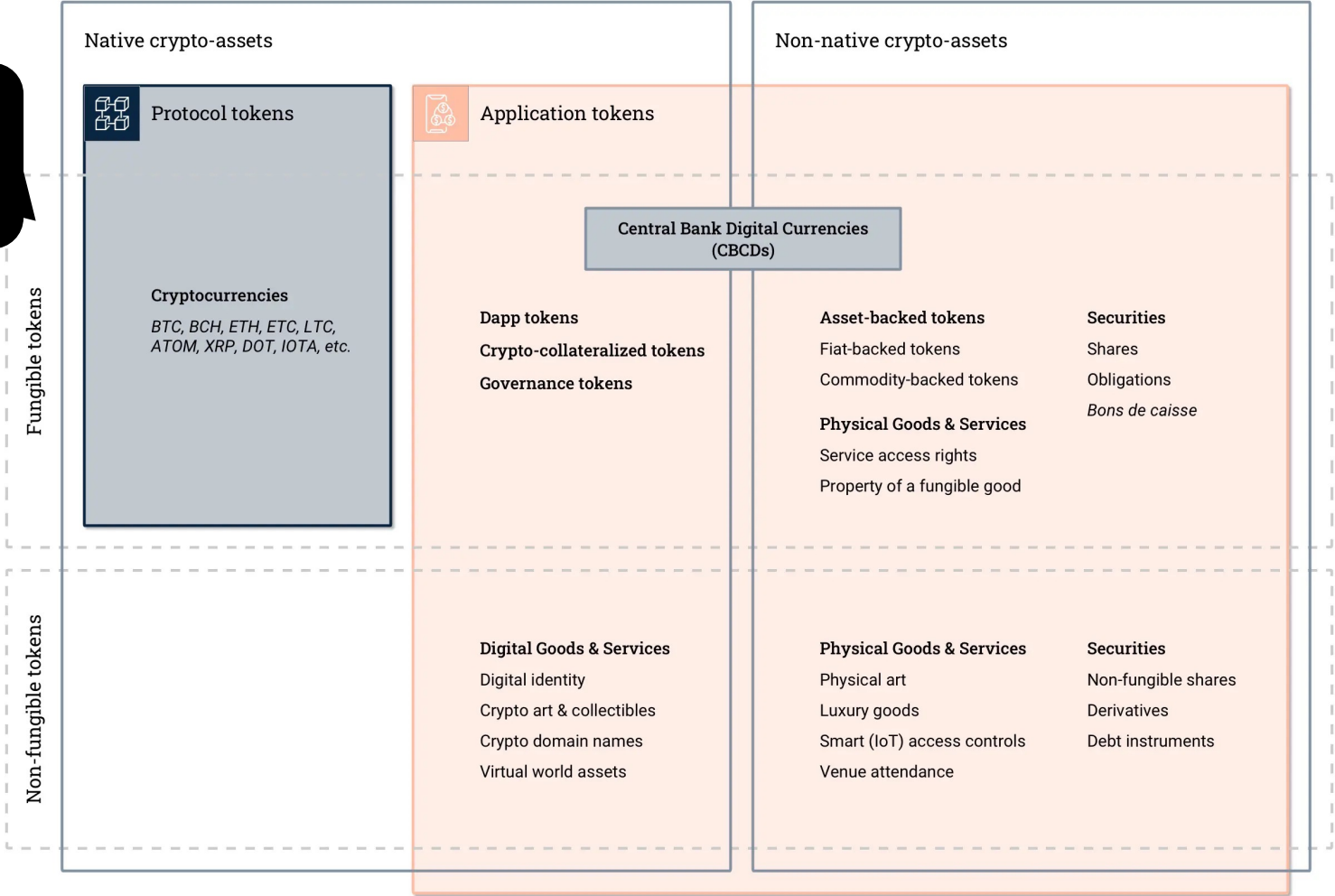
**Some additional background on the different cryptoassets.**

---

# There are several different taxonomies classifying cryptoassets, but this simple framework is the most comprehensive and exhaustive.

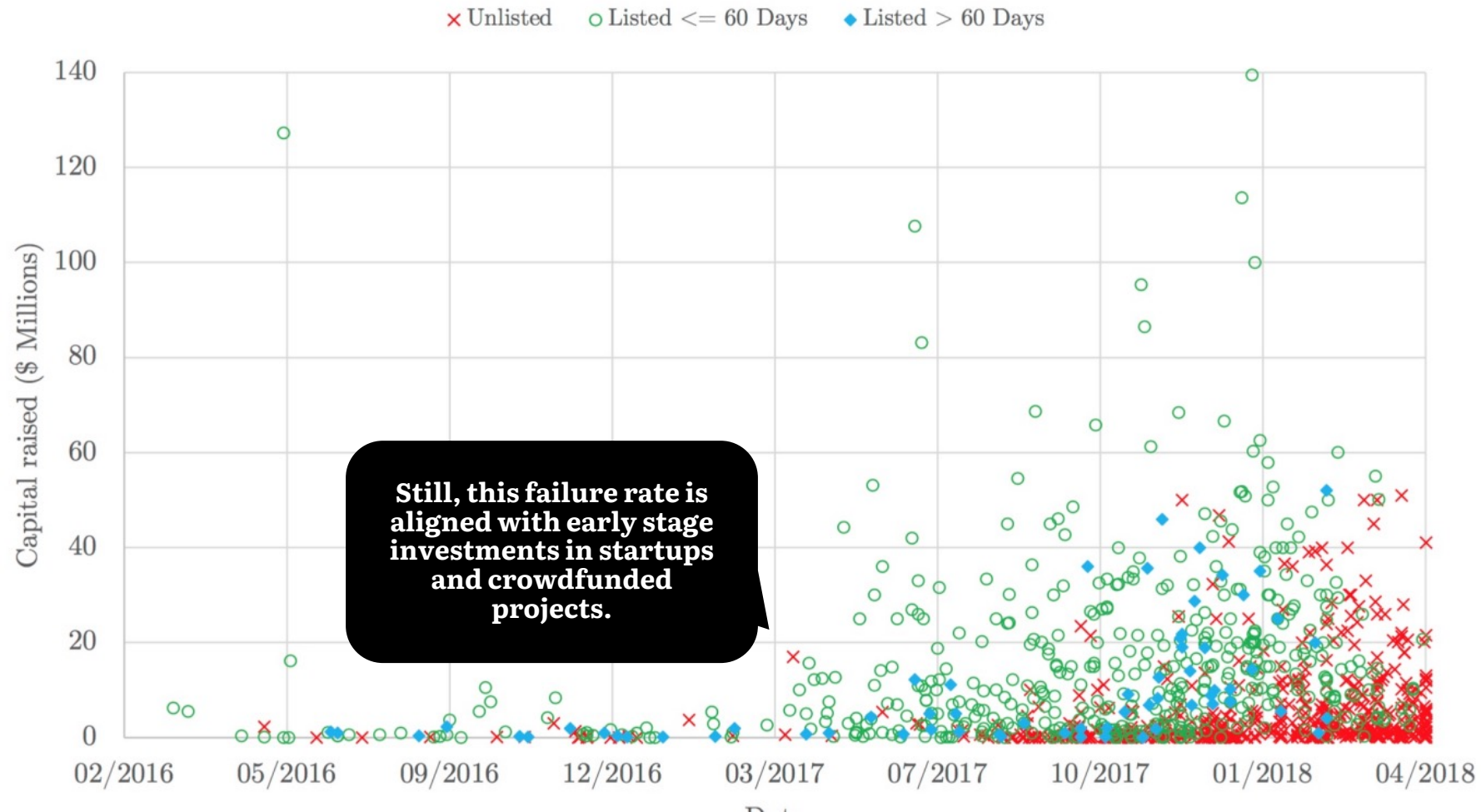
**Cryptocurrencies power protocols serving as a means of payment to those securing the network.**

Crypto-asset functional classification

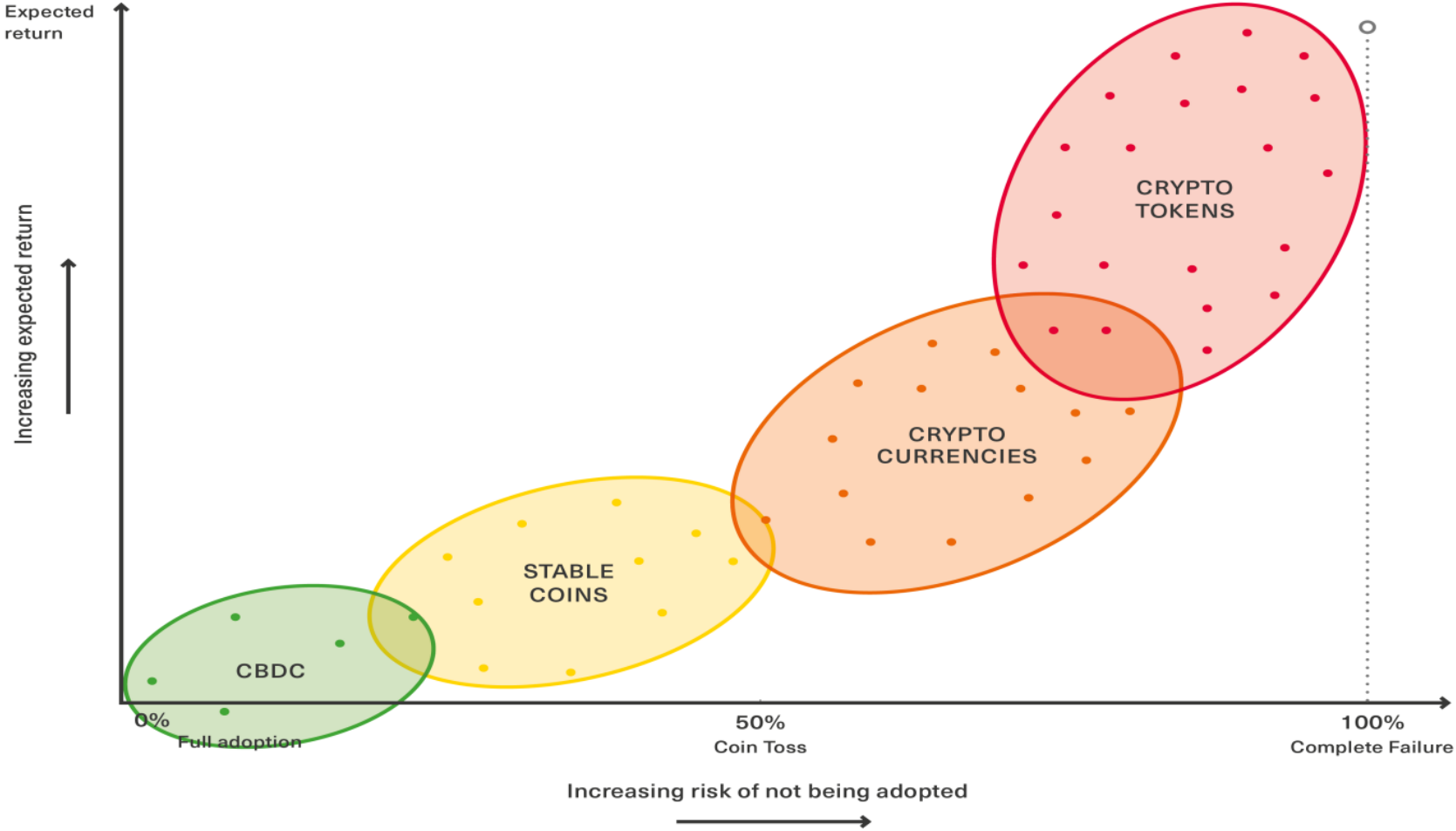


# There has been an explosion of cryptoassets in recent years, but many go bust as they lose traction or are deemed scams.

Initial Coin Offerings by Date and Capital Raised



# That's why those cryptoassets which power a blockchain, typically known as crypto currencies, tend to be less risky than simple tokens.

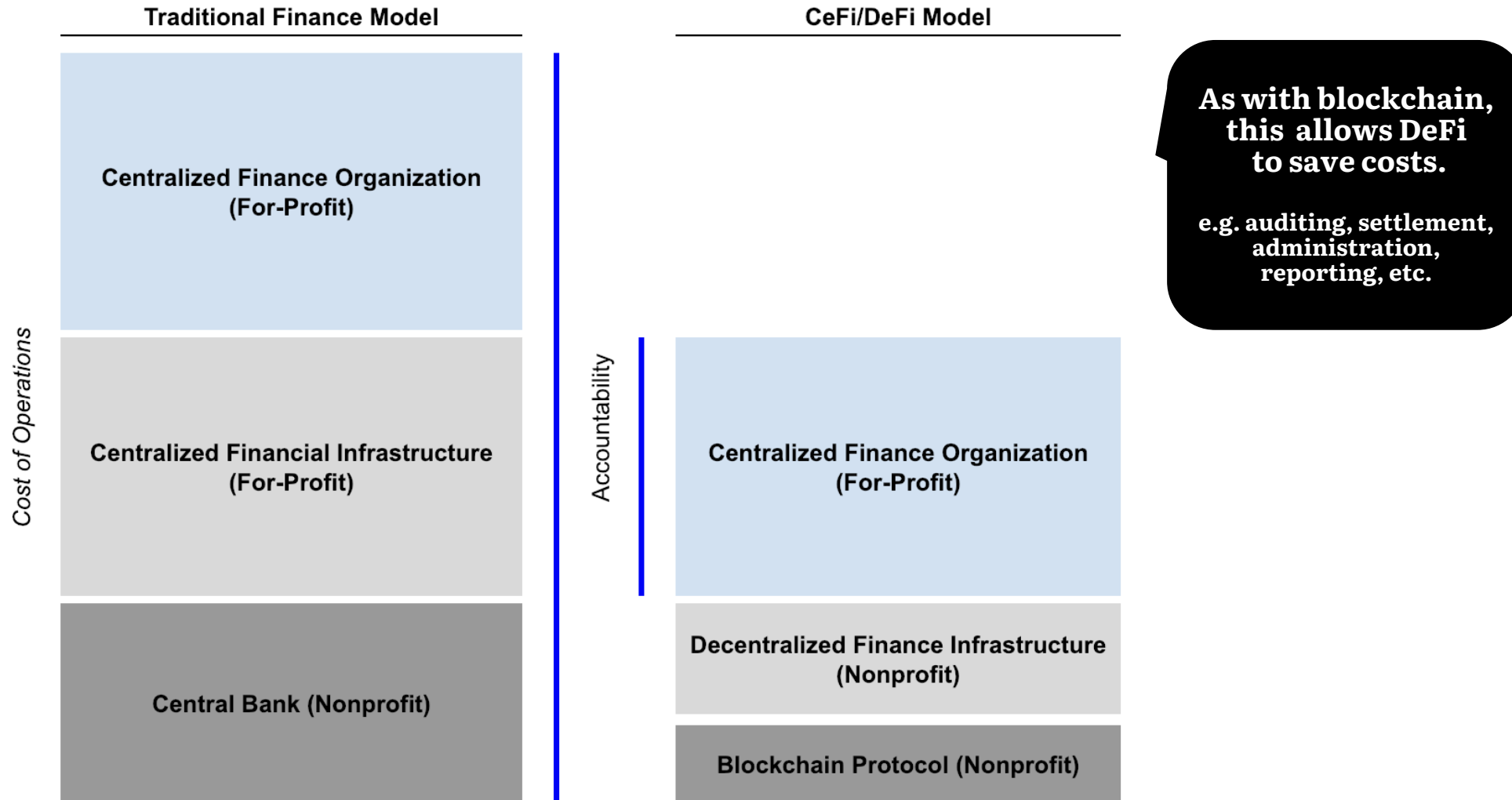




# **Some additional background on DeFi and web3.**

---

# The main difference between TradFi and DeFi is that DeFi minimises the amount of trust one needs to place on financial intermediaries.

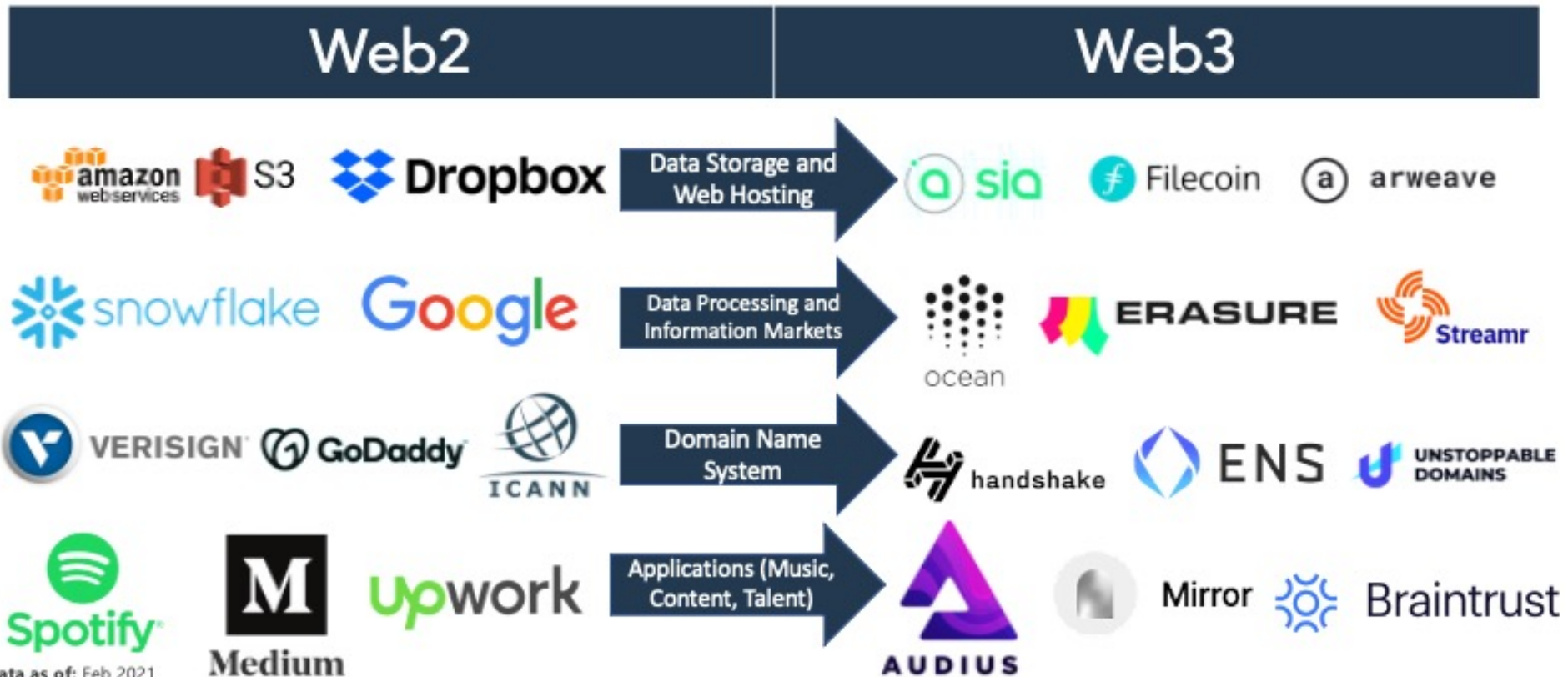


# Web3, “a group of technologies encompassing blockchain, protocols, digital assets, DeFi & social apps”, is all most tech VCs talk about now.

**MESSARI**

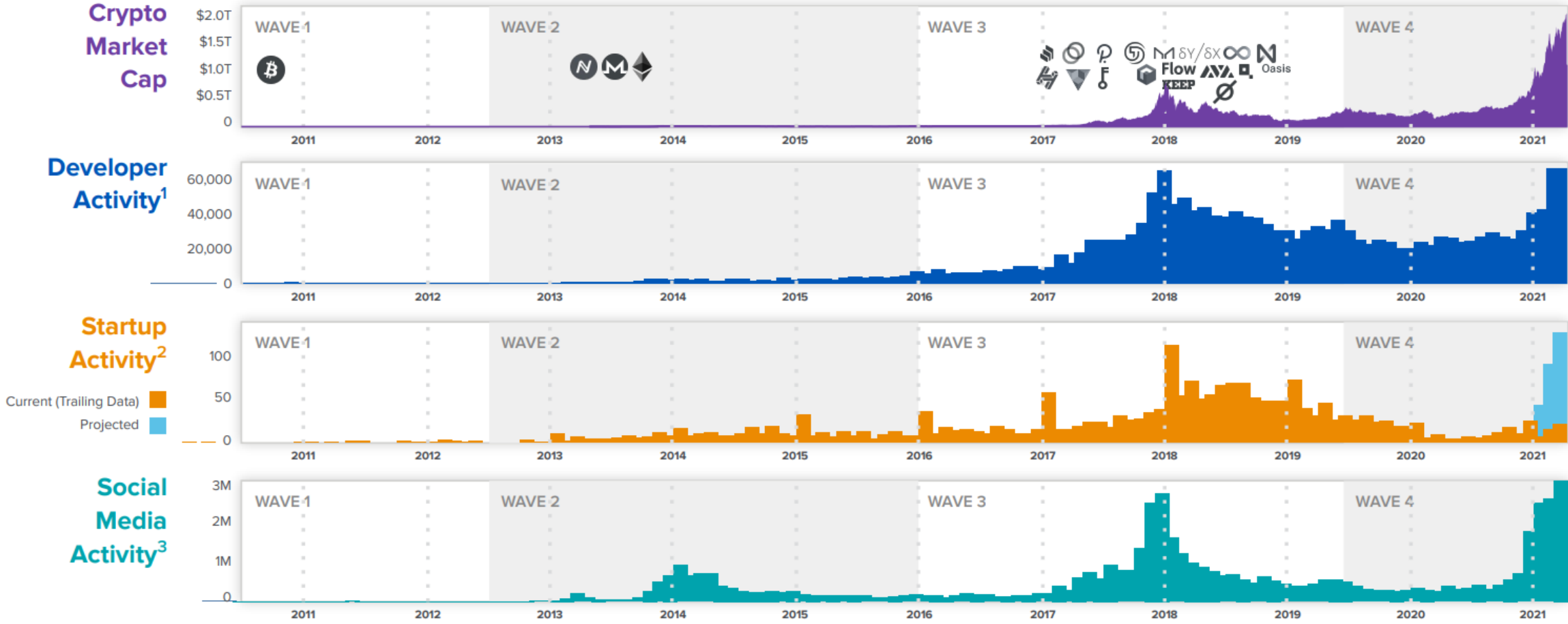
## Web2 Companies Vs. Web3 Protocols

Web3 protocols aiming to replace or compete with web2 companies



Data as of: Feb 2021  
Source: Messari

# Web3 is the natural transition of the initial blockchain and crypto investments, representing a more “resilient and participatory” web.



# The narrative says that this new internet of value will be better because it serves its users instead of the current tech monopolies.



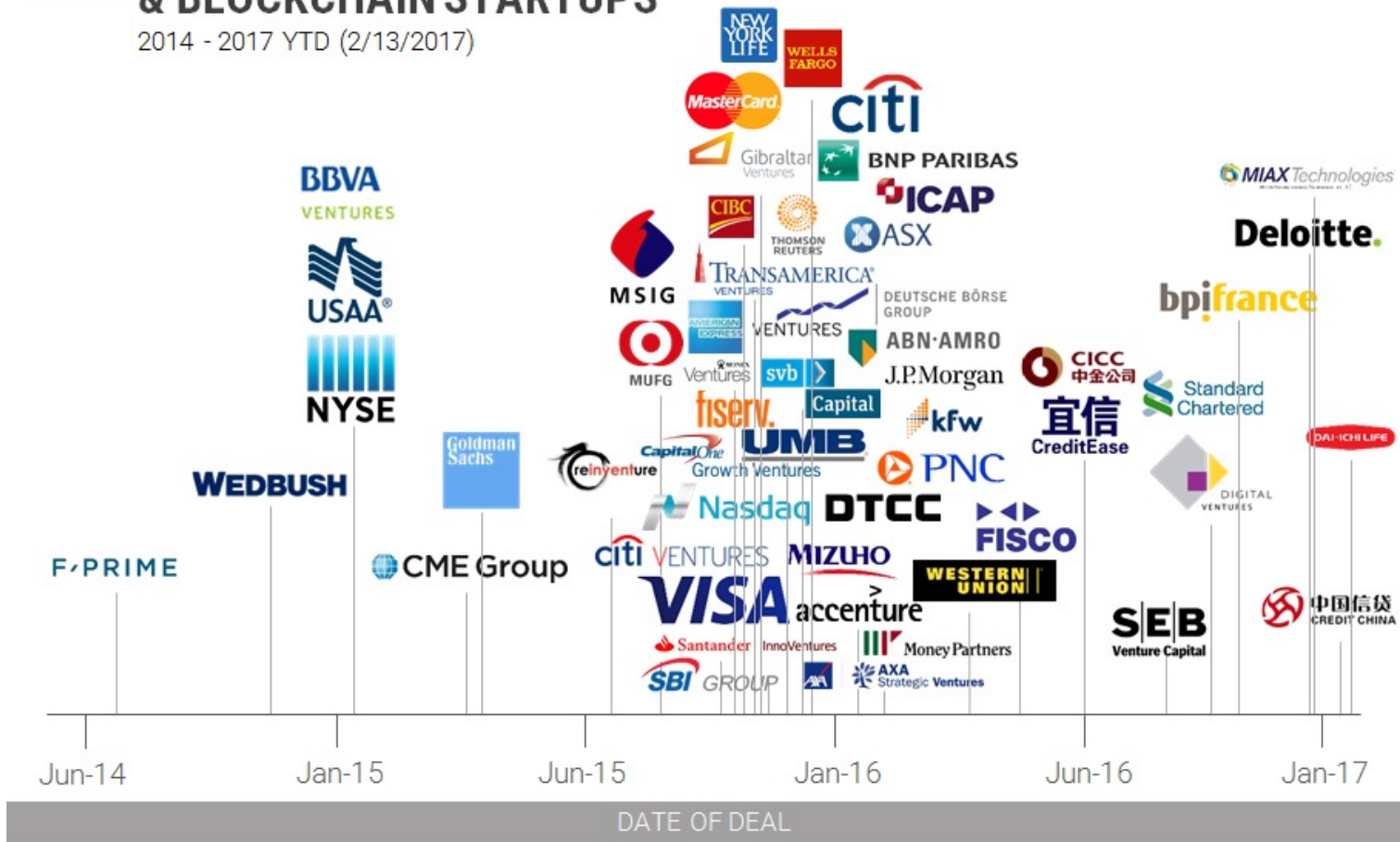
**Some additional background on institutional exposure to crypto.**

---

# Overall, we can see that traditional financial institutions initially started to adopt blockchain as a way to improve their trustworthiness.

## THE MARCH OF FINANCIAL SERVICES FIRMS INTO BITCOIN & BLOCKCHAIN STARTUPS

2014 - 2017 YTD (2/13/2017)

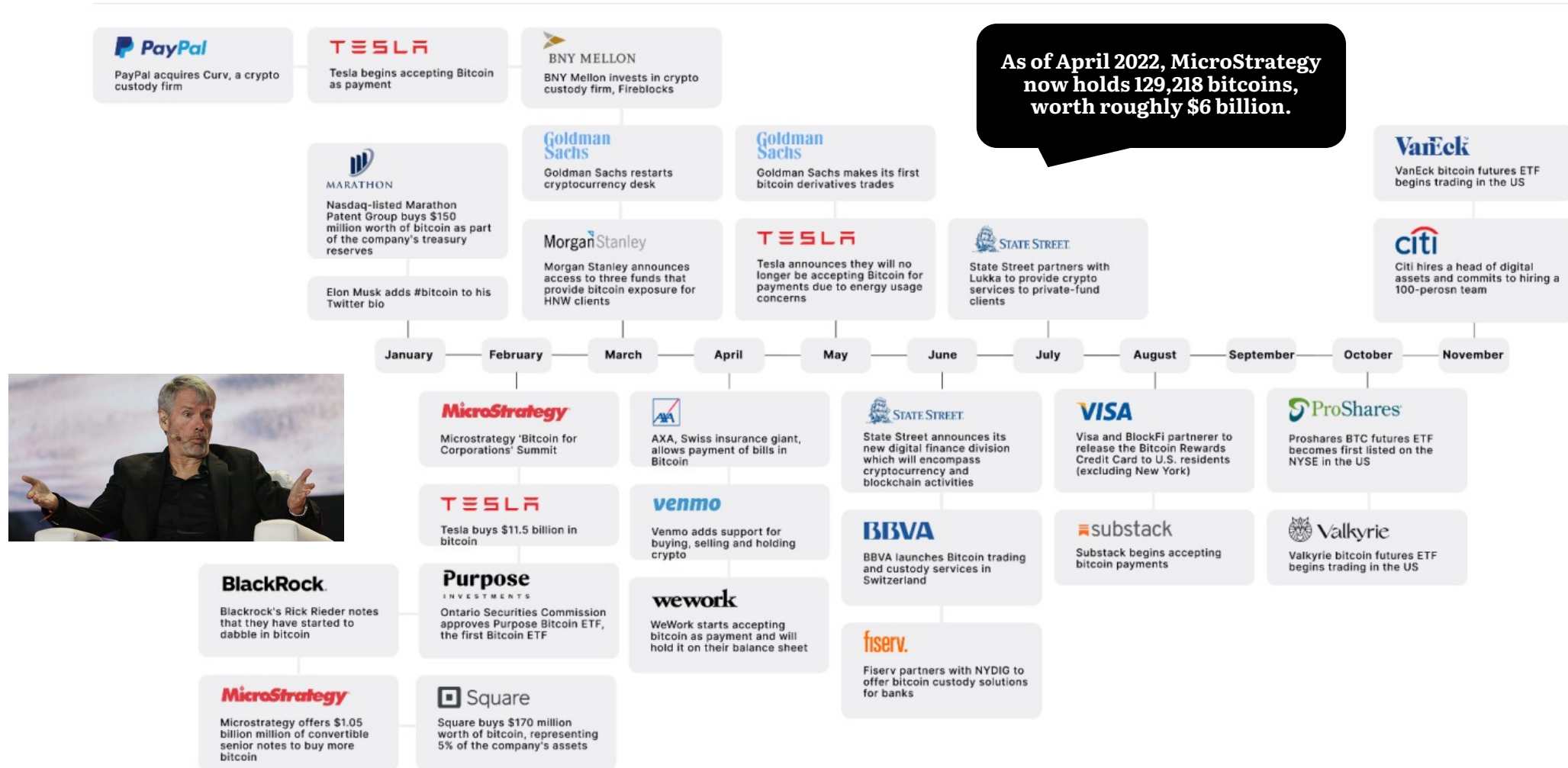


www.cbinsights.com

CBINSIGHTS

# 2021 marked an inflection point, with several institutional adoption highlights, from major tech companies to major banks and funds.

## 2021 INSTITUTIONAL ADOPTION TIMELINE



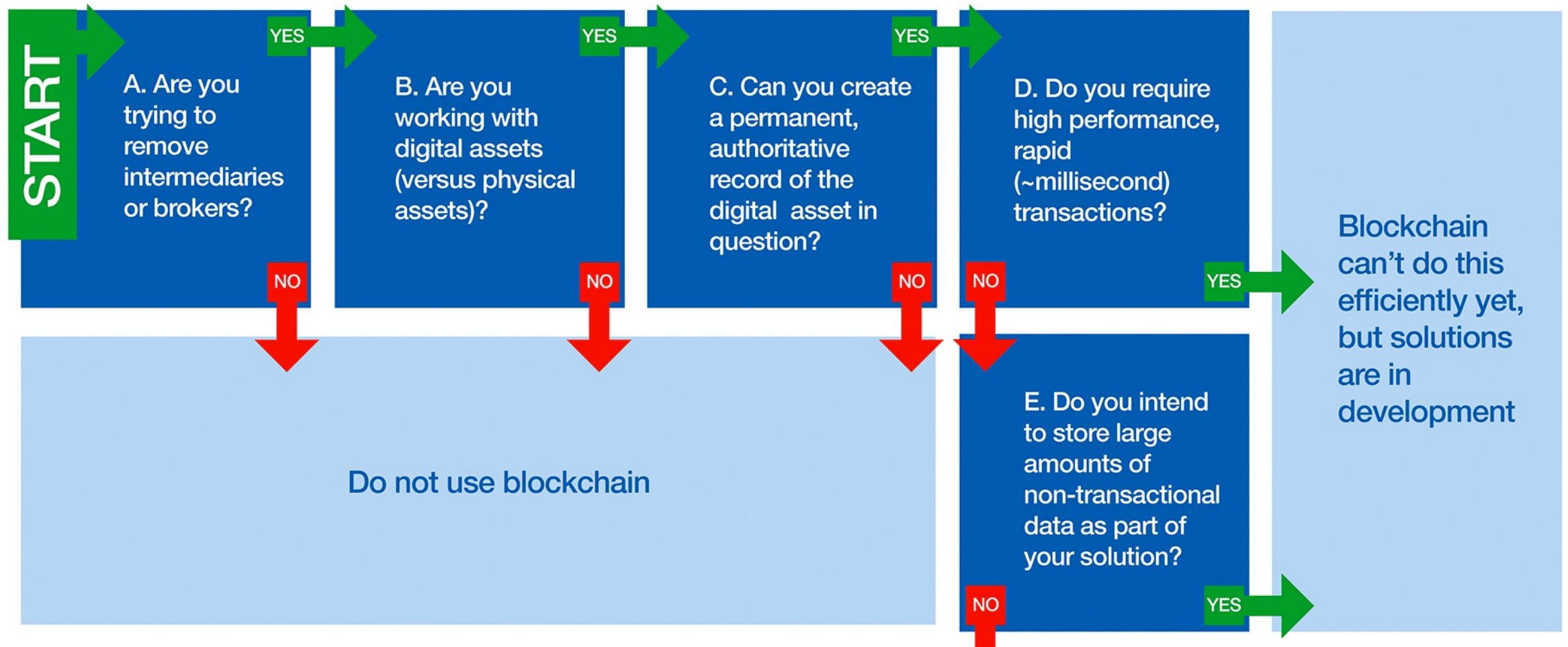


# Recently it became clear these institutions became interested in investing in cryptoassets, usually starting with bitcoin.

A small allocation to bitcoin has enhanced a 60/40 portfolio in recent years

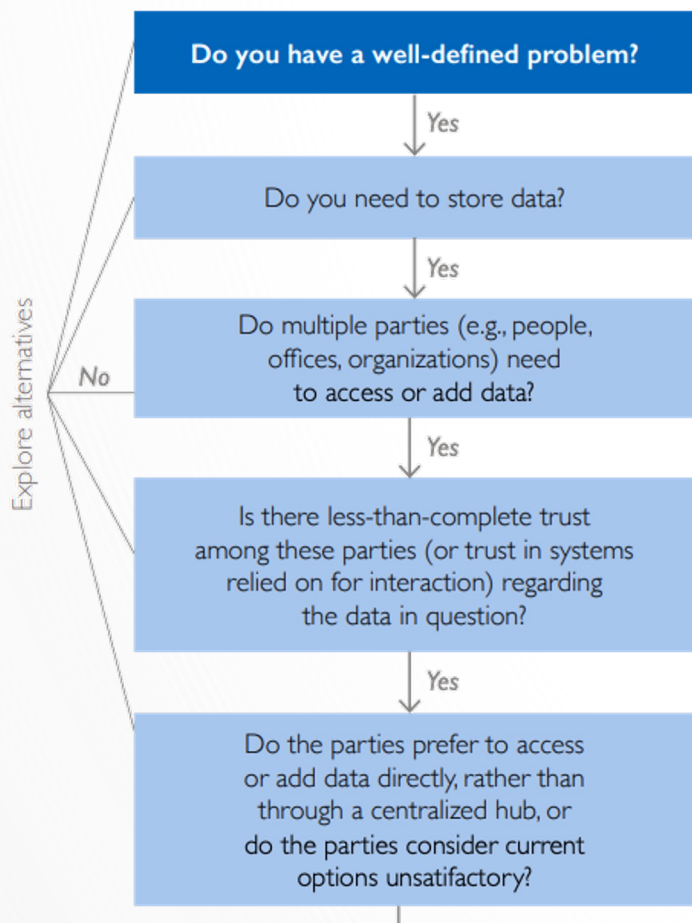
	S&P 500	US 10y bond	Bitcoin	60/40 portfolio	Allocation to bitcoin			
					+2.5%	+5%	+10%	+20%
<b>Since 2014</b>								
Return p.a.	14%	4%	79%	10%	12%	14%	19%	27%
Volatility (daily)	18%	6%	73%	10%	10%	10%	12%	18%
Volatility (monthly)	15%	6%	87%	8%	9%	10%	13%	20%
Return/volatility	0.77	0.60	1.08	1.03	1.24	1.39	1.53	1.53
5% CVaR	-10%	-3%	-35%	-5%	-6%	-6%	-7%	-10%
Max drawdown	-34%	-11%	-83%	-18%	-19%	-19%	-20%	-29%
<b>2014-2019</b>								
Return p.a.	12%	4%	46%	9%	11%	12%	15%	21%
Volatility (daily)	13%	6%	74%	7%	7%	8%	10%	16%
Volatility (monthly)	11%	6%	87%	6%	7%	8%	11%	19%
Return/volatility	0.92	0.66	0.62	1.26	1.46	1.56	1.53	1.31
5% CVaR	-7%	-3%	-35%	-4%	-4%	-4%	-5%	-8%
Max drawdown	-19%	-11%	-83%	-11%	-11%	-12%	-18%	-29%

# Still, institutions can't forget that blockchains are just databases, so one must learn how to separate the hyped wheat from the chaff.

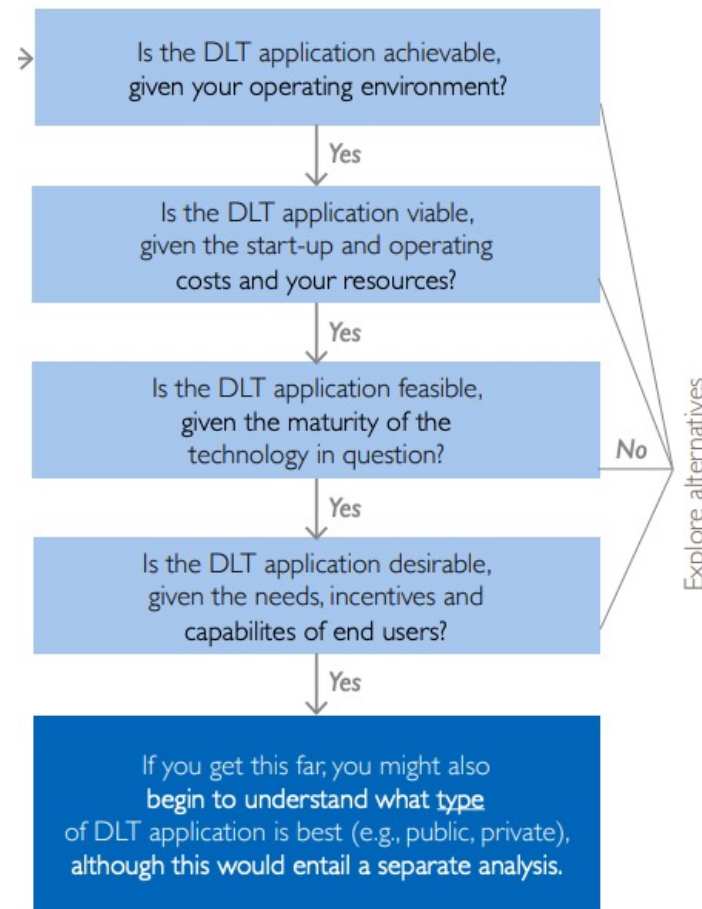


# To sum up, it's all about assessing the relevance and appropriateness of implementing a given blockchain to solve a particular problem.

## Is a blockchain relevant?



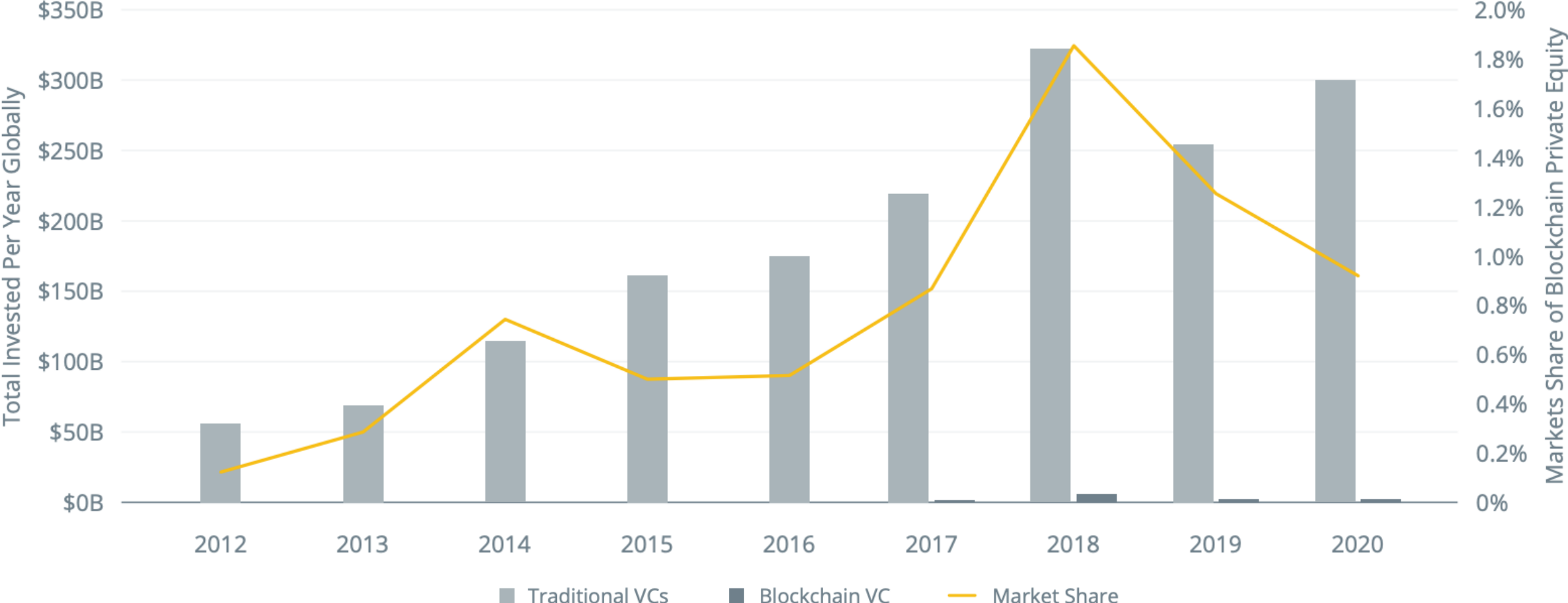
## Is a blockchain suitable?



# **Some additional background on VC investment in crypto.**

---

# The new digital economy is largely untapped by traditional VCs, currently accounting for just 1% of the global VC market cap.



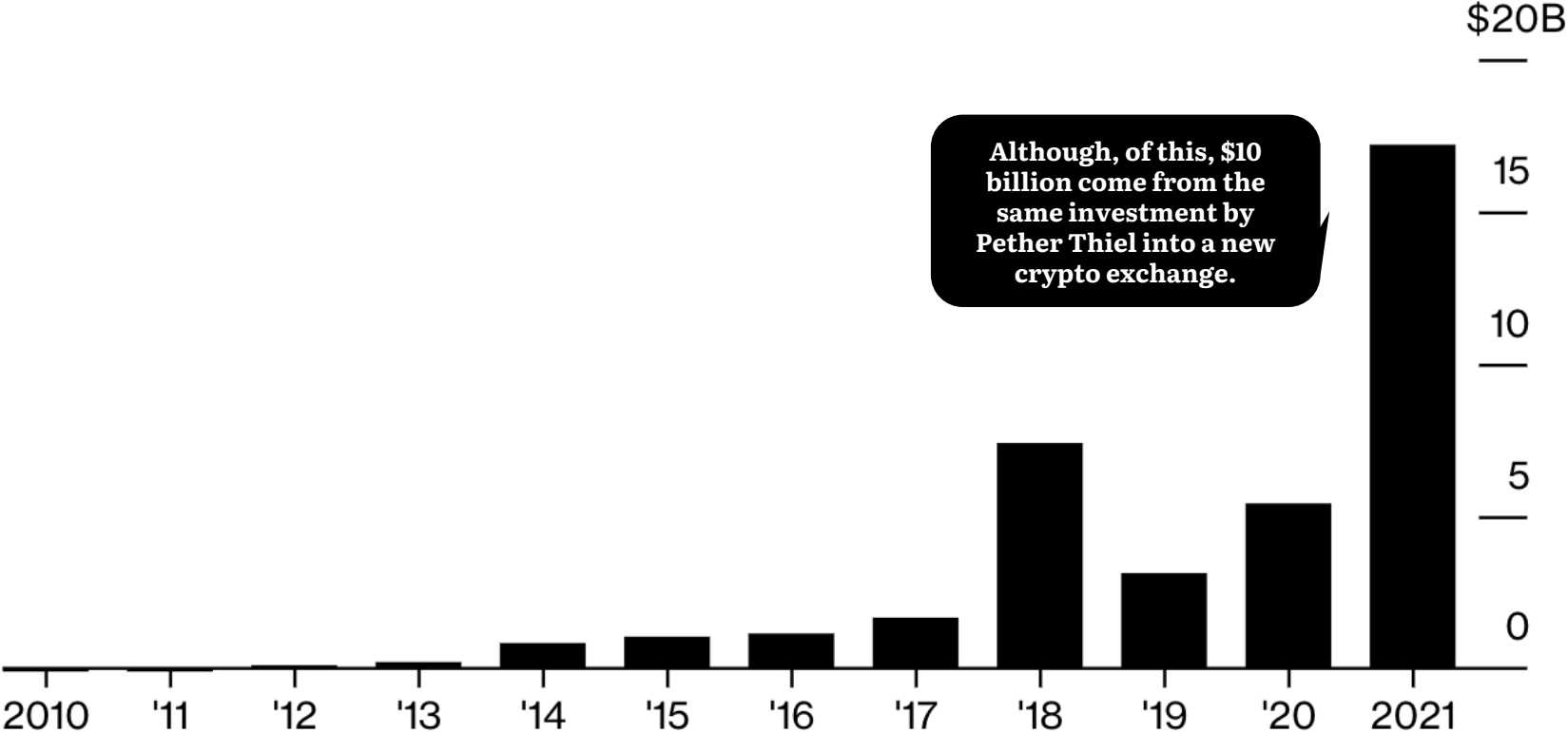
Source: Crunchbase News, Blockchain Capital, Cointelegraph Research

# Zooming in on crypto, 2021 saw higher VC investment into crypto than all previous years combined, with \$17 billion committed by June.

## Gold Rush

Venture capital has piled into crypto companies in 2021

■ Venture capital investments into crypto industry

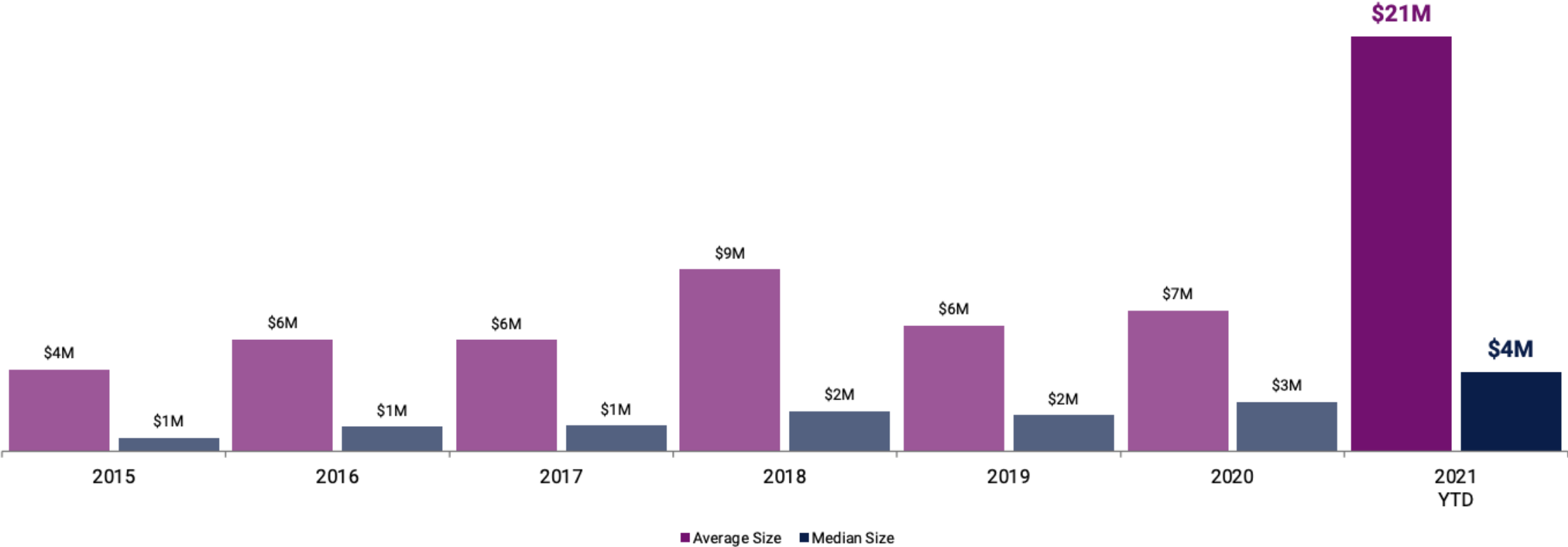


Although, of this, \$10 billion come from the same investment by Pether Thiel into a new crypto exchange.

# This new economy changed the rules of VC as one has to invest in protocols through tokens, instead of in companies through equity.

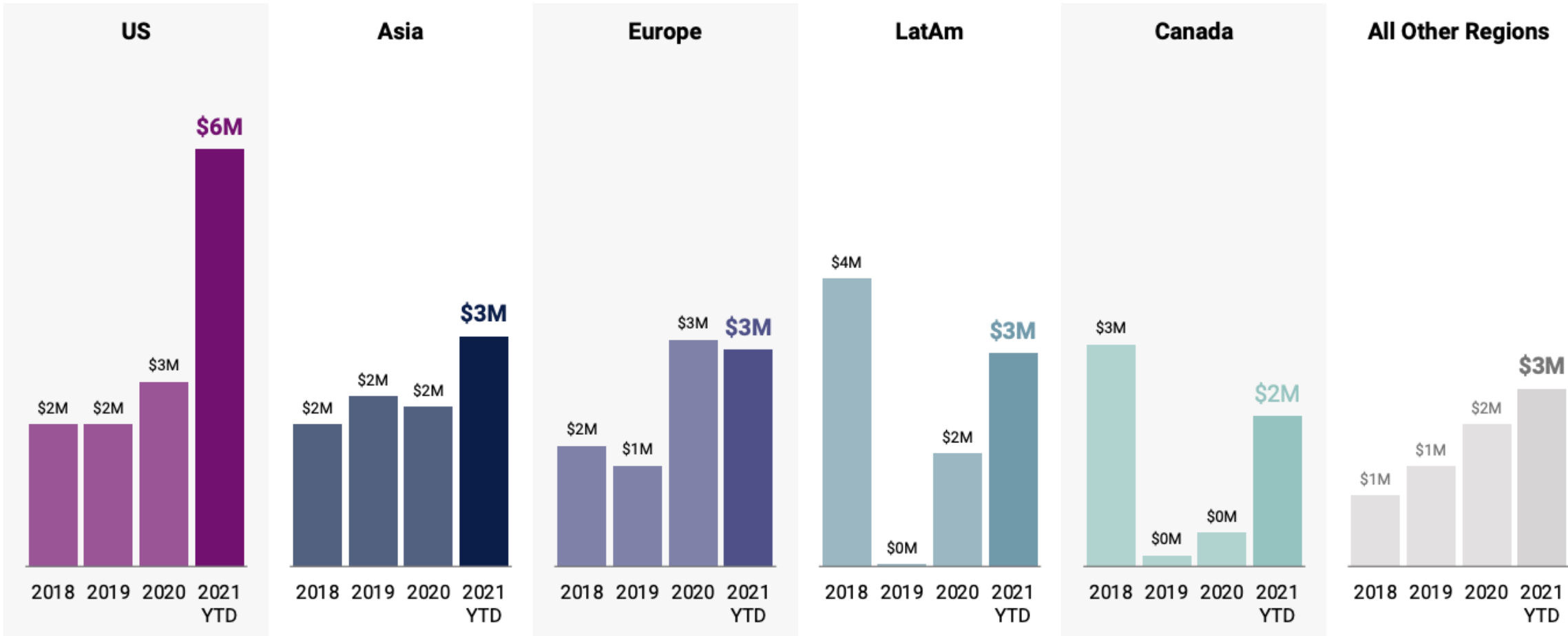


# Globally, the average blockchain investment round has reached \$21M, whereas the median round amounts to \$4M.

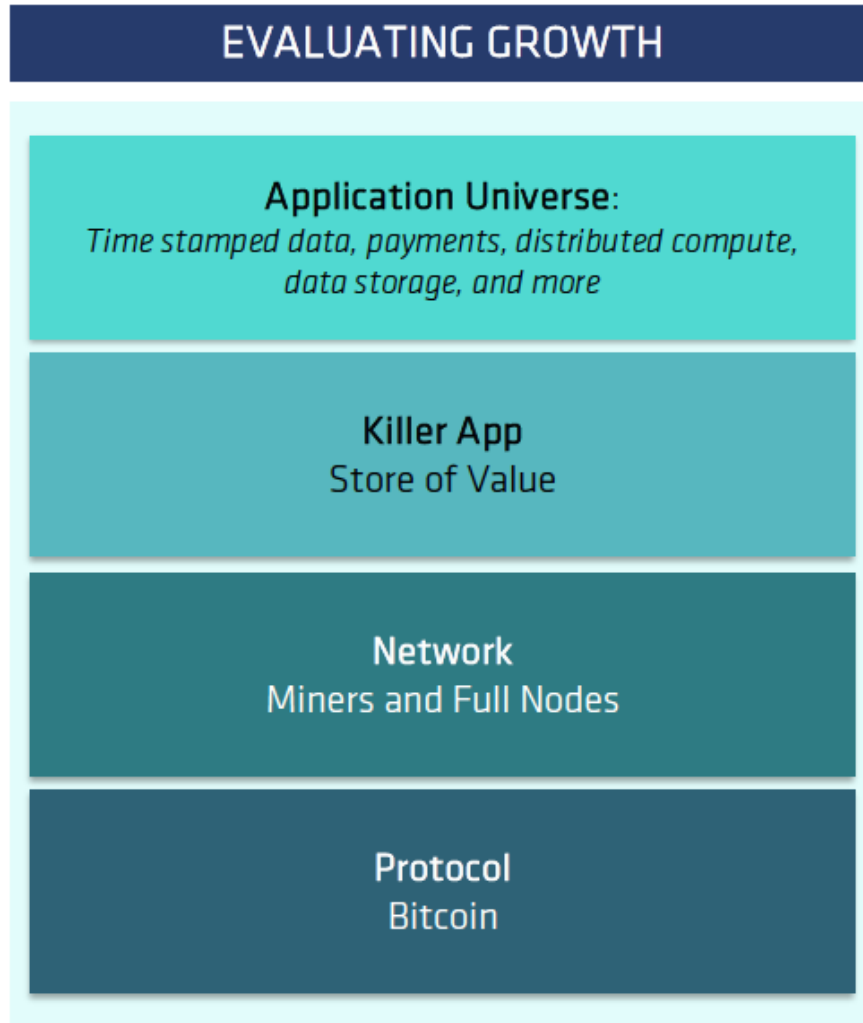




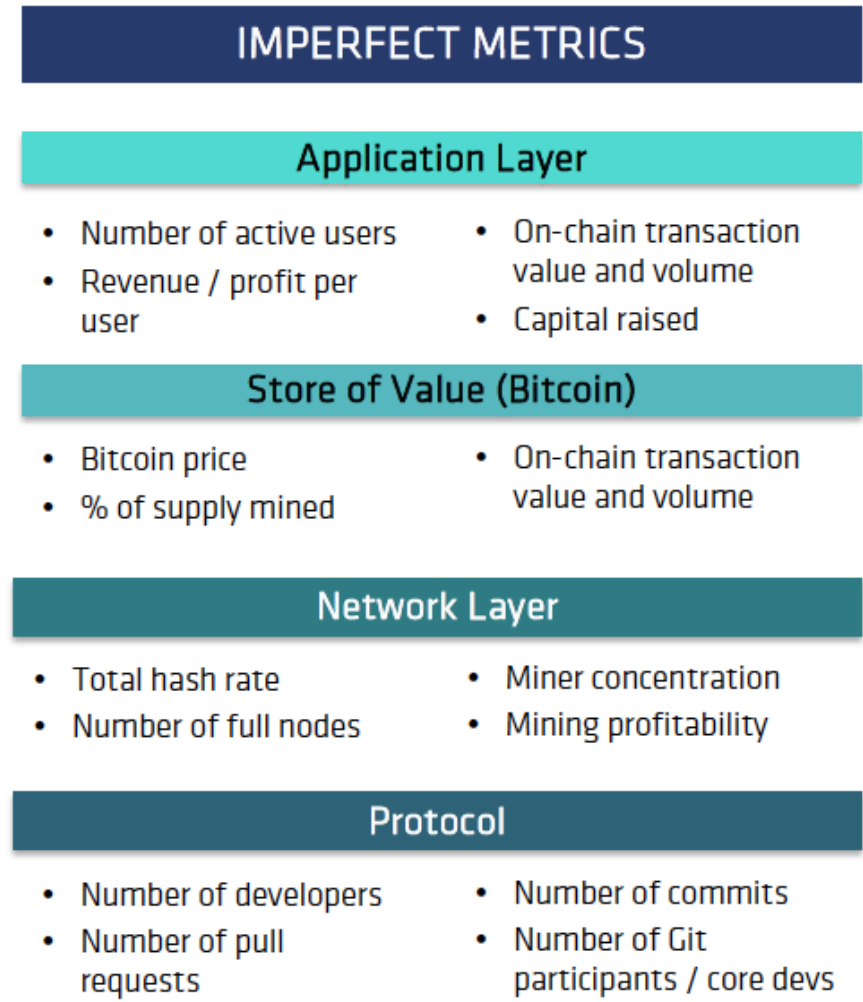
# In Europe, that median value falls to \$3M, as more deals happen on an early stage – roughly %78% of them.



# Investing in most cryptoassets is very much like VC investing, as few projects have traditional cash flows. But there are metrics and data.



**This framework can be used with any major cryptoasset.**



**Let us know if you have any additional question.**

---