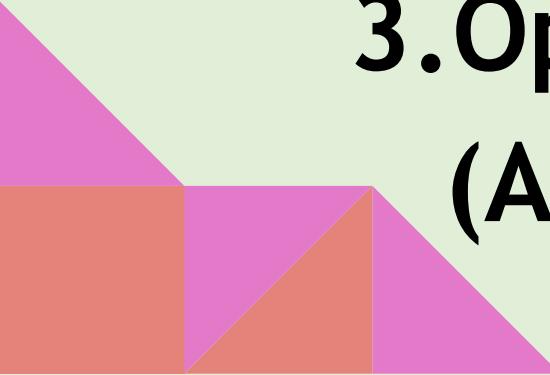


Introduction to Blockchain and Cryptocurrency

1. Emergence of Blockchain in the Financial World
2. Decentralized Applications
3. Open Application Programme interface (API)





Mr. Alex Hung, MH
Chairman
會長 洪文正先生，MH

CEO, Crossover international
Founding Chairman, Hong Kong New Emerging Technology Education Association
Past Court member, HKU
Convenor, Marketing and Promotion committee, HKICT Awards
Vice chairman, HKICT Award : Fintech award
Member of Central committee, Junior Police Call

華豐正凌國際有限公司董事總經理
香港新興科技教育協會創會會長
香港大學前校董
香港資訊及通訊科技獎市場推廣小組委員會召集人
香港資訊及通訊科技獎：金融科技獎副主席
少年警訊中央諮詢委員

Alex Hung, MH is a distinguished figure in the fintech and artificial intelligence (AI) sectors, renowned for his innovative contributions and leadership in Hong Kong's dynamic financial technology landscape. With over three decades of experience in technology, finance, and entrepreneurship, Alex has established himself as a visionary in leveraging AI to transform financial services.

Alex holds a degree in Computer Science of HKU and an MBA/Msc(ISM) from HKUST, which laid the foundation for his expertise in both technical and business domains. He began his career in software development, quickly transitioning into fintech, where he recognized the potential of AI to revolutionize traditional banking, investment, and payment systems. Over the years, he has held senior roles at tech startups, driving digital transformation and fostering innovation.

Alex played a pivotal role in developing AI-powered solutions for risk management, fraud detection, and personalized financial services. His work has not only enhanced operational efficiency but also improved customer experiences, setting new benchmarks in the industry.

Alex is also a passionate advocate for the ethical use of AI in finance. He actively participates in industry forums, sharing insights on balancing innovation with regulatory compliance and data privacy. His thought leadership has made him a sought-after speaker at international conferences, where he discusses the future of fintech and the transformative potential of AI.

In addition to his professional achievements, Alex is deeply committed to nurturing the next generation of fintech talent. He frequently mentors startups and collaborates with academic institutions, including the University of Hong Kong (HKU), to bridge the gap between academia and industry.

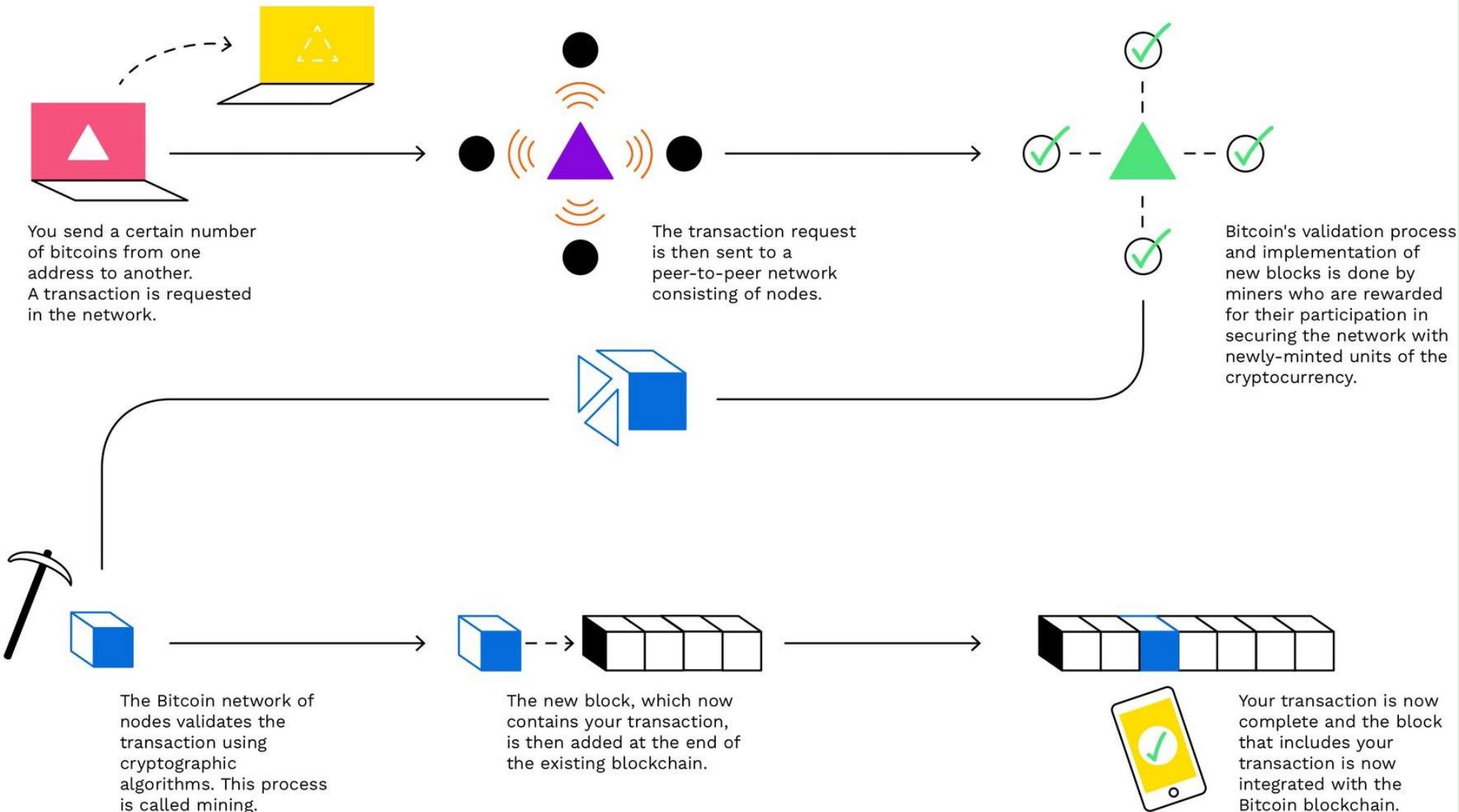
Alex Hung's journey is a testament to the power of innovation and perseverance, inspiring aspiring technologists and entrepreneurs to push the boundaries of what is possible in the ever-evolving world of fintech.

Emergence of Blockchain in the Financial World - Influence on the Global Banking System

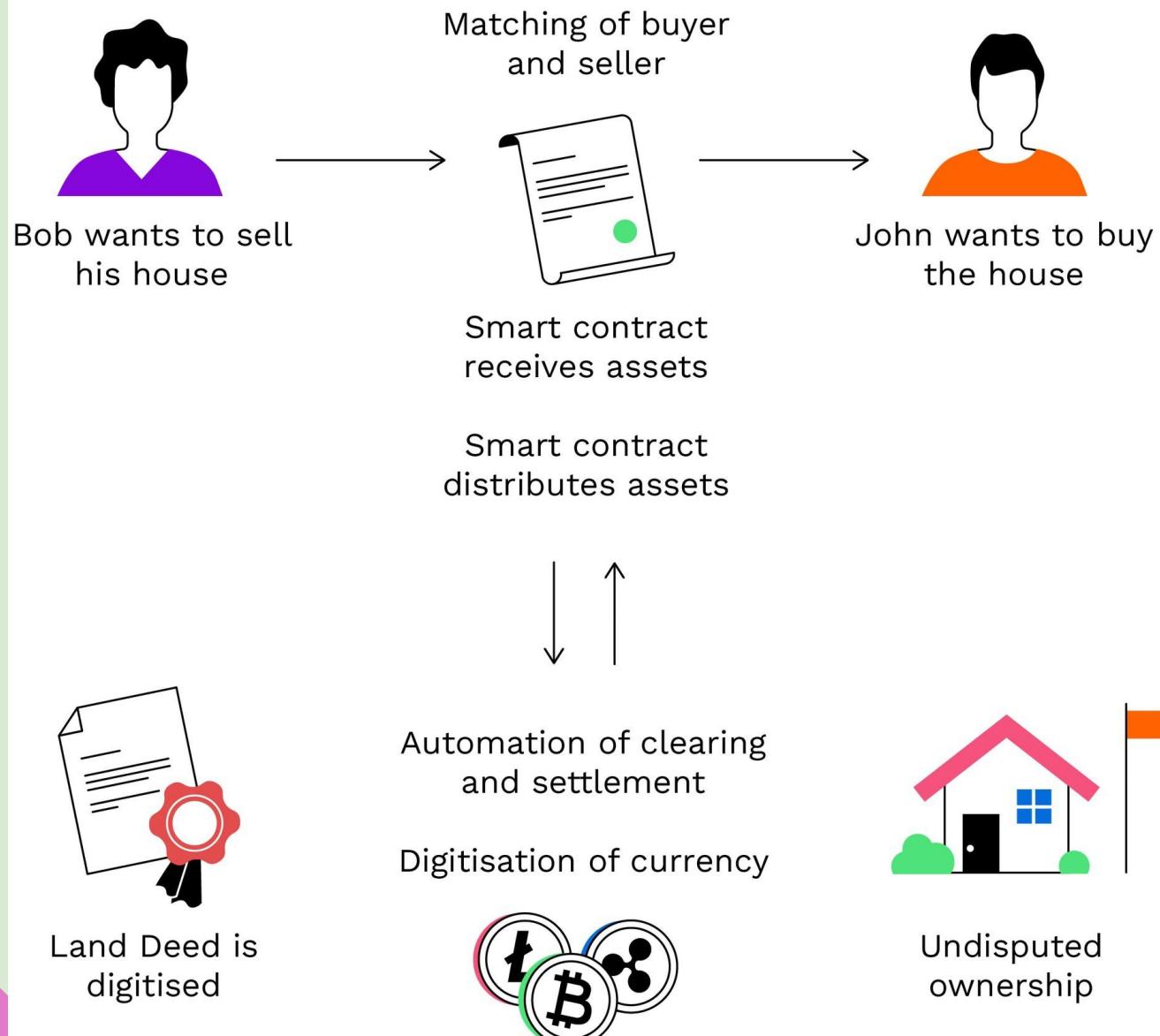


What is a Blockchain

and how does it work?



How a smart contract works



Benefits of Smart Contracts

Smart Contracts are Awesome!

Autonomy

You're the one making the agreement; there's no need to rely on a broker or lawyer

1



2

Trust

Your documents are encrypted on a shared ledger

Backup

On the blockchain, Your documents are duplicated many times over

3



4

Savings

Smart contracts save you money since they knock out the presence of an intermediary

5



Accuracy

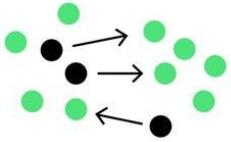
Smart contracts are not only faster and cheaper but also avoid the errors that come from manually filling out heaps of forms.

Cryptocurrencies vs Fiat Money

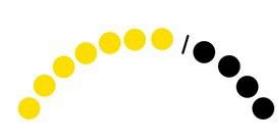
The Difference between



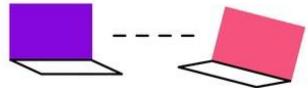
Bitcoin



... is a currency created by decentralised, distributed computing



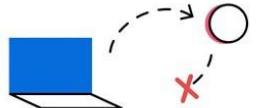
... is governed by majority rule (network consensus)



... transactions only involve two parties - no intermediary required



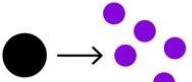
... depending on network speed, transactions take minutes



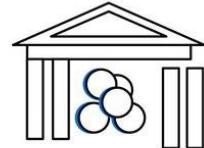
... no chargeback is possible after a transaction has been made



Fiat Money



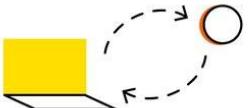
... is a currency issued by a government



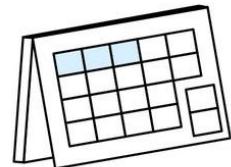
... is governed by a central bank



... an intermediary such as a bank or payment provider is needed for a transaction



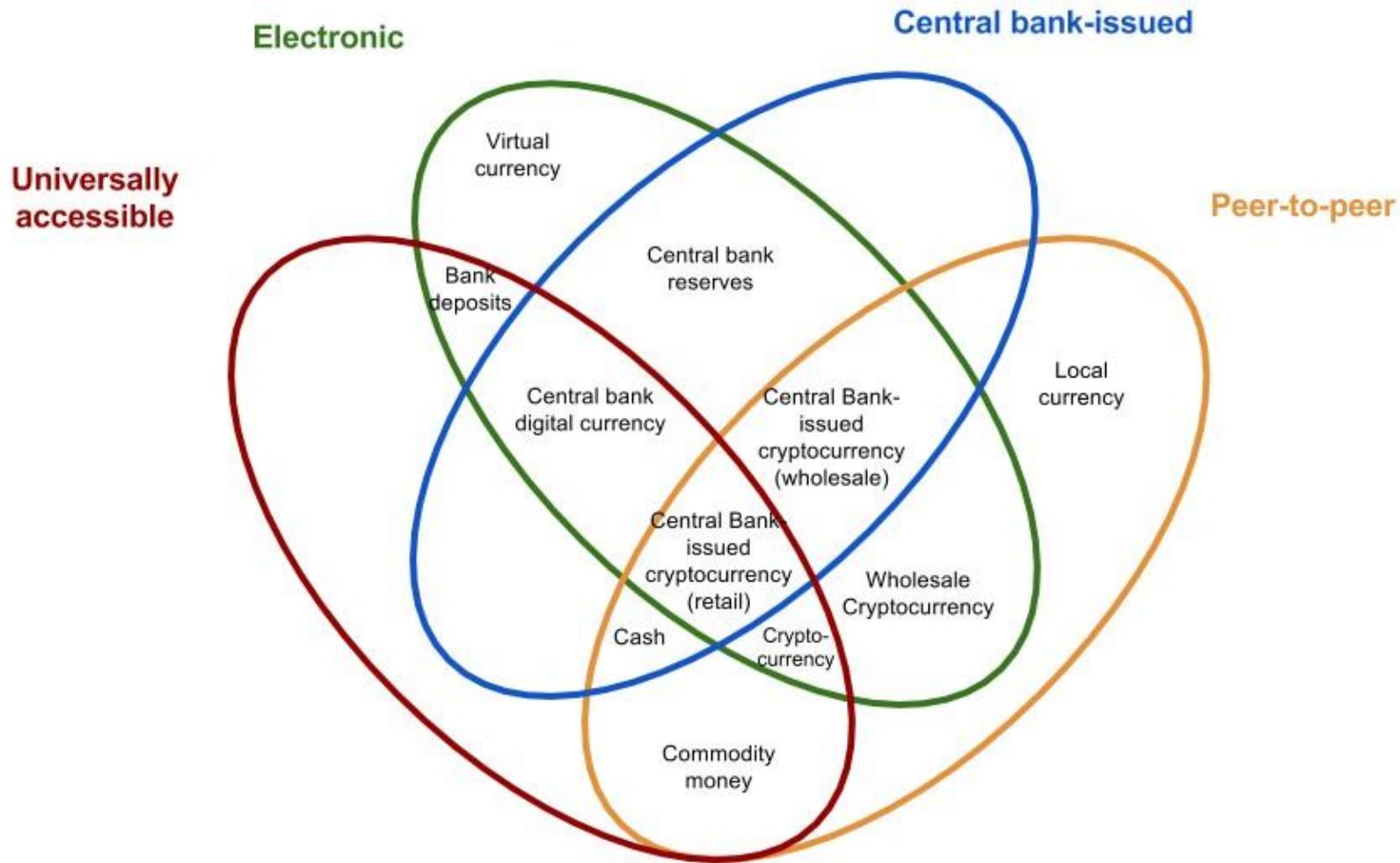
... a chargeback is possible after a transaction has been made



... local and international transactions may take days

Four Aspects of Money

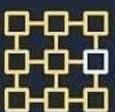
The money flower: a taxonomy of money



How is bitcoin mined?



HOW BITCOIN MINING WORKS:



1101001001
110010010
001010100
1101110111
1100010011



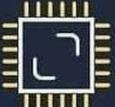
Bitcoins are mined from blocks.
Each block is part of the blockchain
(a ledger of all the transactions made
using Bitcoin).

Blocks are where the complex
mathematical code is stored

To mine Bitcoin users
have to make a new block.



This can be a process of trial
and error until miners find a
hash which works.



Users must then solve the
mathematical problem, known
as a Proof of Work problem,
using their computer CPU to
run the problem solving
software.

Each one is now worth 25 Bitcoins.
It was previously 50 Bitcoins but the
figure is halved every four years to
reduce the rate at which they are
mined.

Once the problem has been solved
the Bitcoins are transferred to the
miner's unique address.



They can then make transfers using
Bitcoin via their Bitcoin wallet.

Benefits of Cryptocurrency



Cryptocurrency opens the door for
revolutionary technological possibilities!



Irreversible



Pseudonymous



Fast and Global

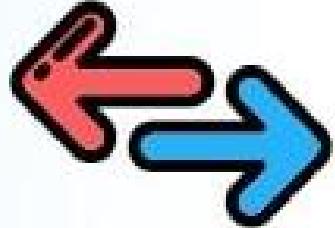


Secure



Permissionless

Benefits of Cryptocurrency



Irreversible

After confirmation, a transaction can't be reversed. At all. Once money is sent, it's sent. If you accidentally send money to a scammer, there's no recourse or safety net for you. The network is immutable, and unforgiving. But that property is also what makes crypto so secure. No centralized body or government can decide what you can and can't spend money on. Once it's spent, it's spent.



Pseudonymous

Any accounts and transactions are not connected to a real world identity. Bitcoin is sent to 30 character addresses that consist of various letters and numbers. Through intensive analysis, it can be possible to track certain addresses activities in relation to each other, but your Bitcoin address should have no real world ties to your identity.



Fast and Global

Transactions can be propagated nearly instantly and confirmed within a couple of minutes. Since a decentralized network has nodes across the world, transactions are indifferent to your physical location and are always routed through the optimal node. It doesn't matter if you're sending Bitcoin next door or across the world, the transaction time is the same!

Benefits of Cryptocurrency



Secure

Cryptocurrencies are locked by public key cryptography. Only the owner of the private key attached to the funds can send them. Very complicated mathematics makes this scheme impossible to crack, at least within several human lifetimes.

There are more public and private key pairs in the Bitcoin network than there are stars in the Andromeda Galaxy. It would take an unbelievable amount of time to crack any specific one.

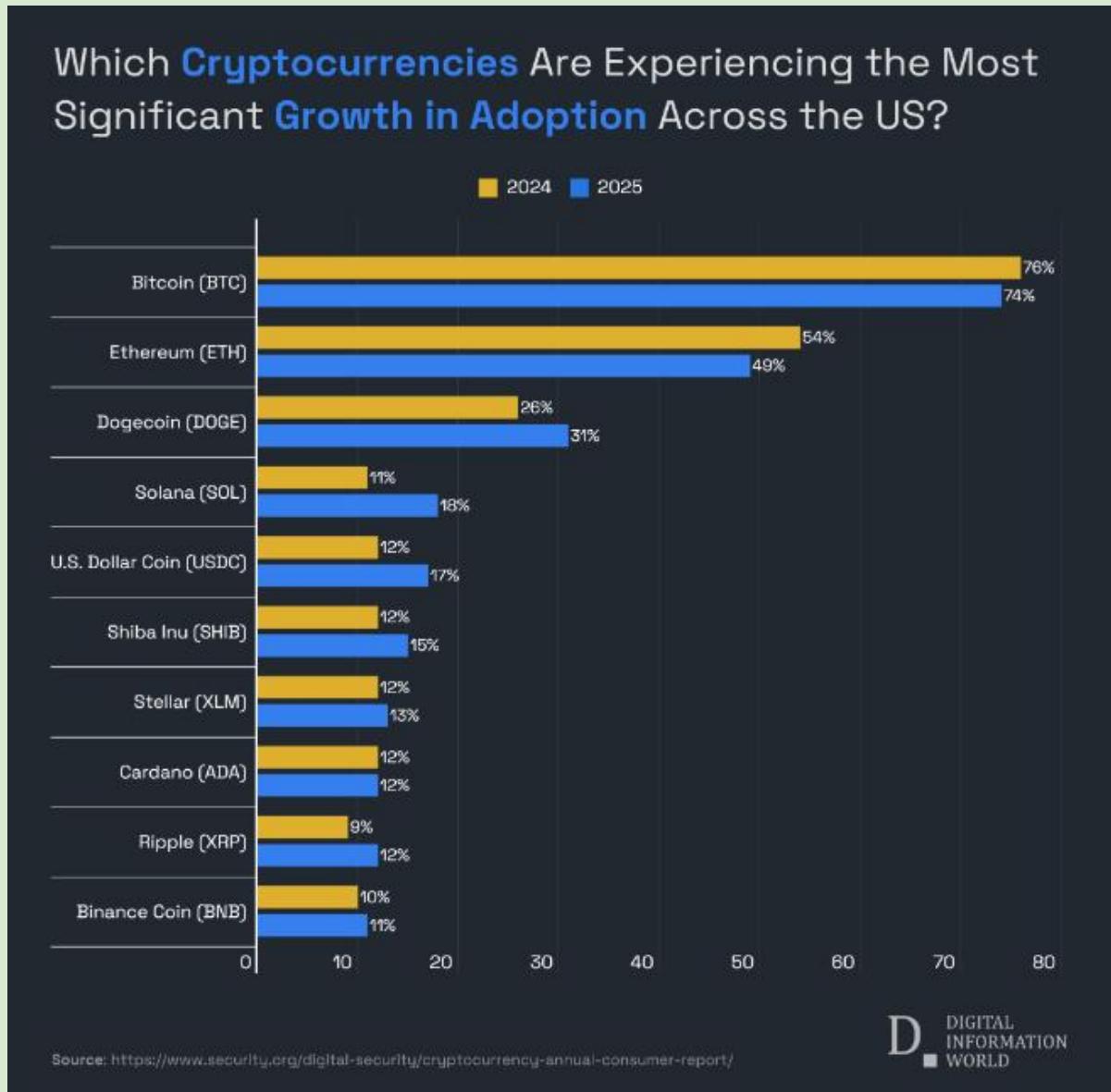


Permissionless

You don't have to ask anyone to use cryptocurrency. The network is incapable of discrimination. All you need to do is download the software for free! After it's installed, you can send and receive Bitcoins as much or as little as you like!

You can even run a node that allows you to actively participate in the confirmation of transactions!

What are the hottest cryptocurrencies?



<https://www.digitalinformationworld.com/2025/01/which-cryptocurrencies-are-americans.html>

What are the hottest cryptocurrencies?

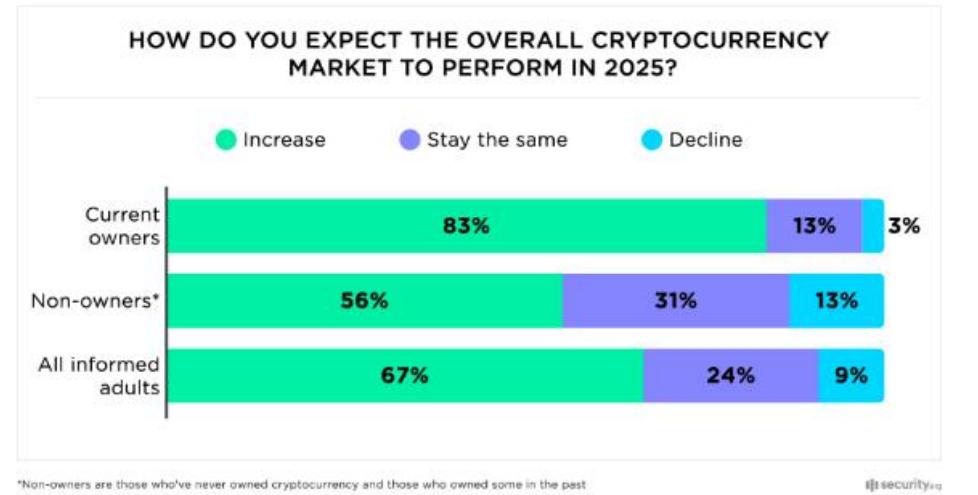
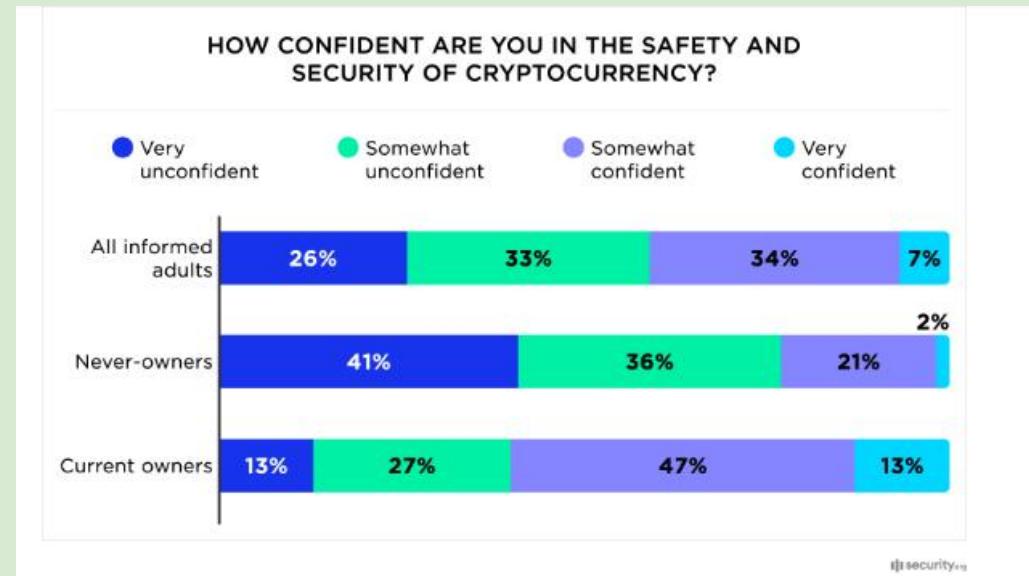


Hotcoin

TOP 10 Cryptocurrencies Price Since All Time High (ATH)

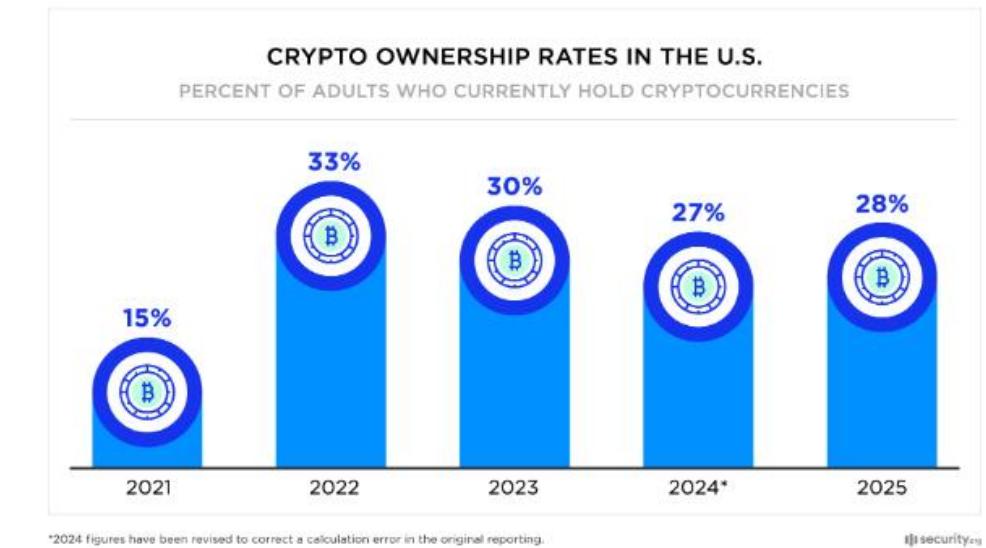
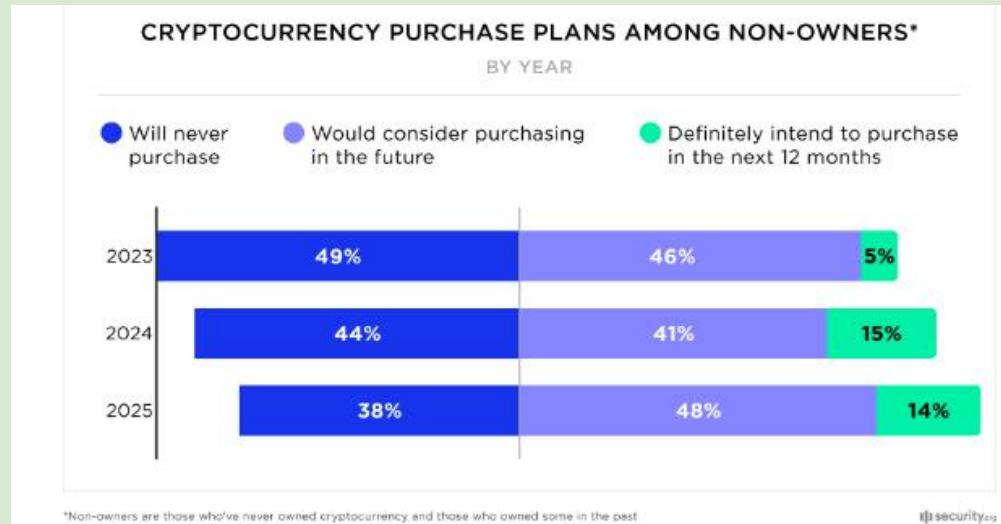
Token	Price	ATH Price	% from ATH	ATH Date
Bitcoin	\$97,898.64	\$108,786	-10% ▼	Jan 20, 2025
Ethereum	\$2766.66	\$4878.26	-43.3% ▼	Nov 10, 2021
XRP	\$2.52	\$3.40	-25.9% ▼	Jan 07, 2018
SOL	\$205.58	\$293.31	-29.8% ▼	Jan 19, 2025
BNB	\$574.07	\$788.84	-27.2% ▼	Dec 04, 2024
DOGE	\$0.2659	\$0.7316	-63.6% ▼	May 08, 2021
ADA	\$0.7521	\$3.09	-75.6% ▼	Sep 02, 2021
TRX	\$0.2255	\$0.4313	-47.8% ▼	Dec 04, 2024
LINK	\$19.70	\$52.70	-62.6% ▼	May 10, 2021
SUI	\$3.59	\$5.35	-32.7% ▼	Jan 04, 2025

Public sentiment on cryptocurrencies



<https://www.digit alinformationwor ld.com/2025/01/ which-cryptocurrencies -are- americans.html>

Public sentiment on cryptocurrencies

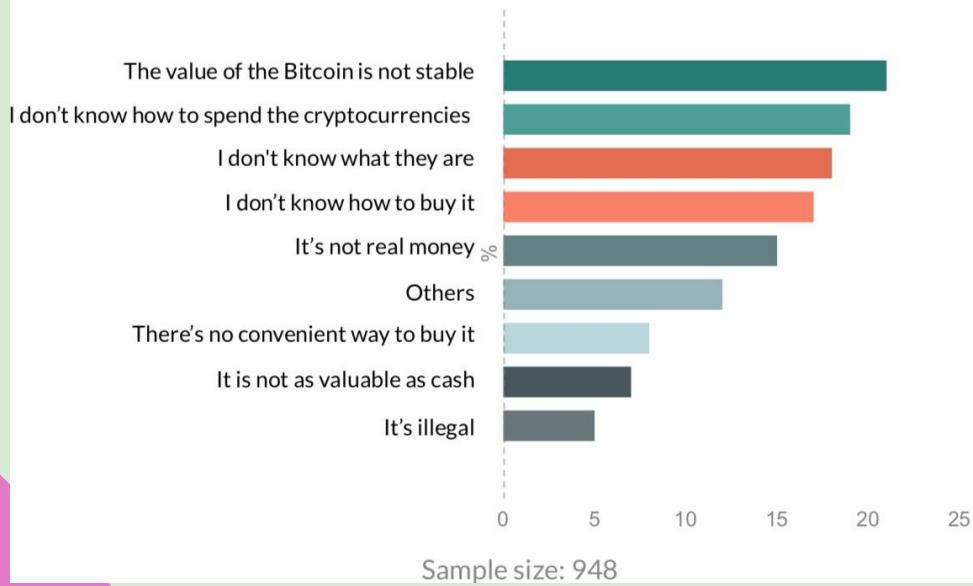


Public sentiment on cryptocurrencies



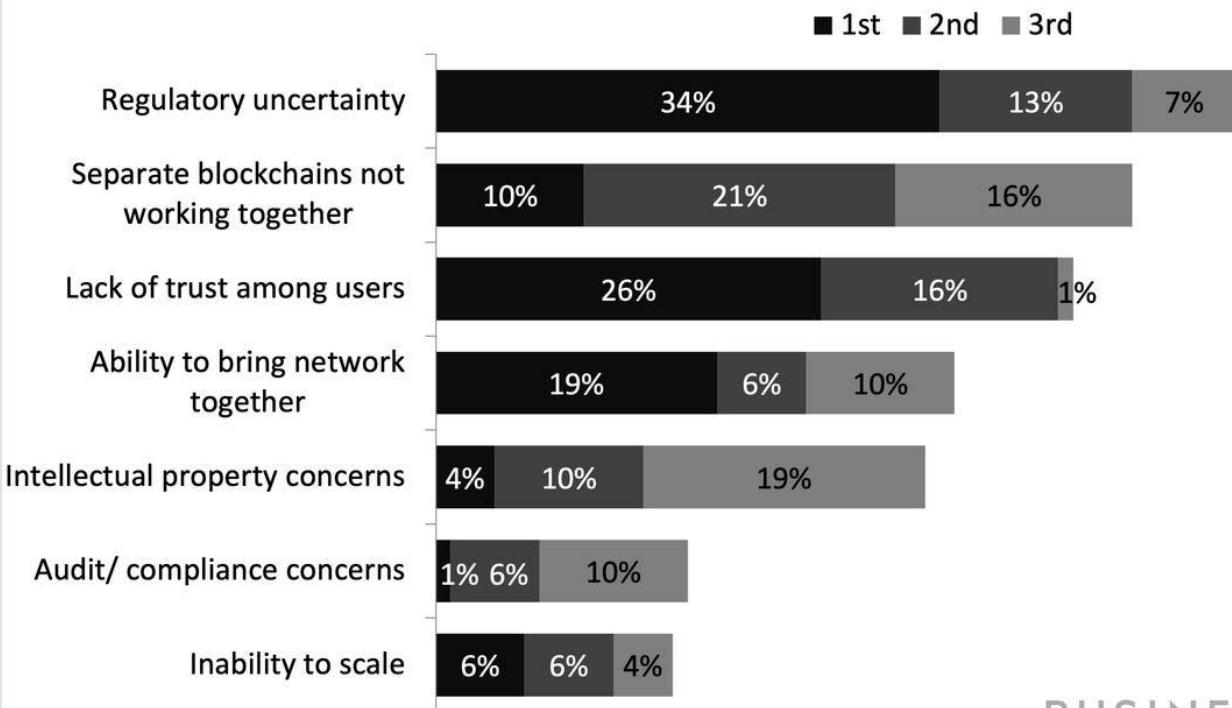
Challenges of buying cryptocurrency

- What are the reasons that you don't purchase/own Bitcoin/other cryptocurrencies? (Please select all that apply)



Global Finance Execs' View Of Blockchain Challenges

Q: Which of the following will be the biggest barriers to blockchain adoption in your industry in the next three to five years



Source: PwC Global Blockchain Survey, n=70, 2018

Cryptocurrencies Regulations by Country

In terms of regulation, numerous countries/regions have:



	<p>Initiated a licence and registration regime for major crypto-asset intermediaries such as crypto exchanges and custodians</p> <p>Country examples:*</p>		<p>Deliberated fiat-backed stablecoin regulation, especially with respect to defining reserve requirements as well as clarity in redemption rights</p> <p>Country examples:*</p>
--	---	--	---

	<p>Mandated or are in the process of mandating regulations on AML/KYC being coordinated by way of FATF's Travel Rule</p> <p>Country examples:*</p>		<p>Reflected on the most appropriate ways to ensure consumer and investor protection (through restricting access or requiring firms to implement "positive friction", mandating disclosures and increasing oversight over institutional participants)</p> <p>Country examples:*</p>
--	---	--	--

	<p>Developed guidance and/or approval regimes for the marketing and promotion of crypto-assets</p> <p>Country examples:*</p>		<p>Conducted consultations on decentralized activities such as DeFi and DAOs</p> <p>Country examples:*</p>
--	---	--	---

<https://www.weforum.org/stories/2025/01/cryptocurrency-regulations-era-experts-digital-finance/>

Cryptocurrencies Regulations by Country

The countries with the tightest cryptocurrency regulations



Key

- 📍 Country
- ↗ Legal to own
- 💻 License/registration required for crypto businesses
- 🌐 Central Bank Currency Project
- ⚖️ Taxed as an asset/currency
- 🛍️ Used to purchase goods
- 🏆 Crypto regulation score /5



1

	Australia	✓	✓	✓	✓	✓	5
1	South Korea	✓	✓	✓	✓	✓	5
	United Kingdom	✓	✓	✓	✓	✓	5
	United States	✓	✓	✓	✓	✓	5
	Denmark	✓	✓	✓	✓	✓	5
	Japan	✓	✓	✓	✓	✓	5
	Norway	✓	✓	✓	✓	✓	5
	Canada	✓	✓	✓	✓	✓	5

1. Australia, South Korea, United Kingdom, United States, Denmark, Japan, Norway

Crypto regulation Score: 5/5

Seven OECD countries achieved a perfect score for the categories we looked at, with all of them legalising the ownership of crypto, requiring a licence for crypto business, taxing crypto as an asset, and being widely used to purchase goods. Their central banks are also developing their own digital currencies too, protecting investors by offering less volatile alternatives to traditional cryptocurrencies.

Cryptocurrencies Regulations by Country

Country	Regulation 1	Regulation 2	Regulation 3	Regulation 4	Regulation 5	Score
Chile	✓	✗	✓	✓	✓	4
Sweden	✓	✗	✓	✓	✓	4
Turkey	✓	✓	✓	✗	✓	4
Austria	✓	✓	✗	✓	✓	4
Colombia	✓	✓	✗	✓	✓	4
France	✓	✓	✗	✓	✓	4
Germany	✓	✓	✗	✓	✓	4
Greece	✓	✓	✗	✓	✓	4
Israel	✓	✓	✗	✓	✓	4
Netherlands	✓	✓	✗	✓	✓	4
Spain	✓	✓	✗	✓	✓	4
Belgium	✓	✓	✗	✓	✓	4
Czech Republic	✓	✓	✗	✓	✓	4
Estonia	✓	✓	✗	✓	✓	4
Finland	✓	✓	✗	✓	✓	4
Ireland	✓	✓	✗	✓	✓	4
Italy	✓	✓	✗	✓	✓	4
Lithuania	✓	✓	✗	✓	✓	4
New Zealand	✓	✓	✗	✓	✓	4
Poland	✓	✓	✗	✓	✓	4

2. Chile, Sweden, Turkey, Mexico, Austria, Canada, Colombia, France, Germany, Greece, Israel, Netherlands, Spain, Belgium, Czech Republic, Estonia, Finland, Ireland, Italy, Lithuania, New Zealand, Poland

Crypto regulation Score: 4/5

21 OECD countries share a score of four out of five for their cryptocurrency regulations, with the majority losing out on the top spot thanks to their central banks not developing their own digital currencies.

Turkey's attitude to cryptocurrencies is the most mixed in this list, whilst ownership is not illegal, there is no supervisory or regulatory authority dealing with cryptocurrencies. To combat this, the government has demanded the details of trading platform users to protect them from being defrauded.

Cryptocurrencies Regulations by Country



Mexico	✓	✗	✓	✗	✓	3
Latvia	✓	✗	✗	✓	✓	3
Portugal	✓	✓	✗	✗	✓	3
Hungary	✓	✗	✗	✓	✓	3
Switzerland	✓	✓	✗	✗	✓	3

3. Mexico, Latvia, Portugal, Hungary, Switzerland

Crypto regulation Score: 3/5

Four countries share third place, all scoring three out of five for their crypto regulations. The majority of these nations don't require crypto businesses to register with the government or qualify for a licence, and this lack of governmental oversight could harm potential investors.

The biggest crypto scams of 2021-2022

1

Africrypt



AFRICRYPT

2

Bitconnect



3

Thodex



THODEX

\$3.6 billion stolen

\$2.4 billion stolen

\$2.0 billion stolen

Cryptocurrencies Regulations by Country



1. Africrypt – **\$3.6 billion stolen**

Taking the top spot as the biggest crypto scam from the last two years is Africrypt. The founders of the South African cryptocurrency platform lured wealthy investors with promises of 10% daily returns before claiming they had been hacked and funnelling an estimated \$3.6 billion in Bitcoin into their own wallets.

2. Bitconnect – **\$2.4 billion stolen**

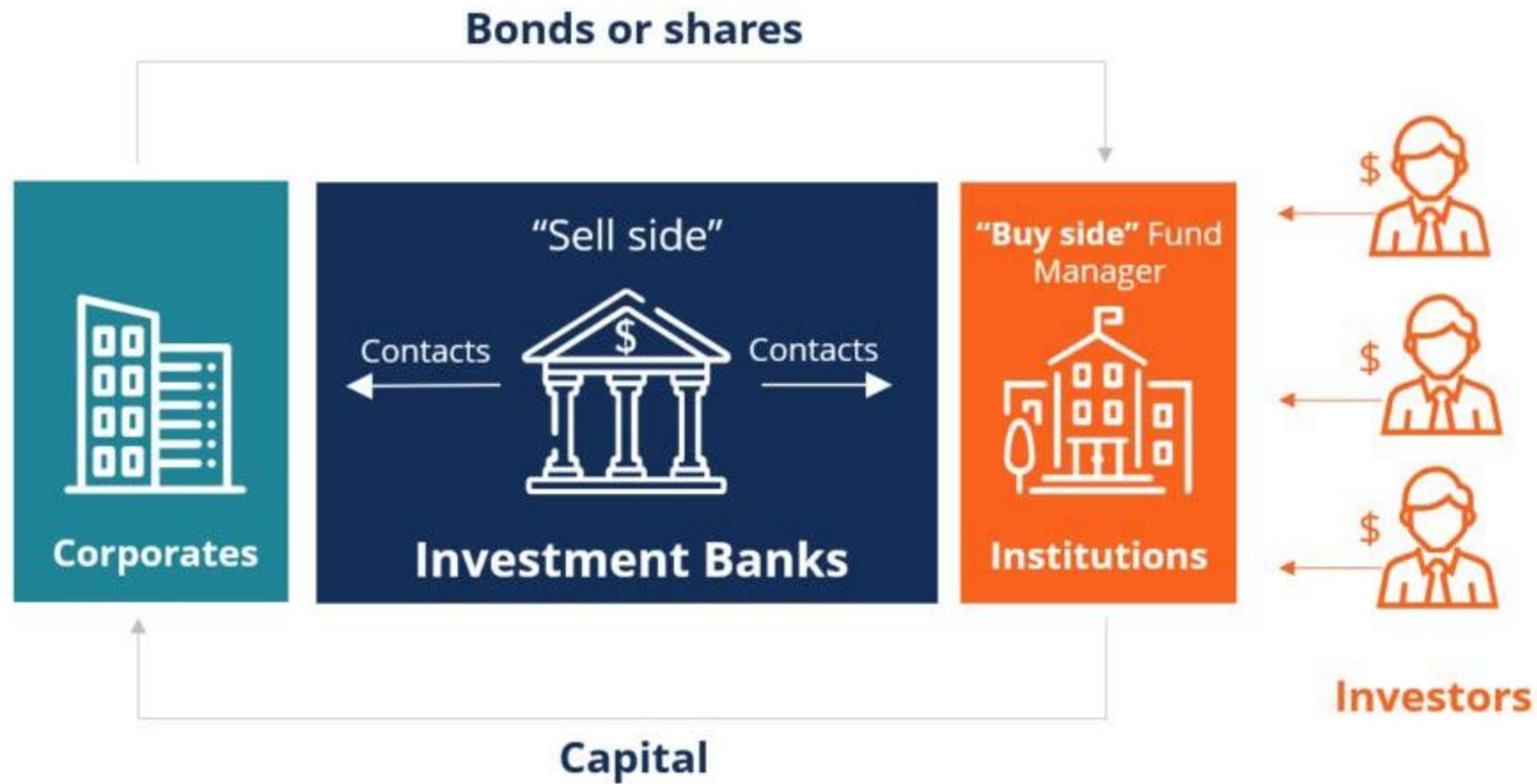
Bitconnect was suspected of being a Ponzi scheme as far back as 2018 thanks to its multi-level marketing structure and promises of 1% daily compound interest, an impossibly high return. It took until 2025 for the US Department of Justice to charge its founder with fraud and money laundering, after its value collapsed in 2019.

3. Thodex – **\$2 billion stolen**

This exit scam defrauded its investors of an estimated \$2 billion. The founder of this Turkish cryptocurrency exchange announced the site would be temporarily closed before shutting down the site entirely and fleeing with the funds of its 400,000 users. Recently arrested in Albania, he faces extradition back to Turkey on charges of aggravated fraud and forming a criminal organisation.

Influence on the Global Banking System

Global banking system at a glance



Influence on the Global Banking System

Global banking system at a glance



Investment Banking

Customer Base

- Large Corporates
- Financial Institutions
- Public Sector

Products

- Capital Markets
- Securities Services
- Financing Advisory

Commercial Banking

Customer Base

- Small-medium businesses
- Local corporates
- Business proprietors

Products

- Credit and Lending
- Payment and Cash
- Trade Financing

Retail Banking

Customer Base

- Average citizens

Products

- Savings and Deposits
- Mortgages
- Credit Cards
- Investment

Private Banking and Wealth Management

Customer Base

- High net worth individuals
- Family offices

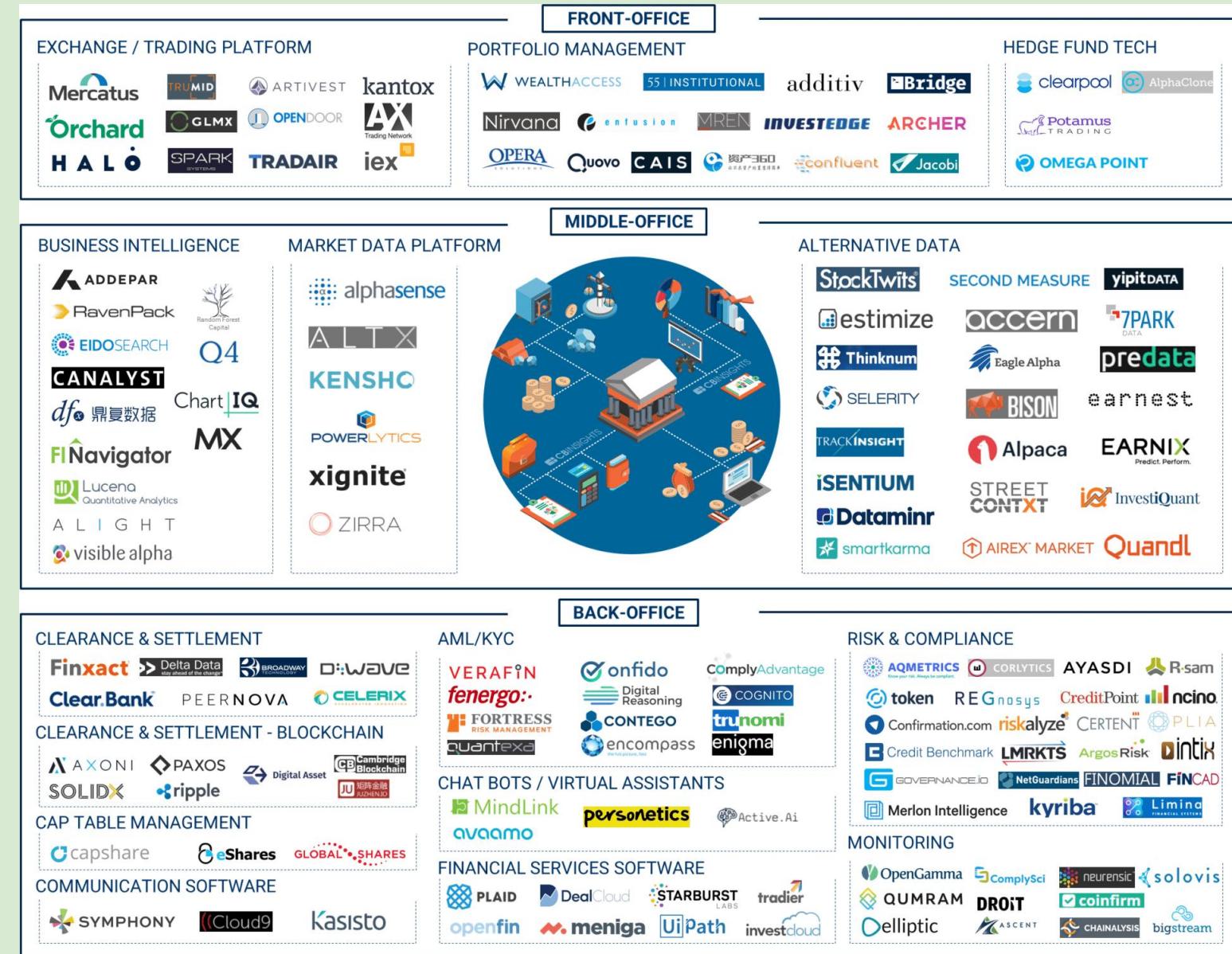
Products

- Investment Advisory
- Structured Products
- Hedge Fund
- Trust Services

Influence on the Global Banking System

How Fintech has impacted the global banking system?

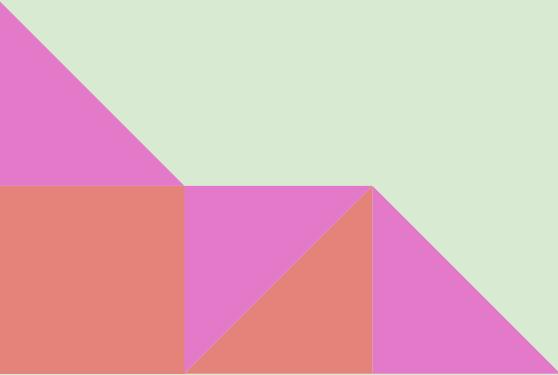
Source: CB Insights



Influence on the Global Banking System



**How will the global banking system
look like in the future?**



Customer behaviour has been evolving

Traditional players have been slow to react to the evolving digital demands of the customer.



50% of customers said that their primary banks are well connected to other platforms

Uncertain times have accelerated this change

During uncertain times, digital agility helps banks respond quickly to customer needs and requests.



Before COVID-19

49% of customers used internet banking

47% of customers used mobile apps for banking

15% of customers interacted with banks via chatbots

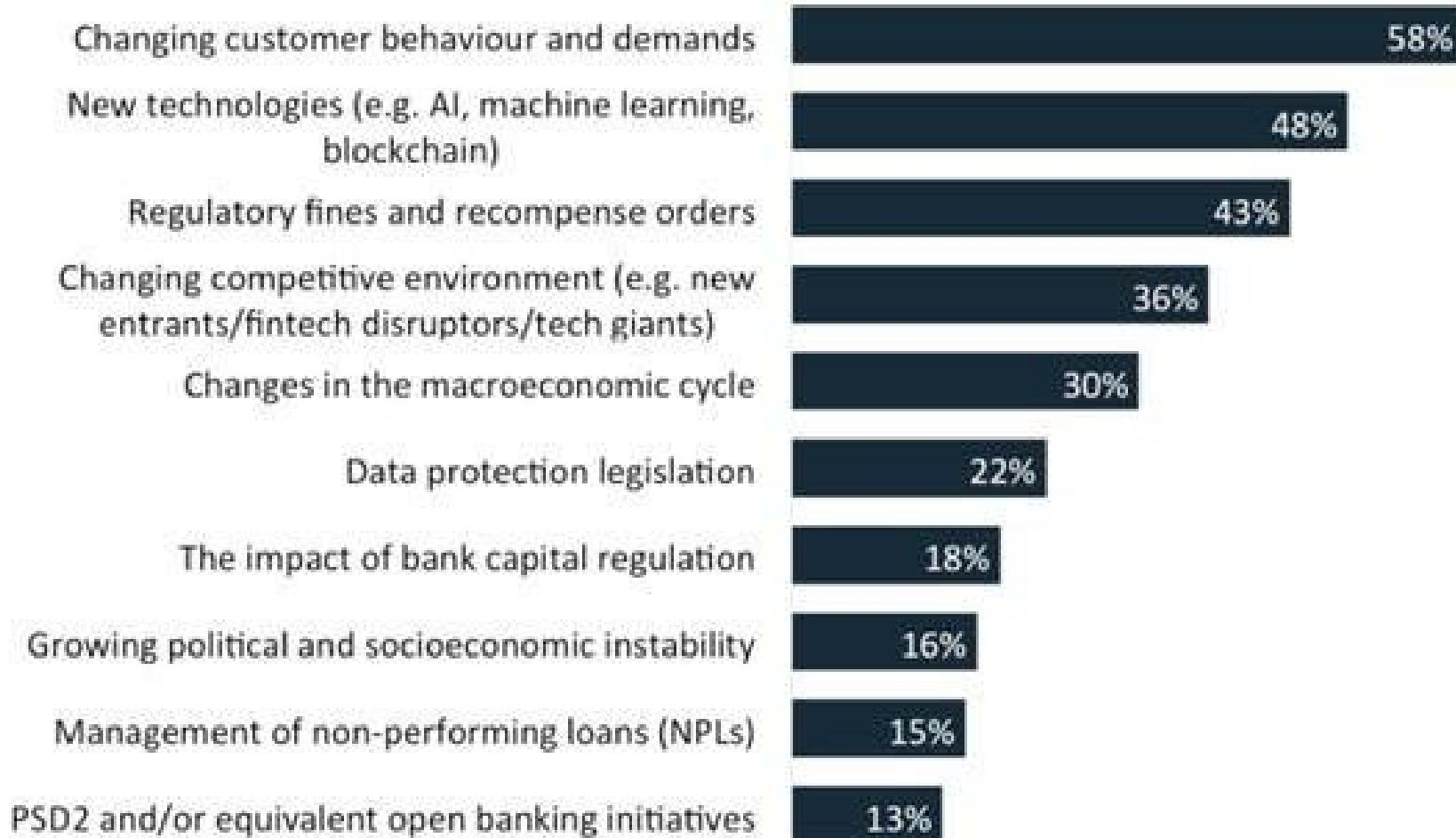
57% of consumers would prefer internet banking

55% of customers would prefer mobile apps for banking

21% of customers would prefer chatbots and automated voice help when interacting with banks

30% of customers are willing to shift to BigTechs/FinTechs because of unsatisfactory experiences with their primary bank

Trends That Will Have The Biggest Impact On Retail Banks Through 2020



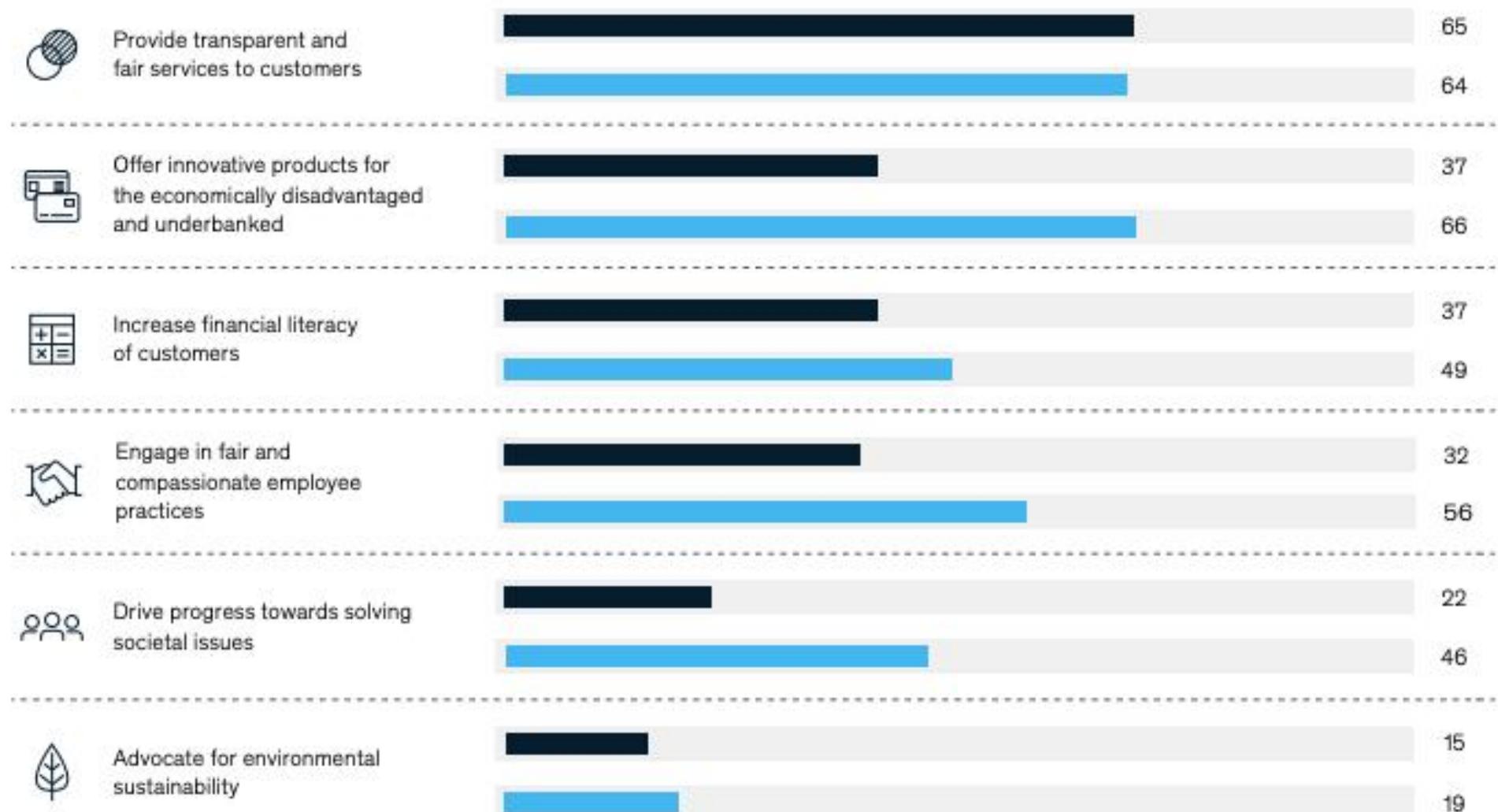
Source: Temenos and the Economist Intelligence Unit, n=400, 2018

Consumer and executive ranking of banks' social priorities.

Percent of respondents that think banks should engage in the "good bank" activity

Consumers, n = 2,036

Executives, n = 100



Source: McKinsey 2019 Future of Banking Consumer and Executive Surveys

Run the bank

Front office

- Stable costs
- IT includes branches, ATMs, call centers, digital channels and customer information systems operations

% of total IT spend
Now % - future %

~35%

~25%
↑
~5%

Change the bank

- Increase of cost driven by investments in new devices and advanced level of security, self-service, hyper-personalization and single user interface

Middle-back office

- Cost decreasing from 45% to 25% in the future, driven by technology transformation
- IT includes transactions and product support, payment processing and back-office systems

~45
↓
~25%

~15%

- Stable costs
- Investment in real-time processing and 100% digitalization as well as smart data analytics

1

Blockchain Included in the "14th Five-Year Plan" National Key Research and Development Programme in China

01 云计算

加快云操作系统迭代升级，推动超大规模分布式存储、弹性计算、数据虚拟隔离等技术创新，提高云安全水平。以混合云为重点培育行业解决方案、系统集成、运维管理等云服务产业。

02 大数据

推动大数据采集、清洗、存储、挖掘、分析、可视化算法等技术创新，培育数据采集、标注、存储、传输、管理、应用等全生命周期产业体系，完善大数据标准体系。

03 物联网

推动传感器、网络切片、高精度定位等技术创新，协同发展云服务与边缘计算服务，培育车联网、医疗物联网、家居物联网产业。

04 工业互联网

打造自主可控的标识解析体系、标准体系、安全管理体系，加强工业软件研发应用，培育形成具有国际影响力的工业互联网平台，推进“工业互联网+智能制造”产业生态建设。

05 区块链

推动智能合约、共识算法、加密算法、分布式系统等区块链技术创新，以联盟链为重点发展区块链服务平台和金融科技、供应链管理、政务服务等领域应用方案，完善监管机制。

06 人工智能

建设重点行业人工智能数据集，发展算法推理训练场景，推进智能医疗装备、智能运载工具、智能识别系统等智能产品设计与制造，推动通用化和行业性人工智能开放平台建设。

07 虚拟现实和增强现实

推动三维图形生成、动态环境建模、实时动作捕捉、快速渲染处理等技术创新，发展虚拟现实整机、感知交互、内容采集制作等设备和开发工具软件、行业解决方案。

#Fintech

#Buzzword



Metaverse

Web3

GameFi

Defi

NFT

CBDC

RWA

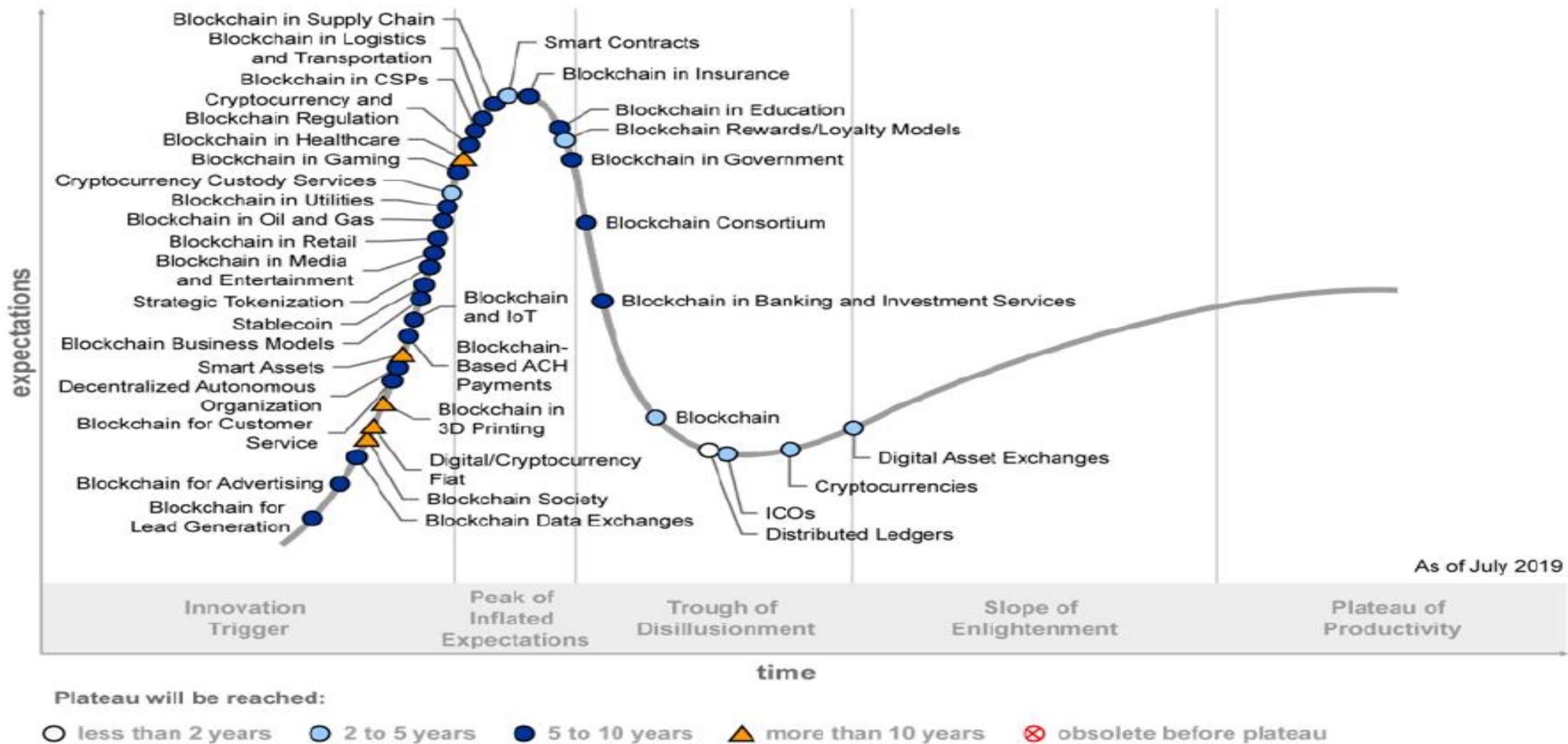
Stablecoin

AIGC



#Blockchain

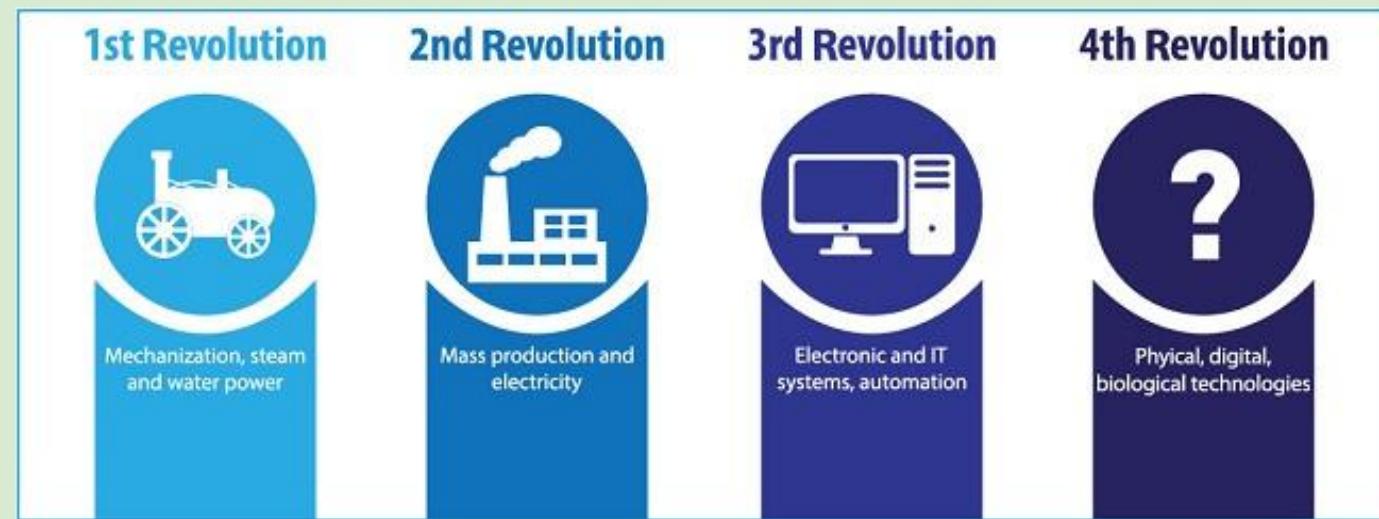
#HypeCycle



Source: Gartner
ID: 390391

How does blockchain empower the Internet?

92



#StableCoin #USDT

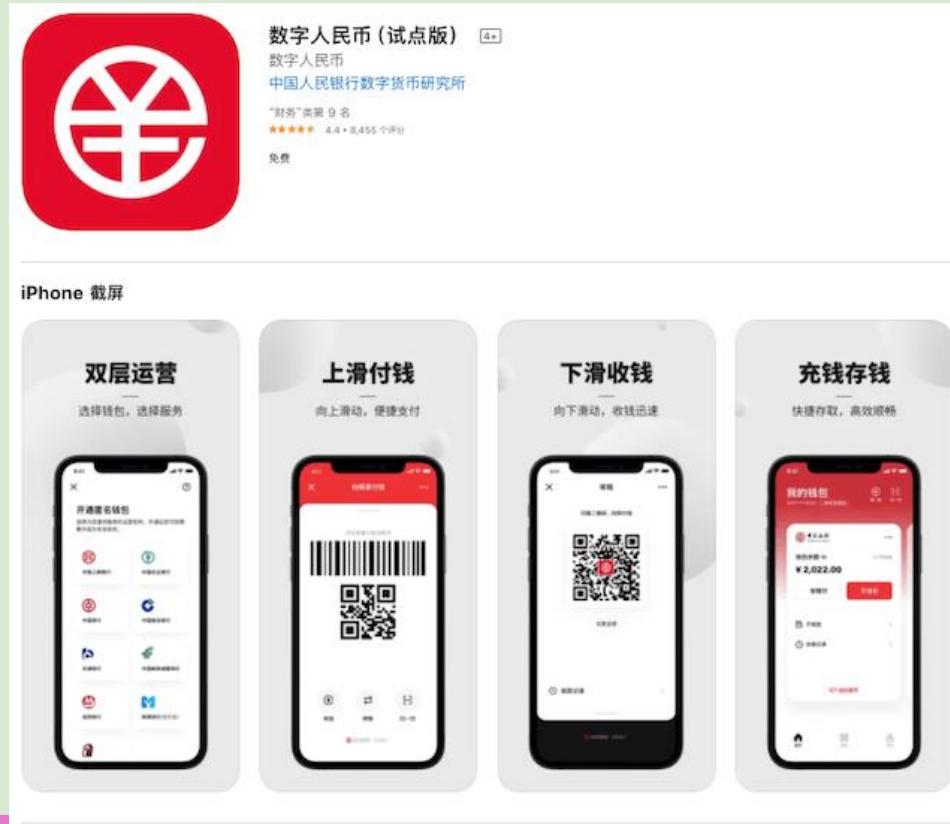


Tether is the issuer of US dollar StableCoin USDT, ranking third in the cryptocurrency market and currently the largest settlement currency in the market.

Tether was founded in Hong Kong in October 2014 and is currently the StableCoin with the largest market value.

According to Dune Analytics data, USDT accounts for 62.6% of all StableCoin supply, with a market value of more than US\$18.7 billion.

#StableCoin #eCNY



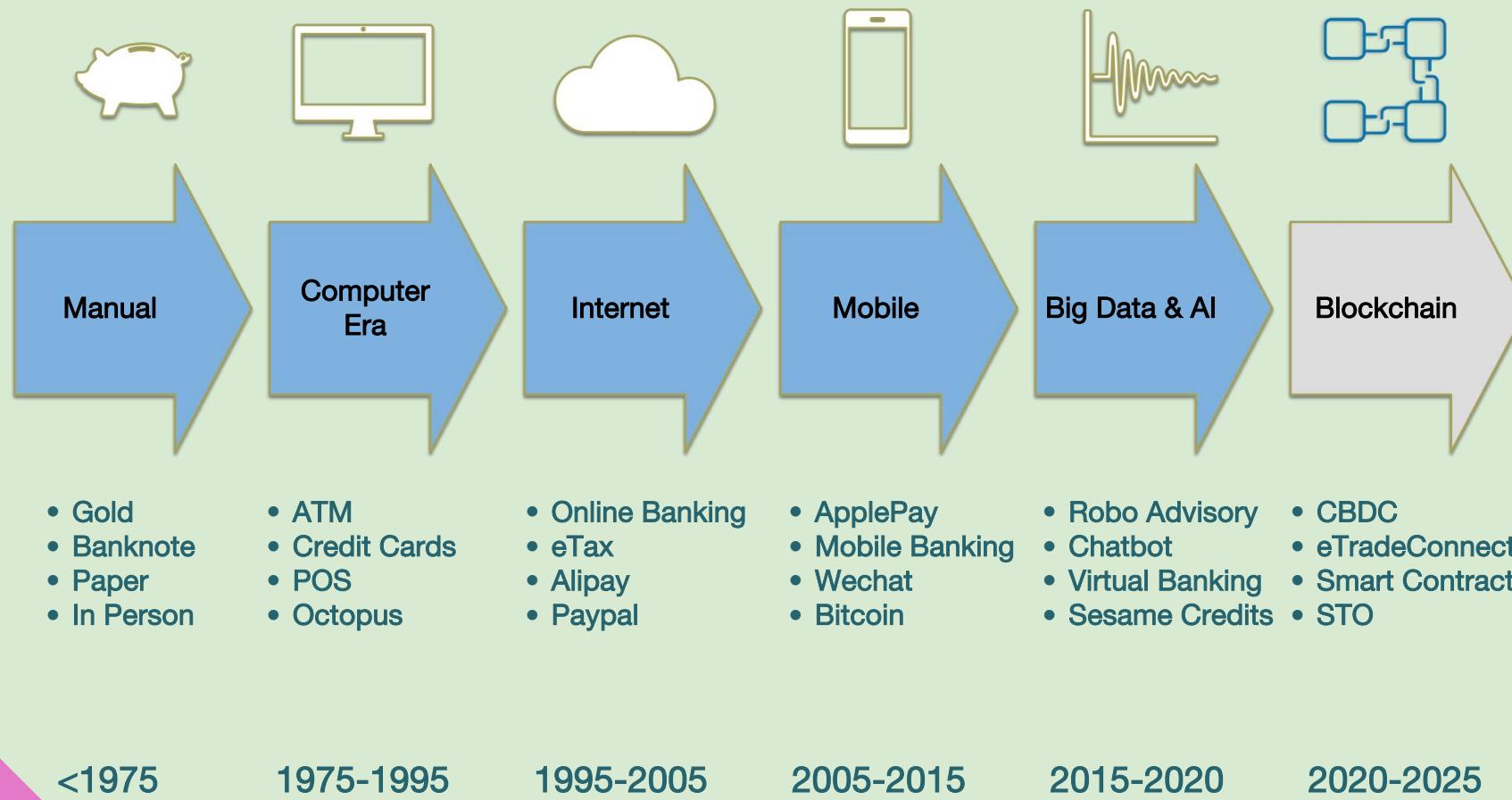
#StableCoin #e-HKD+



Under Phase 2, 11 groups of firms from various sectors have been selected to explore innovative use cases for e-HKD and tokenised deposits across three main themes, namely settlement of tokenised assets, programmability and offline payments. The selected firms will also examine the commercial feasibility, within a real-world setting, of new forms of digital money that may potentially be accessible to individuals and corporates.

Visa, DBS, HSBC Among Major Players in HKMA's e-HKD Pilot Phase 2

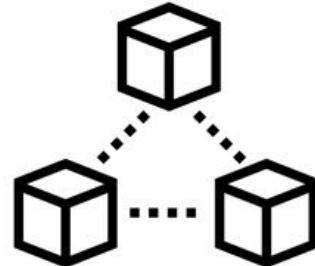
#FinTech #Development timeline



#Internet #Blockchain



vs



Internet Revolution

Blockchain Revolution

TCP/IP

- First layer of the internet
- Allows Instant information transfers
- **Internet of information**

Blockchain

- Second layer of the internet
- Allows Instant value transfers
- **Internet of Value**

#Logic #Transform

INTERNET

Transfer information



TEXT



IMAGES



PROGRAMS



VIDEOS

BLOCKCHAIN

Transfer ownership



MONEY



CONTRACTS

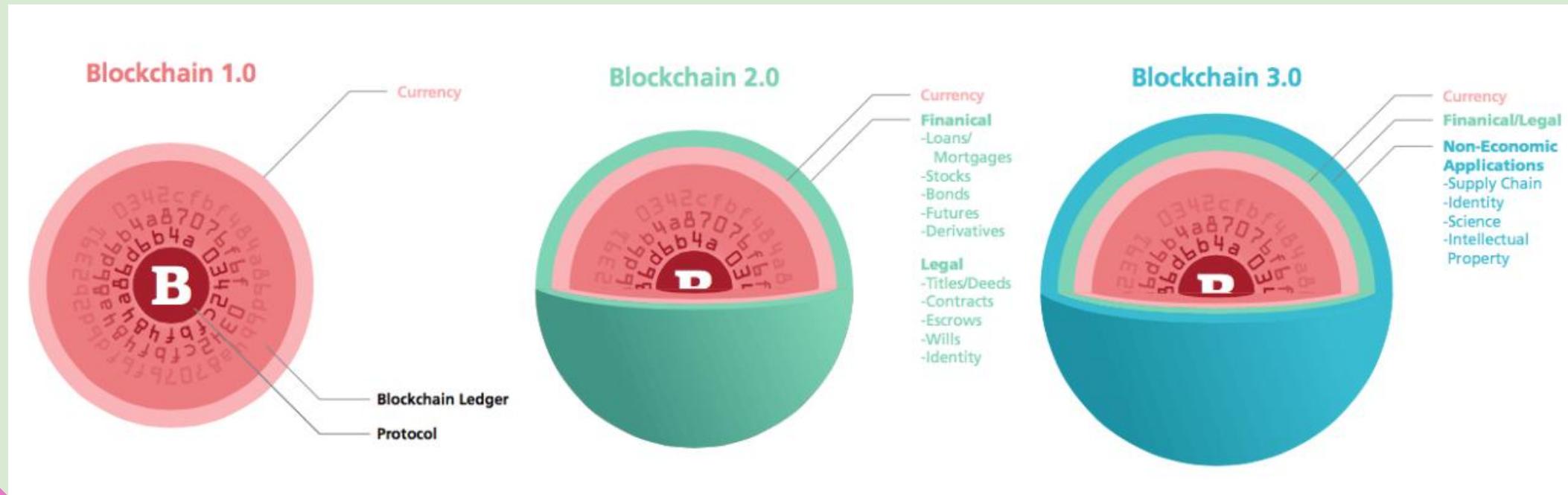


PATENTS



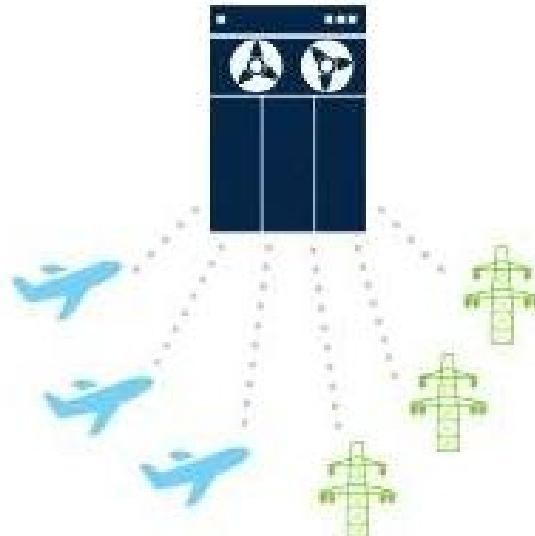
ASSETS

#Blockchain #1.0 #2.0 #3.0



#Blockchain #IoT

Before 2005



Closed and centralized
IoT networks

Today



Open access IoT networks,
centralized cloud

2025 and beyond



Open access IoT networks,
distributed cloud

#TTChain

Raw-materials

Producers/ Farmers/Suppliers



By Lab/DNA Test,
RFID, GS1,etc.



Supply Chain Participants



Manufacturing



Inspection

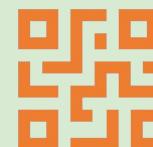


Logistics



Retailers

Traceable
with QR code

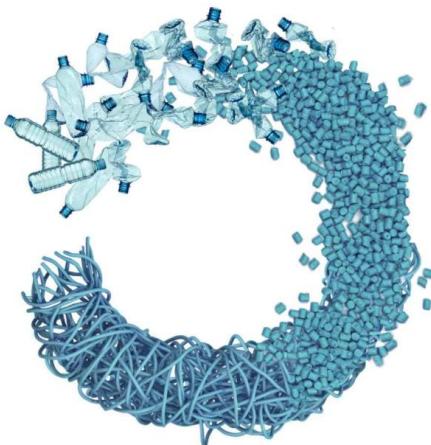


Data on
Blockchain



Products

#ESG #Proof



THESE JEANS ARE 24% MADE FROM RECYCLED PLASTIC

The Sorbtek 365 fibre is a recycled polyester yarn. It is made from 100% high quality recycled materials, including post consumer water bottles and pre-consumer waste.

It is created by collecting plastic waste, recycling this into resin pellets, then extruding them into the Sorbtek fibre.



This product is part of our Sustainable Style range. Engineered to leverage natural fibres for optimum performance, all garments in this collection have been designed with more sustainable materials and design innovations. All with the aim to lower our impact on the environment, whilst maintaining style, fit and functionality in our garments.



TT Chain – as a custodian - will verify and trace all sourced materials, manufacturing processes to the finished products and work with 3rd party authentication – proven the end products are 100% using the recycled plastic →

A proof of ESG process

#EcoFriendly #MaternityJeans



Recycled Waste

Chip

Fiber

Yarn

Manufacturer

Buyer

All data are being stored on the blockchain



✓ For Recycled Materials Provider:

- To track the future stage of their materials go to

TRUSTBIX



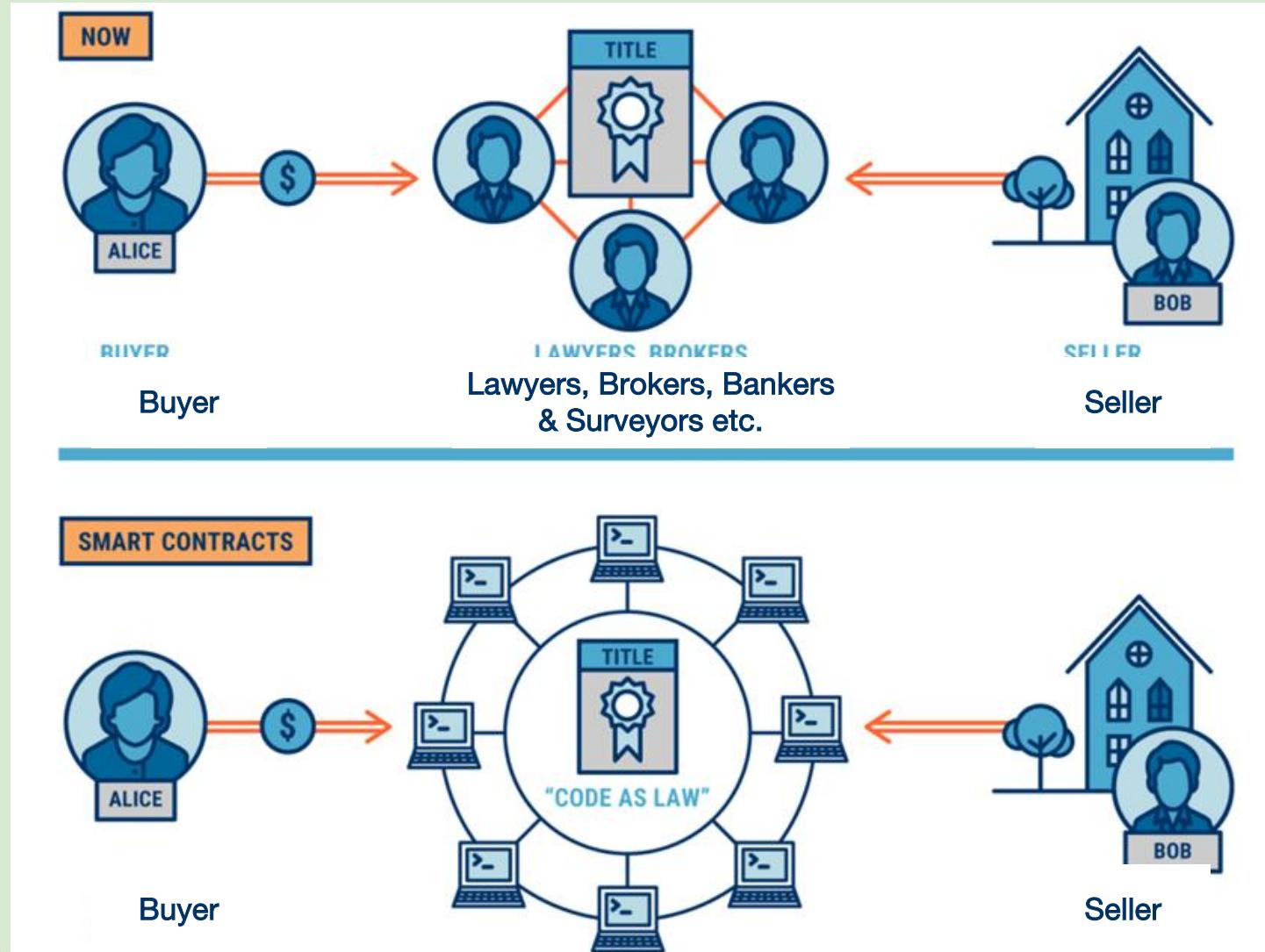
✓ For manufacturer:

- To trace the source of materials
- To track the future stage of their products go to
- To proof sustainability the ESG authenticity

✓ For Buyers/Brands:

- To trace the authenticity and source of materials through the whole supply chain
- To proof sustainability the ESG authenticity

#Blockchain #Benefit



#SmartContract#智能合約



DApps!

Decentralized Applications



#DeFi #去中心化金融

The full name of DeFi is Decentralized Finance, literally translated as "decentralized finance", which generally refers to financial applications such as transactions, lending, insurance, options, prediction markets, and payments based on Blockchain and related to digital assets.

Compared with traditional finance, decentralized financial applications based on Blockchain have the characteristics of clearing transactions, resistance to censorship, and no geographical restrictions. As long as they have an Internet connection, people can freely enjoy financial services and realize the vision of inclusive finance.

When we operate a DeFi application, we are actually interacting with the Blockchain's smart contract through the platform's interface. Taking decentralized lending platforms as an example, most of them adopt an over-collateralization mechanism, that is, the value of the collateral must be higher than the loan amount, and both the collateral and the lending funds must be stored in a decentralized "smart contract" (smart contract) and is not controlled by a single person or organization

#TraditionalFinance #去中心化金融

CATEGORY	TRADITIONAL FINANCE	DECENTRALIZED FINANCE
CROSS-BORDER PAYMENTS	Difficult, Slow, High Fees	Easy, Fast, Fees Near Zero
SAVINGS AND LENDING	Middleman Involved, Gets A Large Percentage of the Value	Peer to Peer, Users Retain Higher Percentage of the Value
ONBOARDING	Registration Required, Lengthy Processing Times	No Registration, Instant Onboarding
ACCESSIBILITY	Not Available in Many Countries	Available Globally, Including Developing Countries

#TraditionalFinance #去中心化金融

CeFi vs. DeFi Payments value chain: DeFi disrupts Payments by providing a cheaper and potentially faster alternative already today.

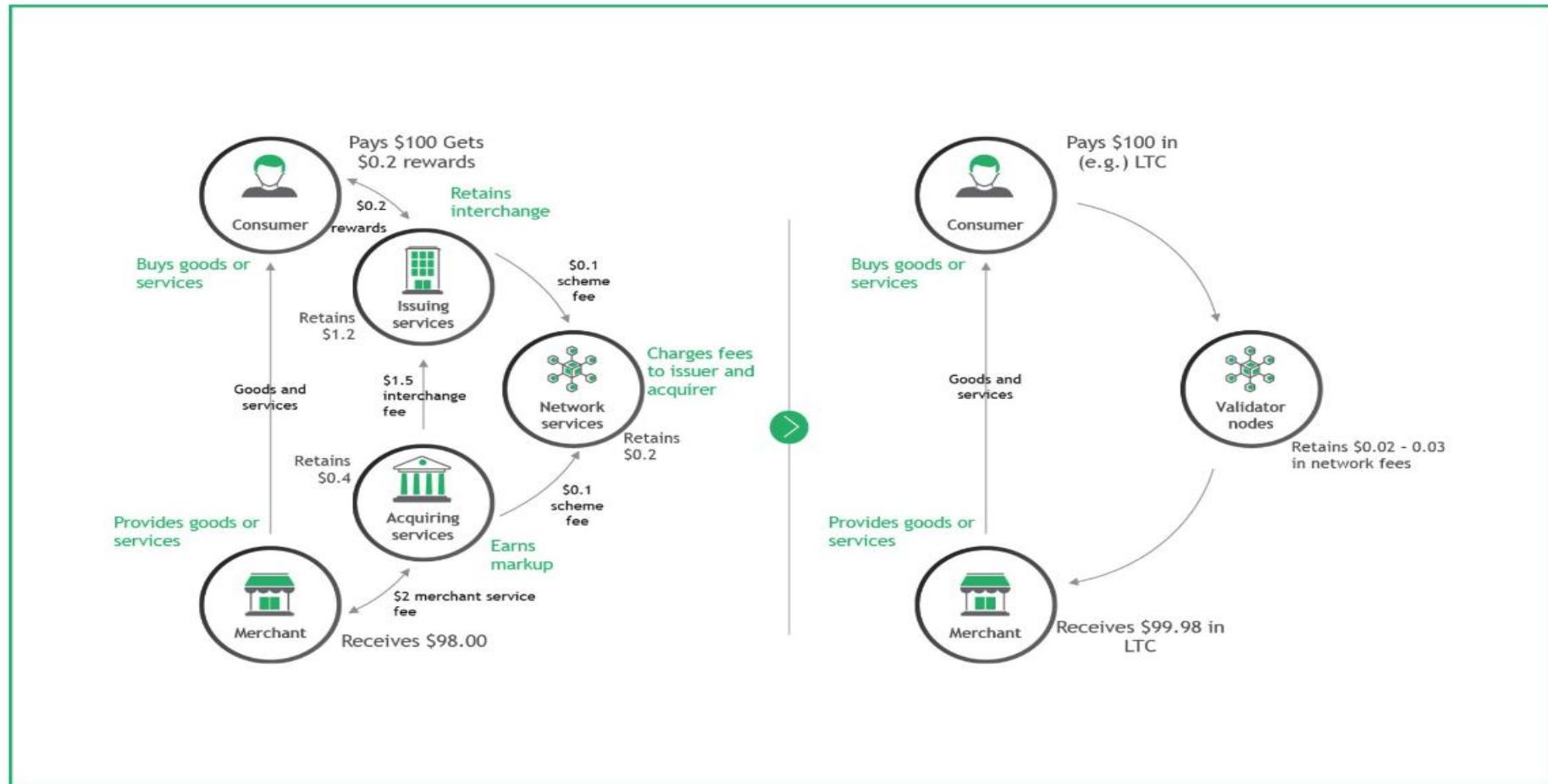


Exhibit 4 | CeFi vs. DeFi Payments value chain

Source: BCG and Crypto.com

#STO #WhitePaper



2021年3月4日，HKbitEX (“香港DigitalAssets交易所”) 與 Deloitte (“德勤”)、The University of Hong Kong (“香港大學”), 聯合發佈 STO 白皮書第2章：STO 的優勢

High Liquidity: Asset Segmentation

The asset segmentation authorized by Blockchain effectively lowers the investment threshold for investors, thereby encouraging more people to participate in investing in private market securities, real estate and collectibles, and bringing unprecedented high liquidity to these assets.

Security: Records cannot be tampered with

In addition to enhancing liquidity, another feature of STO technology is that the ownership record related to the underlying asset of the security token cannot be tampered with.⁷ Each block in the chain contains the cryptographic hash of the previous block. Therefore, if you want to change the record, you have to modify the hash values of all previous blocks - which is theoretically impossible.

Automating company behavior: smart contracts

Using Blockchain technology and automating specific operations through smart contracts is of great benefit to STO investors. For example, in the case of a dividend/coupon distribution, a smart contract can be programmed to automatically instruct the distribution and amortize the residual (debt) on a predetermined payment date. Investor voting using smart contracts rather than traditional proxy forms can also speed up the process.

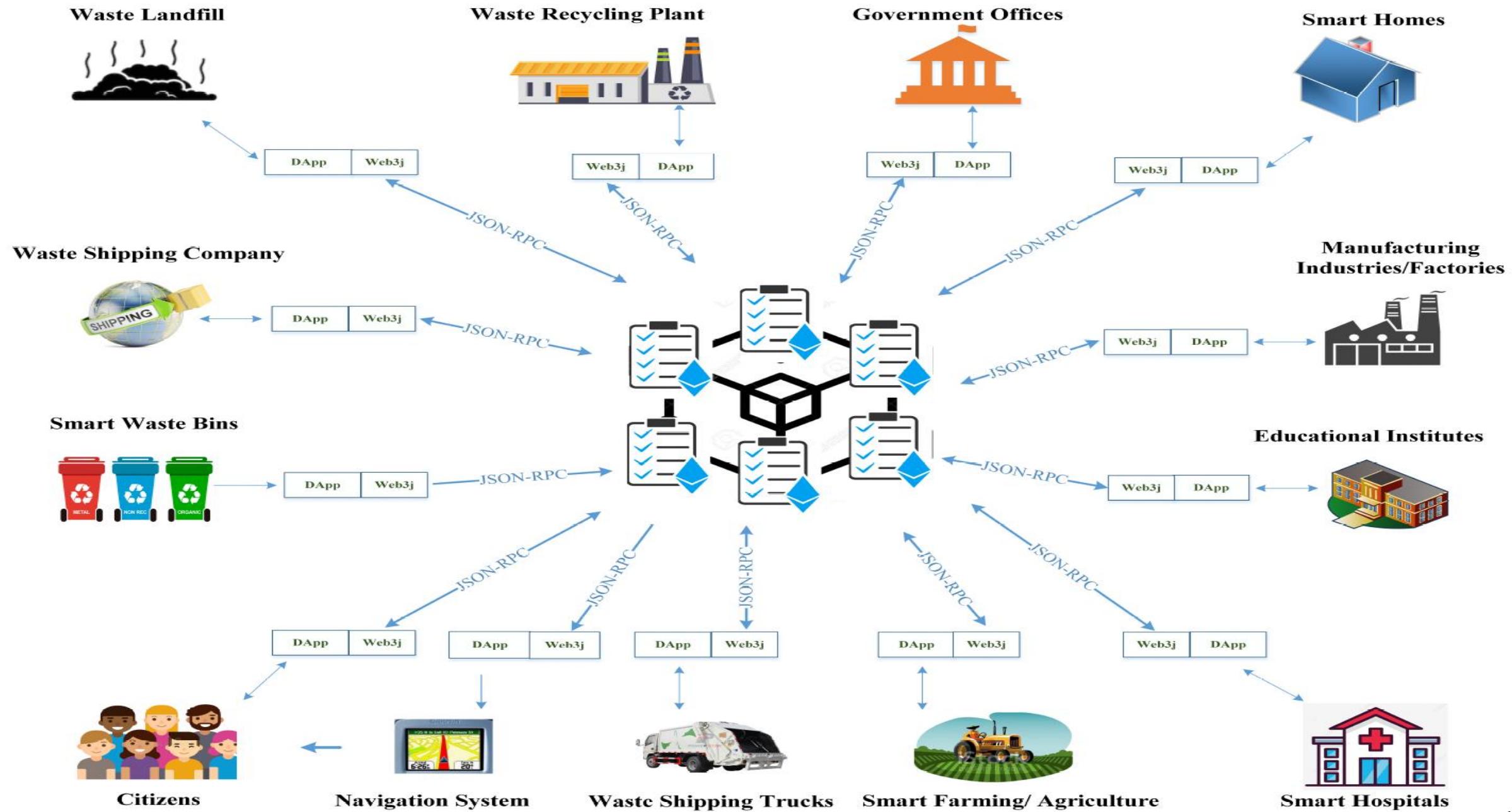
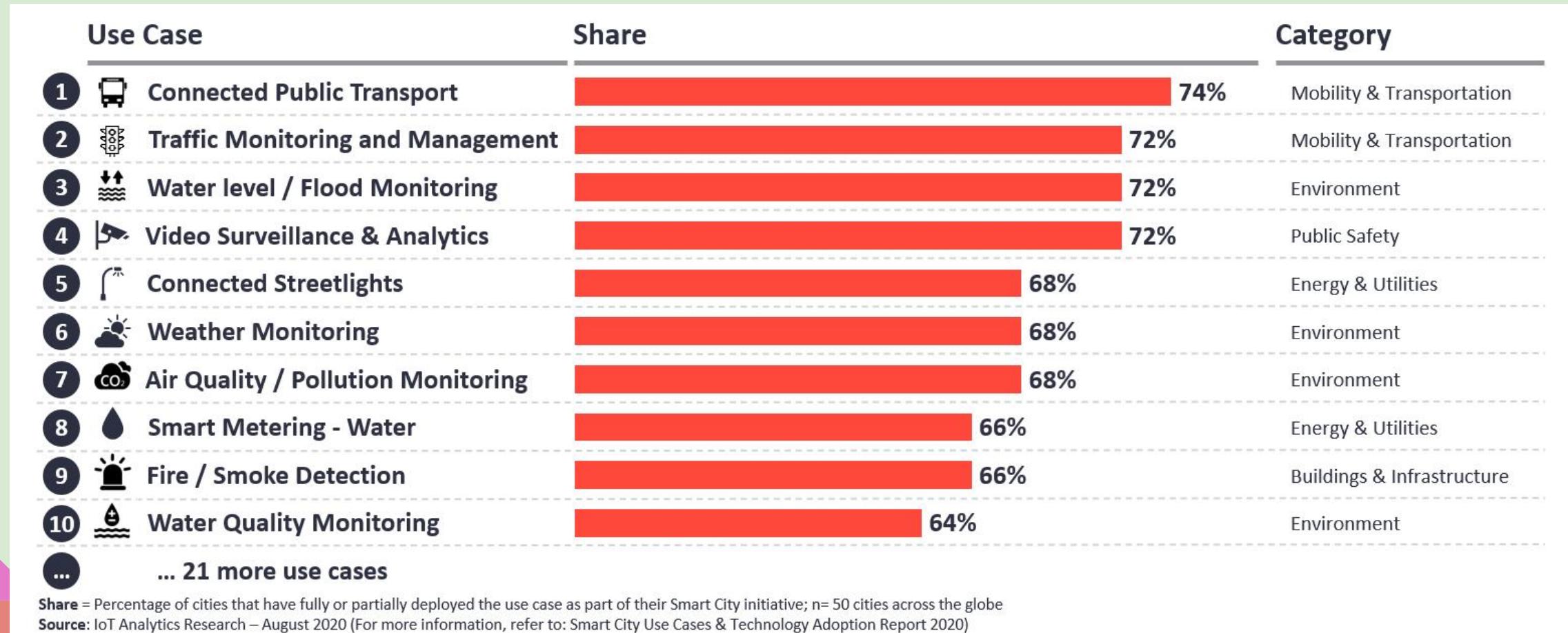
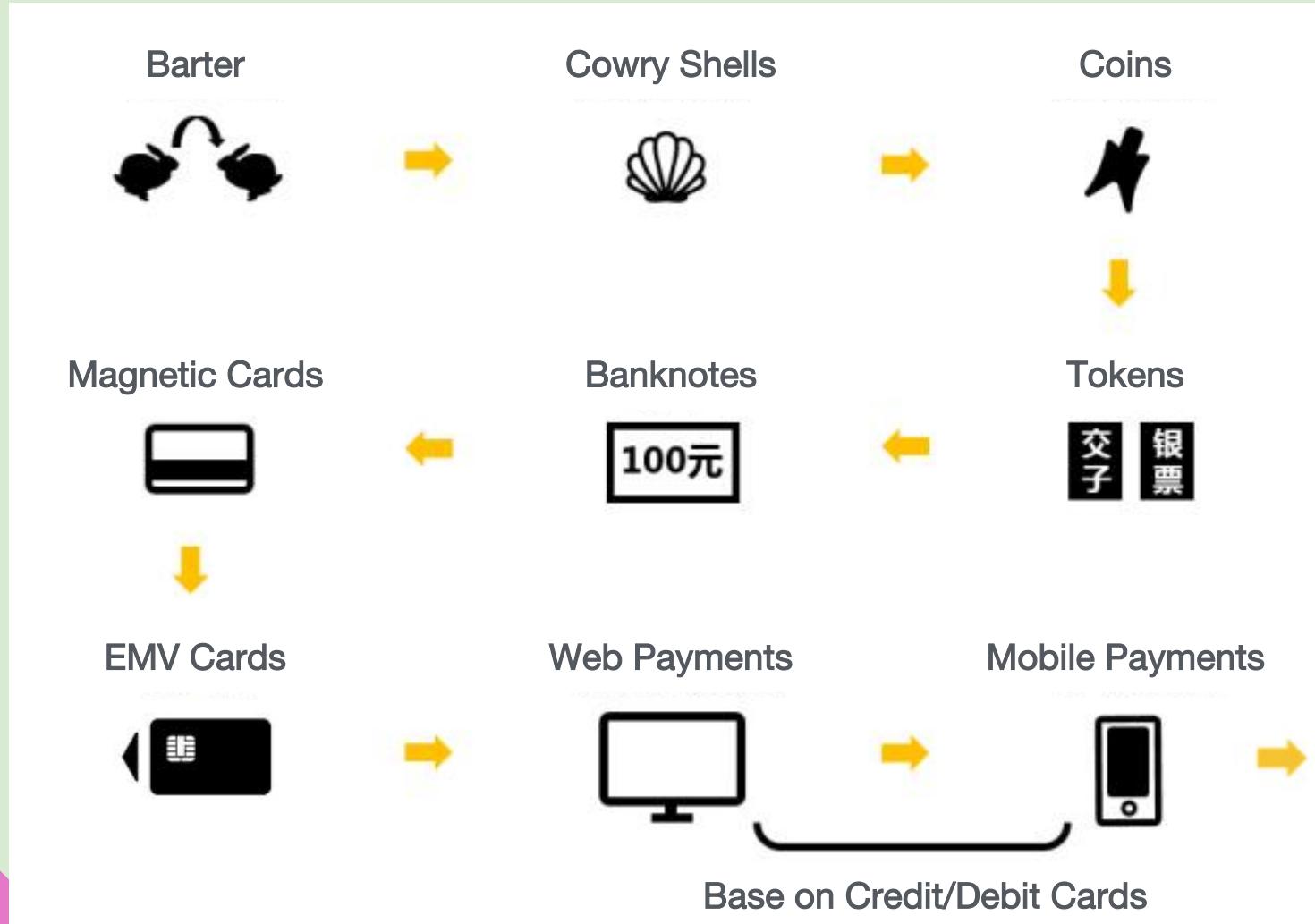


Fig. 2. An overview of waste-related data storing and retrieving using the blockchain-based system.

#Top10 #SmartCity# 使用場景



#What #Next





#Concern #FocalPoint

2015



2016



2017



2018



RW

A

2023

2022

2021

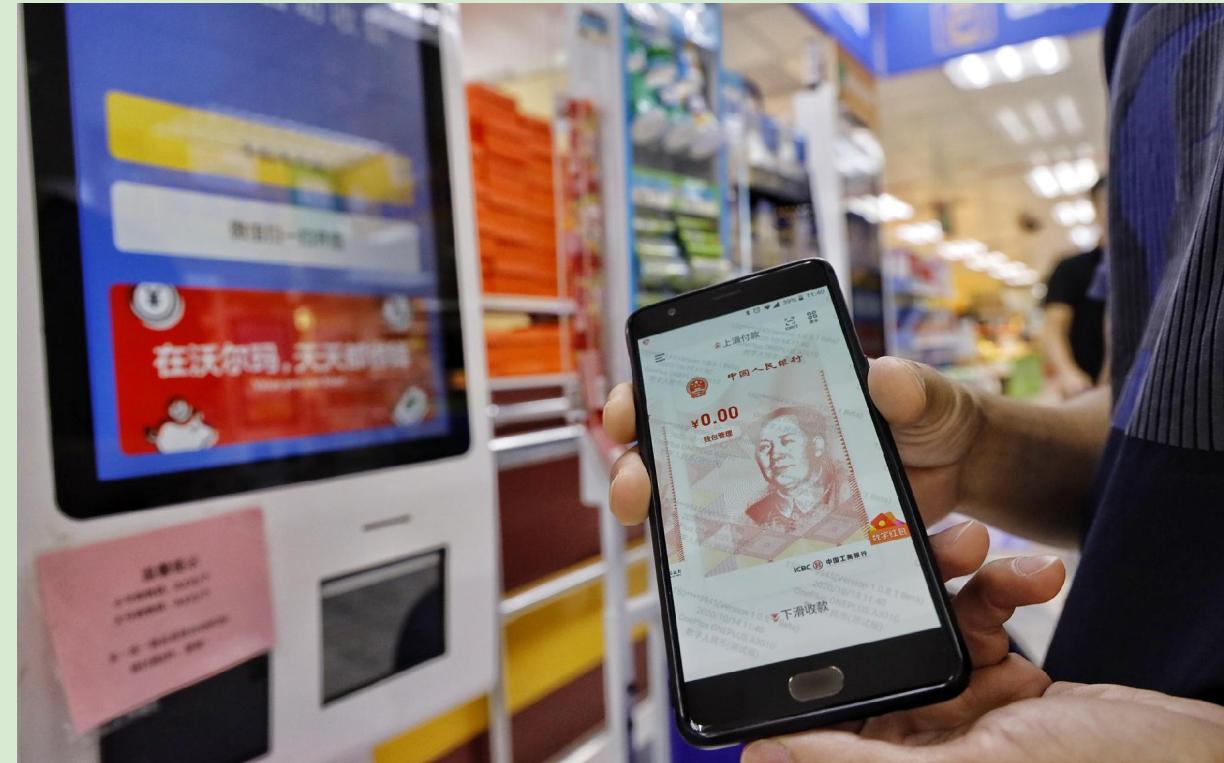
2020



#CBDC #Development



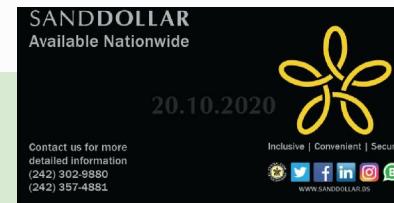
#DCEP #LuckyDraw



#CBDC #Headline

Oct 21, 2020, 02:20pm EDT | 11,236 views

Central Bank Digital Currency: The First Nationwide CBDC In The World Has Been Launched By The Bahamas



SORAMITSU 5 YEARS 2016-2021

NATIONAL BANK OF CAMBODIA

BAKONG

Introducing Bakong

We are pleased to announce Bakong, the collaboration between SORAMITSU and the National Bank of Cambodia. Bakong is Cambodia's only integrated payment system that allows you to do everything - e-wallets, mobile payments, online banking and financial applications - all in one place.



Bank of England to consider digital money plan

19 April | [Comments](#)

The Bank of England and the Treasury have announced they are setting up a taskforce to explore the possibility of a central bank digital currency.

Bloomberg

Cryptocurrencies

ECB Says Lack of Official Digital Currency Risks Loss of Control

By [Carolynn Look](#)

2 June 2021, 19:00 GMT+8

#FinTech #2025

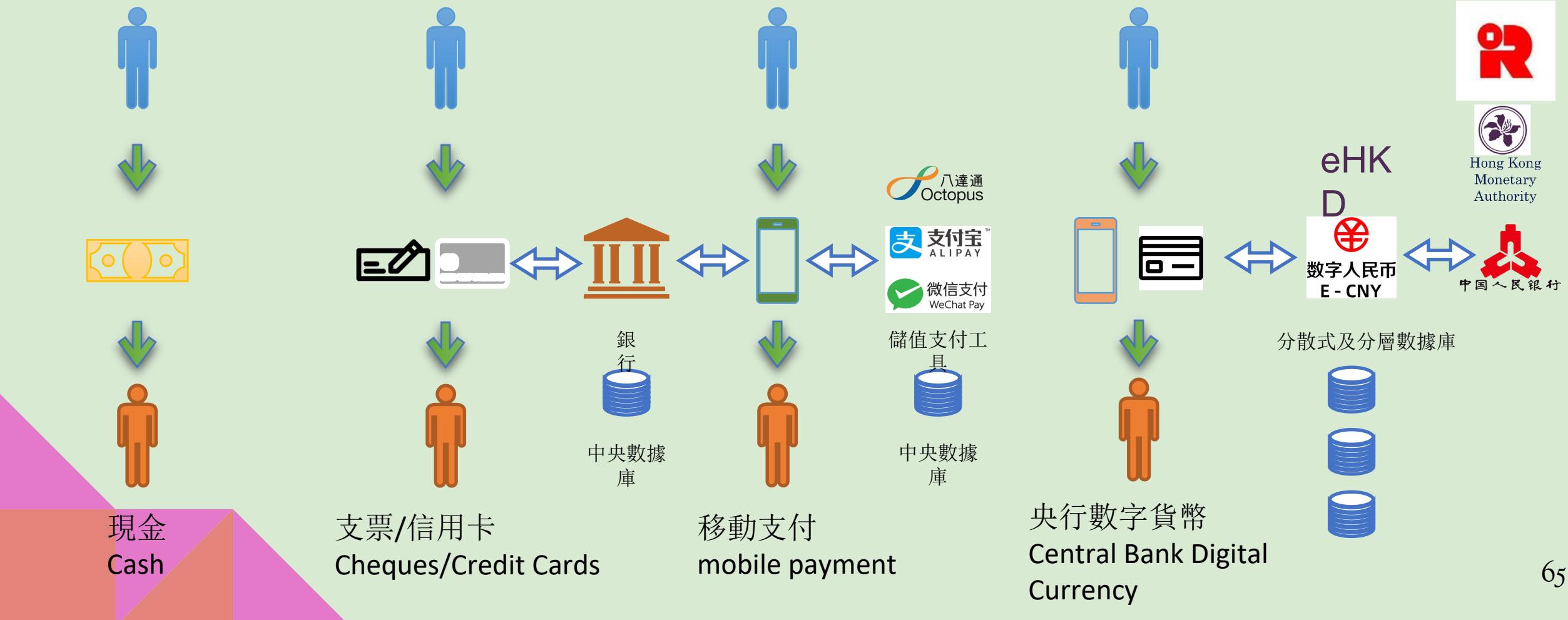


1. Comprehensively promote the digitalization of banks - banks will submit FinTech application assessments at the end of the year - InvestTech, WealthTech, InsurTech, GreenTech, AI, Blockchain etc.
2. Central Bank Digital Currency Research - Bank for International Settlements (BIS) Hong Kong Innovation Center (香港創新中心) collaborates to research wholesale m-CBDC Bridge. Then cooperated with BIS Project Aurum to study the implementation of retail eHKD and eCNY
3. Establish a new generation of data infrastructure based on Blockchain technology - use CDI comprehensive data to cooperate with other government departments to study digital corporate identity authentication
4. Establishing a FinTech talent pool - cultivating FinTech professionals in an all-round way and providing practical experience
5. Provide FinTech regulatory sandbox Sandbox 3.0 - provide funding and application scenarios to startups through public sector trial programs

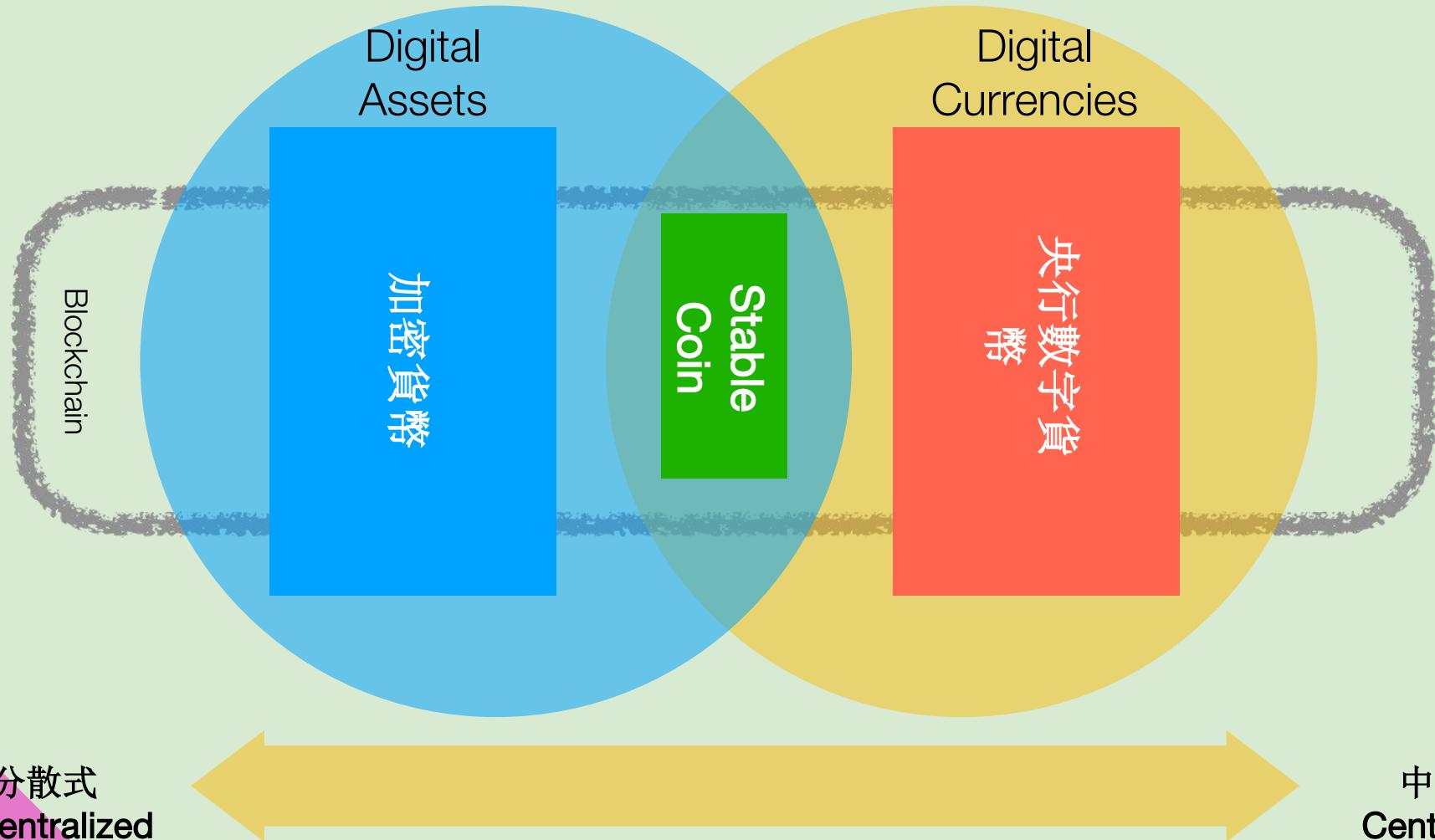
#Data #NewOil



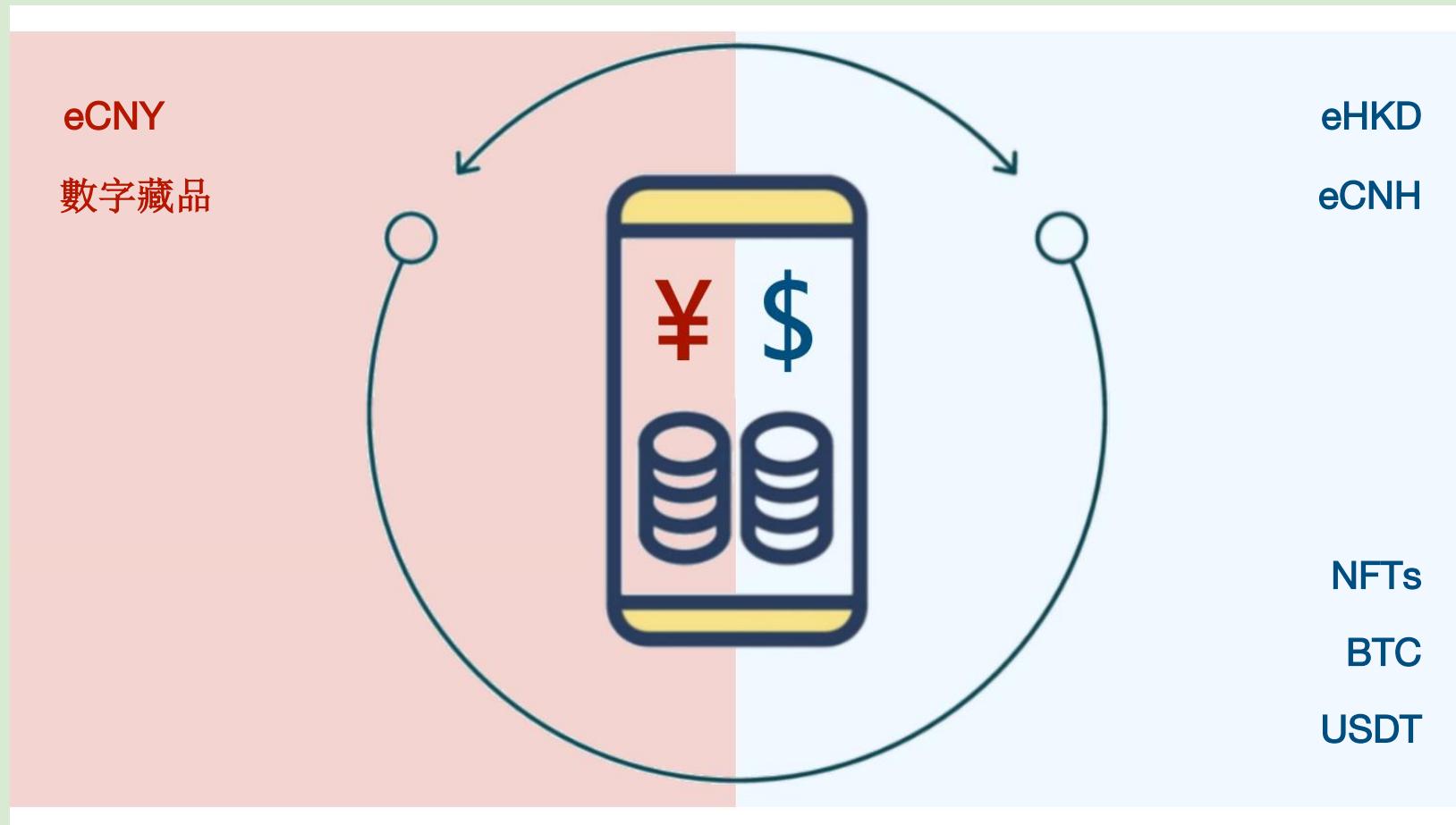
#Payment#Data



#Cryptocurrency #DigitalAssets #StableCoin #Central Bank Digital Currency



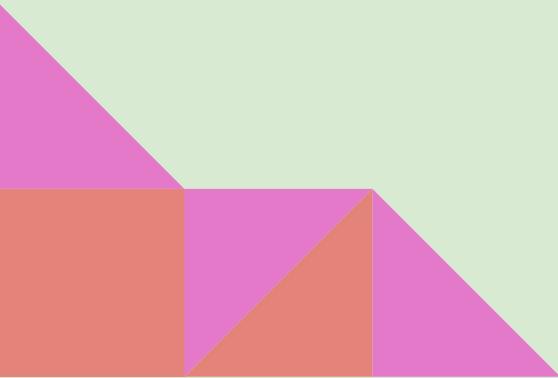
#GBA #DigitalAssetsWallets





Digital banking

What is open banking
and open API?



How open banking could benefit consumers and small businesses



LEARN MORE ABOUT OPEN BANKING
AND SHARE YOUR THOUGHTS AT

<https://www.fin.gc.ca/activity/consult/2019/ob-bo/obbo-report-rapport-eng.asp>

What open banking could mean for...

LARGE NATIONAL BANKS THAT OFFER THE FULL RANGE OF FINANCIAL SERVICES?



Banks can leverage their brands and customer bases to partner with other firms and offer new, innovative services.



SMALL- AND MID-SIZED FINANCIAL SERVICE PROVIDERS?



Smaller providers have higher profile online and can better attract new customers thanks to simplified account switching and other functionality.

NEW FINANCIAL SERVICE PROVIDERS LIKE FINTECHS?



New service providers can offer tailored, consumer-centric products out of the gate so they can scale faster and grow more independently.



Open banking has the potential to boost the competitiveness of the financial sector by giving a wider range of players access to financial data they can use to develop new and more tailored products and services.

Open API unlocks Open Banking globally

OPEN BANKING

Open Banking approaches across the globe

					
Market vs regulator driven	Regulator-driven	Regulator-driven	Regulator- and market-driven	Regulator-driven	Market-driven
Main objectives of Open Banking	Empower consumers to access and benefit from their data	Harmonize banking across the EU, foster competition and innovation	Modernize the banking system, and foster competition	Increase range of service providers in the market	Developed as a source of competitive advantage for individual FIs
Entities that have to comply	All authorized deposit-taking institutions (ADIs)	All ASPSPs (Account Service Payment Service Provider) across EU	All institutions regulated by the Banking Act	Top 9 banks by assets	FIs that self-select into opening access to data
Scope of data to be shared	Customer data Transaction data Product data Identity verification	Customer data Transaction data	Transaction data Account balance data	Customer data Transaction data Product data Aggregated data	Institution-dependent
Third-party access rights	Read only	Read and write	Read and write	Read and write	Institution-dependent



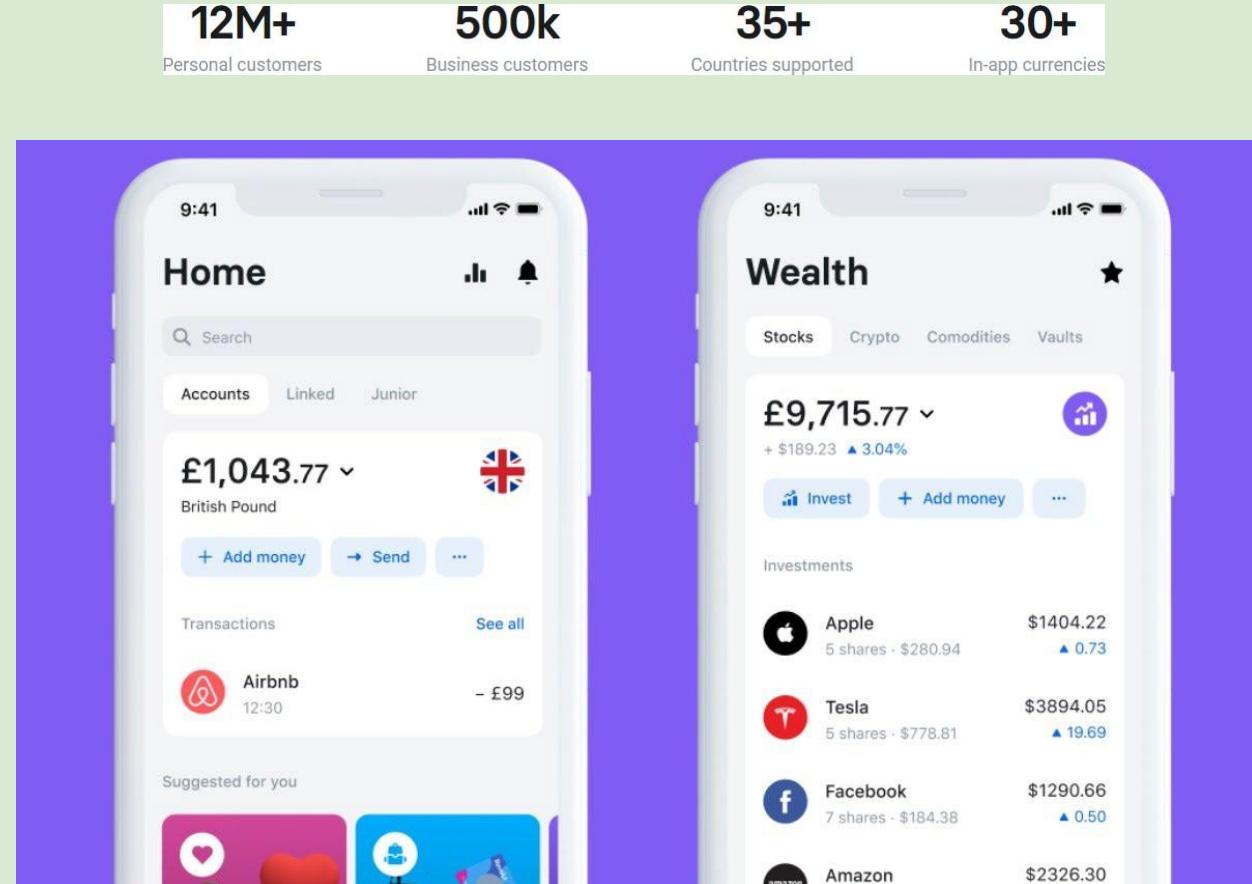
Open Banking in Southeast Asia

Country	Singapore	Malaysia	Indonesia	Thailand	Philippines	Vietnam
Approach	Market-driven	Market-driven	Market-driven	Market-driven	Market-driven	Market-driven
Guideline	API Playbook	Policy Document on Publishing Open Data using Open API	Open API Standards and Banks Interlinkage	-	-	-
Objective	To eliminating the need to customize for each client/partner	To facilitate convenient credit transfers and the development of other value-added services	To increase payment systems' efficiency	-	-	-
Standards	<ul style="list-style-type: none"> • Design principles • Implementation • API use cases • Governance 	<ul style="list-style-type: none"> • API architecture • Data • Security • Third party governance 	<ul style="list-style-type: none"> • Data • Technical • Safety • Governance 	-	-	-
Implementation timeline	Self-enforced	Self-enforced	1.Trial for selected payment system service providers (PSP) - 1Q2021 2.Trial for other PSP - 3Q2021	-	-	-
Supporting regulation	<ul style="list-style-type: none"> • Open API sandbox (APIX) • Network for Electronic Transfers (NETS) 	Fintech Regulatory Sandbox	<ul style="list-style-type: none"> • E-Payment regulation • National Payments Gateway • E-Money regulation • Standardized QR payments 	<ul style="list-style-type: none"> • Promptpay • E-Money license • Standardized QR payments 	<ul style="list-style-type: none"> • 3-year digital transformation plan • National Retail Payment System (NRPS) 	National Payment Corporation of Vietnam (NAPAS)
Banks with public APIs	4 (DBS, OCBC, Citi, Standard Chartered Bank)	1 (Maybank)	2 (BCA, BRI)	3 (Siam Commercial Bank, KBank, BBL)	2 (UnionBank, BPI)	1 (ACB)

Open Banking APIs from Banks

	Product Data	Accounts	Payments	Product Origination	Customer Reference	Cards
DBS		<ul style="list-style-type: none"> • Create account • Account balance • Account status • Account details • Transaction history 	Domestic fund transfer to own and pre-registered account	<ul style="list-style-type: none"> • Loan applications • Application details • Loan applicants • Loan applicant details • New application • Credit facility details • Pricing packages • Mortgage calculator 		<ul style="list-style-type: none"> • Reward points • Rewards rebates balances • Reward redemption • Reward catalogue item
OCBC	<ul style="list-style-type: none"> • Insurance policies and benefits • FX rates • Loan details • Investment product details 	<ul style="list-style-type: none"> • Account balance • Account details • Transaction history 	<ul style="list-style-type: none"> • Bill payments • Domestic fund transfer • Levy payments • International transfer 	<ul style="list-style-type: none"> • Borrower details • Loan details • Credit facility details 		<ul style="list-style-type: none"> • Reward points • Reward catalogue item • Reward merchants
Citibank	<ul style="list-style-type: none"> • Product details • Insurance product details and bookings 	<ul style="list-style-type: none"> • Account transactions • Account balance • Close account 	<ul style="list-style-type: none"> • Bill payments • Domestic fund transfer 	<ul style="list-style-type: none"> • Loan offer • Loan application • Application decision • Application status 	Customer information	<ul style="list-style-type: none"> • Card usage details • Repayment plans • Partner card list • Report card lost • Pin reset • Reward points • Rewards rebates balances • Reward redemption
Standard Chartered Bank	<ul style="list-style-type: none"> • FX rates • ATM location • Retail products (accounts & loans) • Custody 	<ul style="list-style-type: none"> • Create account • Account transactions • Account balance 	<ul style="list-style-type: none"> • Corporate collections • Domestic fund transfer • International transfer 		Lead generation	

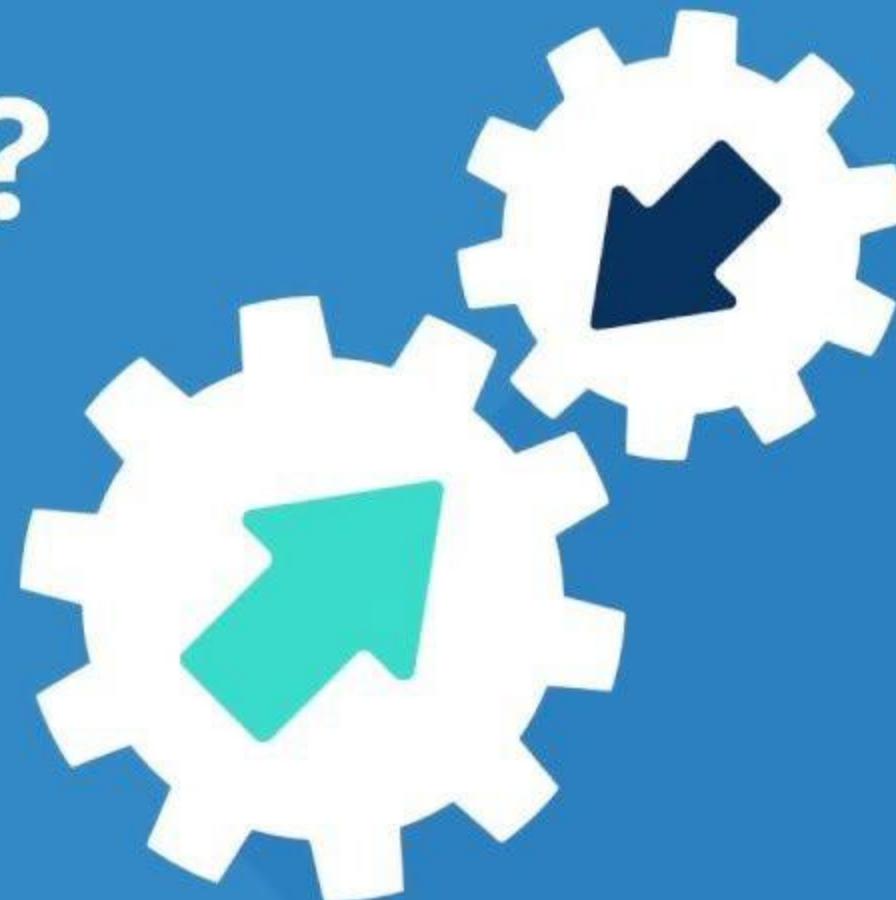
Showcases of API application



Intro: https://www.youtube.com/watch?v=63lwQ1qCx_U
 Demo: <https://www.youtube.com/watch?v=9LifJMgJtTQ>

What is an API?

An API is a very useful mechanism that allows two pieces of software to exchange messages or data in a standard format. Thus, it becomes an instrument to search for new revenue streams, open the doors to talent, or automate processes in an innovative way.



Open application programming interface (API)

How does an API work?

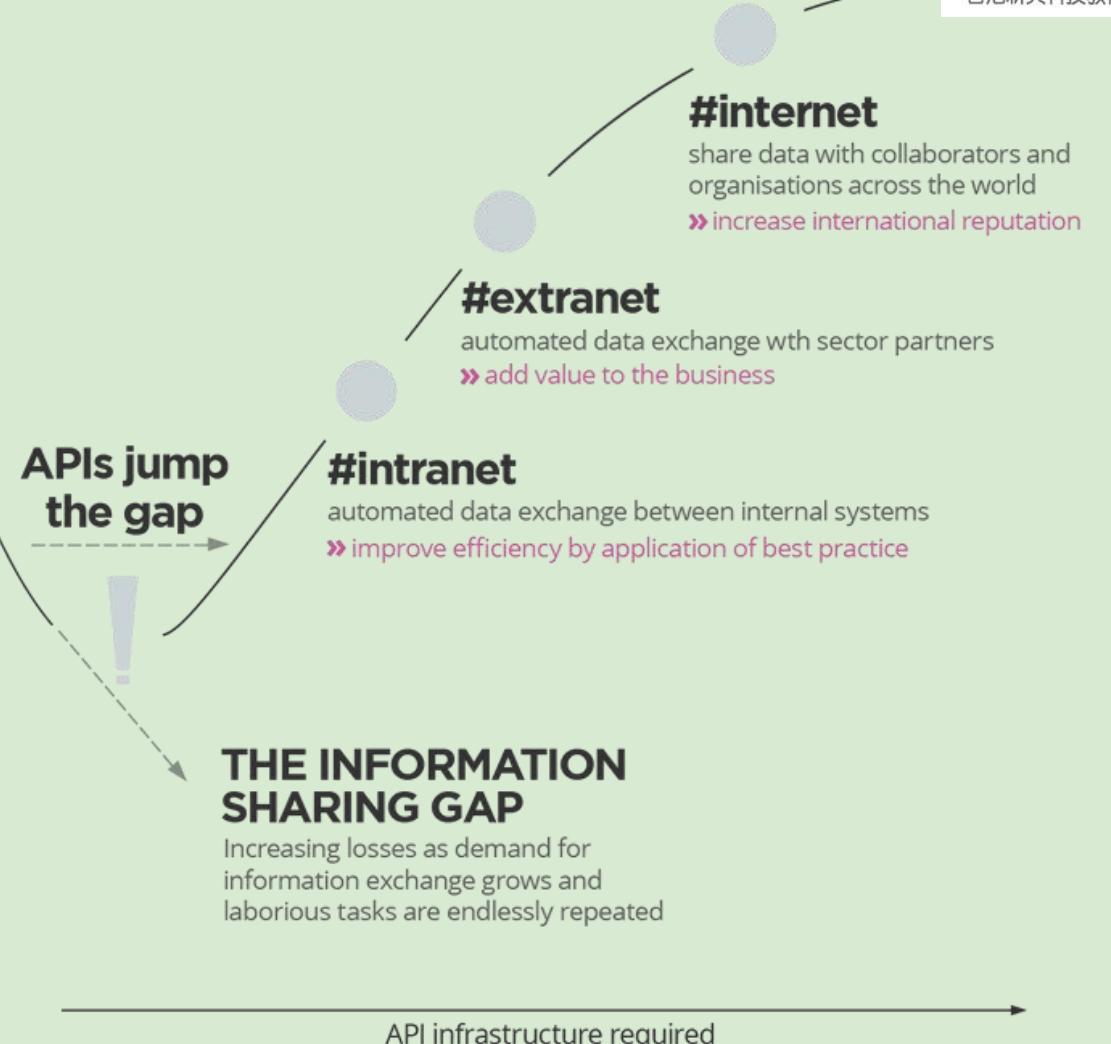
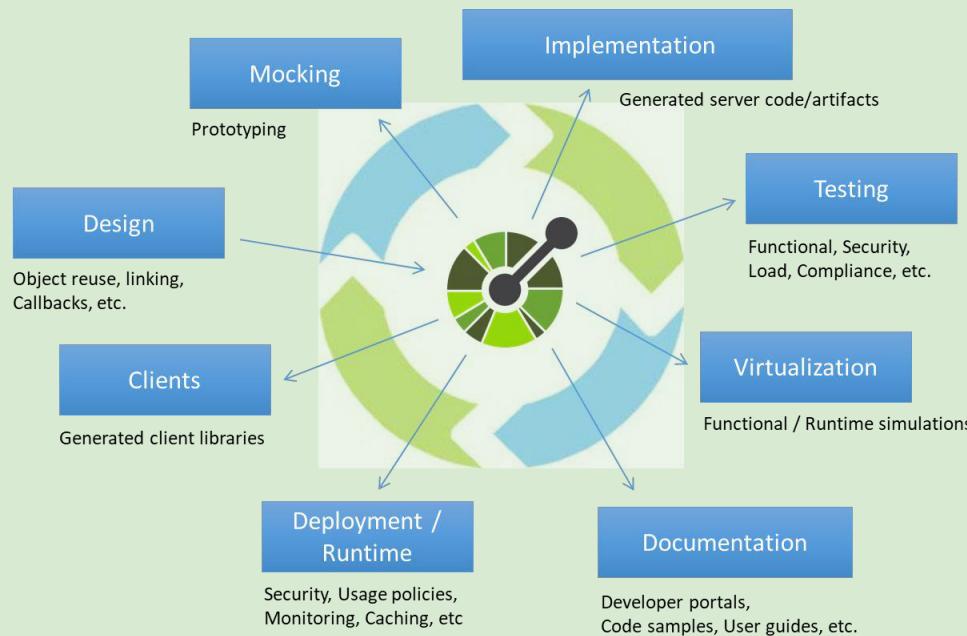
A simple way to understand how APIs work is to look at a common example—third-party payment processing. When a user purchases a product on an ecommerce site, they may be prompted to “Pay with Paypal” or another type of third-party system. This function relies on APIs to make the connection.

- When the buyer clicks the payment button, an API calls to retrieve information—also known as a request. This request is processed from an application to the web server via the API’s Uniform Resource Identifier (URI) and includes a request verb, headers, and sometimes, a query string.
- After receiving a valid request from the product webpage, the API makes a call to the external program or web server, in this case, the third-party payment system.
- The server sends a response to the API with the requested information.
- The API transfers the data to the initial requesting application, here the product website.

While the data transfer will differ depending on the web service being used, the requests and responses all happen through an API. There is no visibility on the user interface, meaning APIs exchange data within the computer or application, and appear to the user as a seamless connection.

Open application programming interface (API)

Benefits of API



Open application programming interface (API)

APIs in action: common examples

Because APIs allow companies to open access to their resources while maintaining security and control, they have become a valuable aspect of modern business and personal applications. Here are some popular examples of API uses that users encounter almost every day:

- Universal logins: A popular API example is the function that enables people to log in to websites by using their Facebook, Twitter, or Google profile login details. This convenient feature allows any website to leverage an API from one of the more popular services for quick authentication, saving them the time and hassle of setting up a new profile for every web application or new membership.
- Internet of Things (IoT): These “smart devices” offer added functionality, such as internet-enabled touchscreens and data collection, through APIs. For example, a smart fridge can connect to recipe applications or take and send notes to mobile phones via text message. Internal cameras connect to various applications so that users can see the contents of the refrigerator from anywhere.
- Travel booking comparisons: Travel booking sites aggregate thousands of flights, showcasing the cheapest options for every date and destination. This service is made possible through APIs that provide application users with access to the latest information about availability from hotels and airlines, either via a web browser or the

Open application programming interface (API)

travel booking company's own application. With an autonomous exchange of data and requests, APIs dramatically reduce the time and effort involved in checking for available flights or accommodation.

- Mapping apps: In addition to the core APIs that display static or interactive maps, these apps use other APIs and features to provide users with directions, speed limits, points of interest, traffic warnings and more. users communicate with an API when plotting travel routes or tracking items on the move, such as a delivery vehicle.
- Twitter (X): Each Tweet contains descriptive core attributes, including an author, a unique ID, a message, a timestamp when it was posted, and geolocation metadata. Twitter makes the core attributes of public Tweets and replies available to developers and allows them to post Tweets on other webpages via the company's API.
- SaaS applications: APIs are an integral part of the growth in software-as-a-service (SaaS) products. Platforms like CRMs (customer relationship management tools) often include a number of built-in APIs that let companies integrate with applications they already use, such as messaging, social media, and email apps. This drastically reduces time spent switching between applications for sales and marketing tasks. It also helps reduce or prevent data silos that may exists between departments using different applications.

Open application programming interface (API)

Types of APIs

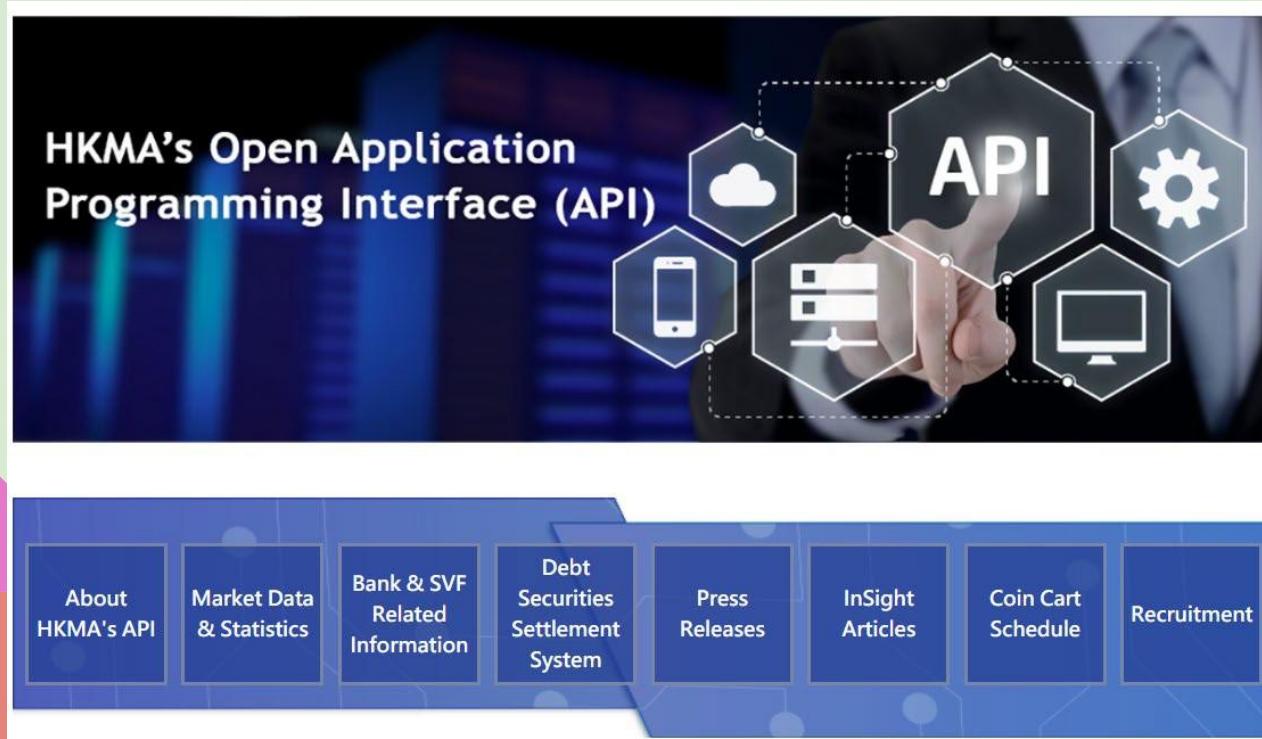
Today most APIs are web APIs that expose an application's data and functionality over the internet. Here are the four main types of web API:

- Open APIs are open-source application programming interfaces you can access with the HTTP protocol. Also known as public APIs, they have defined API endpoints and requests and responses formats.
- Partner APIs connect strategic business partners. Typically, developers access these APIs in self-service mode through a public [API developer portal](#). Still, they need to complete an onboarding process and get login credentials to access partner APIs.
- Composite APIs combine multiple data or service APIs. They allow programmers to access several endpoints in a single call. Composite APIs are useful in microservices architecture where performing a single task may require information from several sources.

Open application programming interface (API)

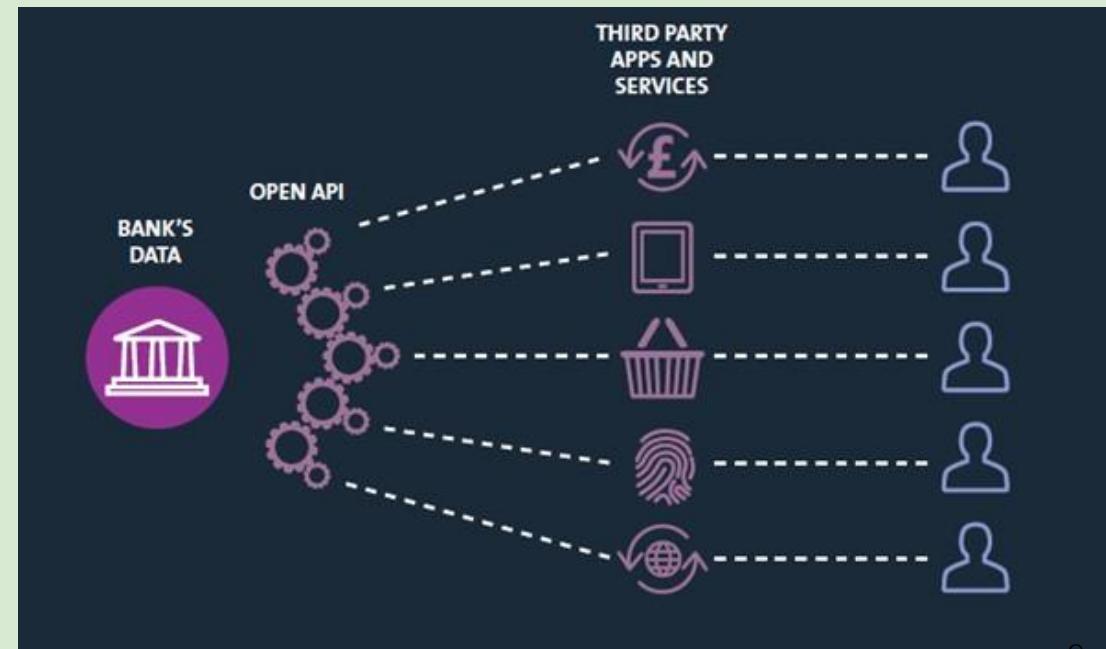
Fintech Open API in Hong Kong

Open API allows financial institutions to open up their internal IT systems and data for programmatic access by third-party service providers (TSPs) or their counterparts in an open and documented manner.



HKMA's Open Application Programming Interface (API)

The website features a central graphic showing a hand interacting with a digital interface displaying the word "API" and various icons representing different data types and devices. Below this, a navigation bar includes links for "About HKMA's API", "Market Data & Statistics", "Bank & SVF Related Information", "Debt Securities Settlement System", "Press Releases", "InSight Articles", "Coin Cart Schedule", and "Recruitment".



Open application programming interface (API)

Fintech Open API in HK

Use Cases:

- Information of different banks' products and services to be aggregated under the same website / application for comparison and financial planning by users with ease
- New service providers may also make use of the open information to offer unique products and new customer experience

About HKMA's API

The HKMA embraces the development and application of Open API. While promoting the wide adoption of Open API by the banking industry in Hong Kong, the HKMA sets an example by launching Open API on its official website.

150 sets of information covering all financial data and important information published on the HKMA's website have been made available for Open API, providing a convenient way for users to retrieve information from the HKMA's website.

The use of API is subject to the Terms and Conditions of Use which apply to this site.

First-time user? Learn more about HKMA's API and types of information you can access here at API documentation.

Benefits

- User friendly: No application, registration or certification is required for using the Open API offered by the HKMA's website. It is also free of charge. In order to facilitate users, examples illustrating how to write simple program to retrieve each set of relevant information and data through Open API are provided.
- Efficient and convenient: Automatic update of information after a one-off programming exercise
- Promoting innovation: Consolidation of different information in a more flexible way for the development of new applications

API available

- Market Data & Statistics
- Bank & SVF Related Information
- Financial Market Infrastructure New
- Press Releases
- inSight Articles
- Coin Cart Schedule
- Recruitment

References

- “Financial Technology”, Niels Pedersen, 2021, Kogan Page
- “History of Fintech”, August 27, 2021, Fintica (<https://www.fintica.com/history-of-fintech/>)
- “The Economic Consequences of the Peace”, John Maynard Keynes, 2005 (<https://www.gutenberg.org/ebooks/15776>)
- “Seven Technologies Shaping the Future of FinTech”, McKinsey Company, November 9, 2021 (<https://www.mckinsey.com/cn/our-insights/our-insights/seven-technologies-shaping-the-future-of-fintech>)
- GFIN+Cross-Border+Testing+Initiative+Cohort+1_0+external+2_FINALFINAL (https://static1.squarespace.com/static/5db7cdf53d173c0e010e8f68/t/62baeaac3ec4851f313afe78/1656416941725/GFIN+Cross-Border+Testing+Initiative+Cohort+1_0+external+2_FINALFINAL.pdf)
- “Final Report – Sector Inquiry into Consumer Internet of Things”, Commission to the Council and the European Parliament, 2022 (https://ec.europa.eu/competition-policy/system/files/2022-01/internet-of-things_final_report_2022_staff_working_document_0.pdf)
- EY-regulatory-technology-regtech (https://assets.ey.com/content/dam/ey-sites/ey-com/en_us/topics/financial-services/ey-regulatory-technology-regtech.pdf)
- “A Comprehensive Review of Internet of Things: Technology Stack, Middleware, and Fog/Edge Computing Interface”, Omer Ali et al, Sensors, 2022 (<https://www.mdpi.com/1424-8220/22/3/995/htm>)
- “5 of the Top 10 Financial Institutions are Now Platforms”, CFTE, September 2, 2020 (<https://blog.cfte.education/5-of-the-top-10-financial-institutions-are-now-platforms/>)

References

- Fintech Laws and Regulations Hong Kong 2023 : ICLG - Fintech Laws and Regulations - Hong Kong Chapter covers a broad overview of common issues in fintech laws and regulations. (<https://iclg.com/practice-areas/fintech-laws-and-regulations/hong-kong>)
- Fintech, RegTech, and the role of compliance in 2023 (<https://legal.thomsonreuters.com/en/insights/reports/fintech-regtech-and-role-of-compliance-in-2023/form?gatedContent=%252Fcontent%252Fwp-marketing-websites%252Flegal%252Fgl%252Fen%252Finsights%252Freports%252Ffintech-regtech-and-role-of-compliance-in-2023>)
- Fintech, RegTech, and the role of compliance in 2023 (<https://legal.thomsonreuters.com/en/insights/reports/fintech-regtech-and-role-of-compliance-in-2023/form?gatedContent=%252Fcontent%252Fwp-marketing-websites%252Flegal%252Fgl%252Fen%252Finsights%252Freports%252Ffintech-regtech-and-role-of-compliance-in-2023>)
- SecurList by Kaspersky (<https://securelist.com/spam-and-phishing-in-2021/105713/>)
- From Perils to Precautions: Recognising the Importance of Regulating Crypto <https://www.hkubs.hku.hk/research/thought-leadership/hkej-column/from-perils-to-precautions-recognising-the-importance-of-regulating-crypto/>
- 吳恩達：生成式AI目前商業價值最小，但未來三年將翻倍 <https://www.cw.com.tw/article/5127492>
- e-HKD: A technical perspective https://www.hkma.gov.hk/media/eng/doc/key-functions/financial-infrastructure/e-HKD_A_technical_perspective.pdf
- <https://www.ibm.com/topics/api>

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