



Transformation of money: a multi-facet phenomenon

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Agenda

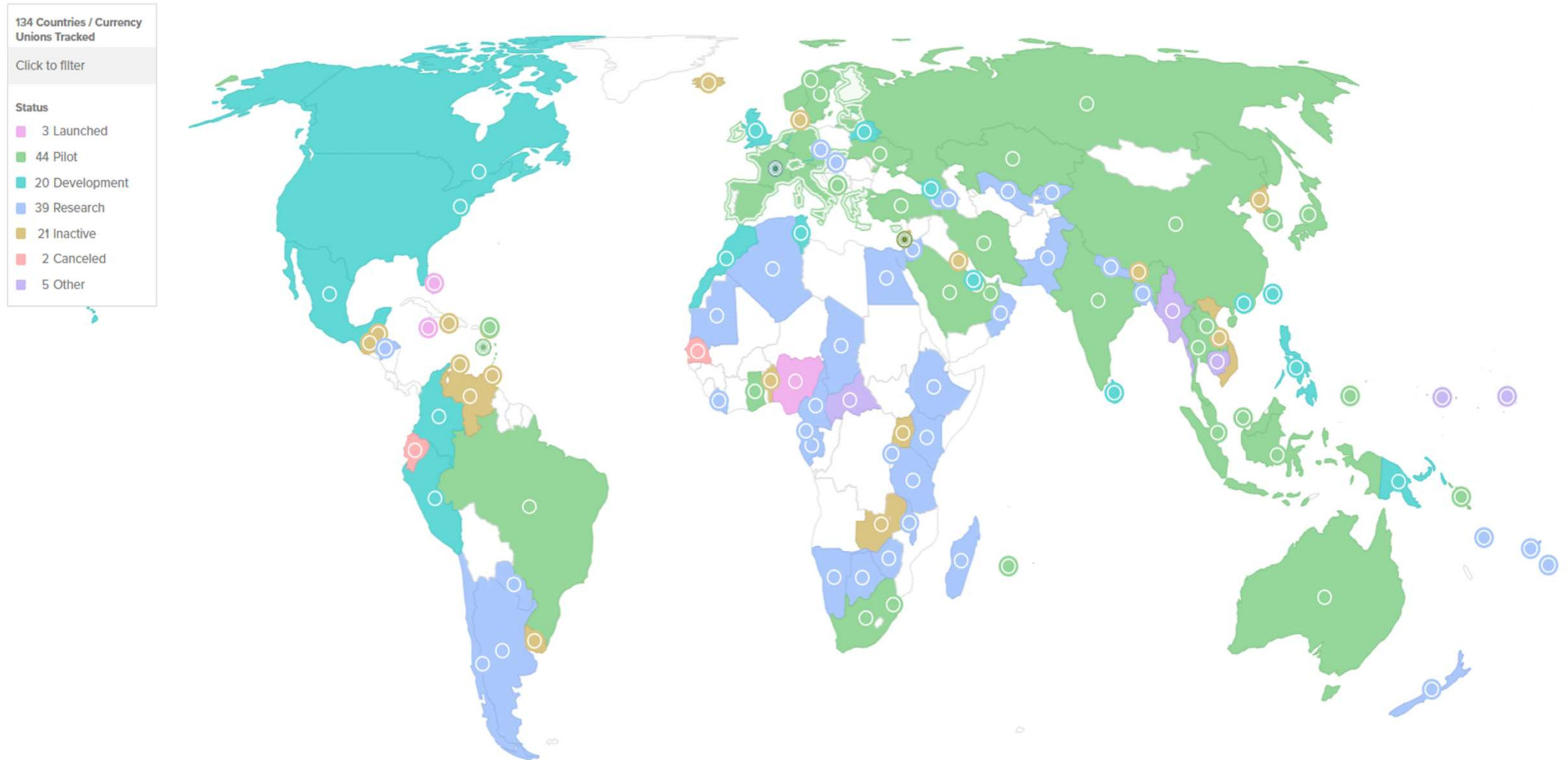


1 CBDC Retail

2 CBDC Wholesale

3 Crypto-assets

CBDCs world map



Source: Atlantic Council ([link](#))

Libra...

On 18 June 2019, the members of the Libra Association, registered in Geneva, announced the initiative of the Libra currency, a stable cryptocurrency (so-called stablecoin) that was supposed to enter circulation in the second half of 2020.



In practice, Libra is not just a new cryptocurrency, but a real blockchain platform, with the possibility of developing smart contracts and with the stated goal of providing financial services to **1.7 billion citizens**.

BLOCKCHAIN



The Libra blockchain will be (at least in a first phase) permissioned. Each of the members of the Libra Association will hold an identified validator node, but the white paper also mentions the future **goal of converging to a permissionless network**. At least for the launch phase, unlike permissionless platforms such as Bitcoin and Ethereum in which anyone can participate in the validation process, in Libra the validators will be dozens of large international companies.

RESERVE



Libra was designed with the objective of having low volatility: a stablecoin pegged to the '**Libra Reserve**' consisting of a basket of deposits denominated in currencies of different central banks and short-term government bonds will be held in the Reserve for each Libra issued. The return on the securities stored in the 'Libra Reserve' will serve to cover operating costs and possibly remunerate members for their activities.

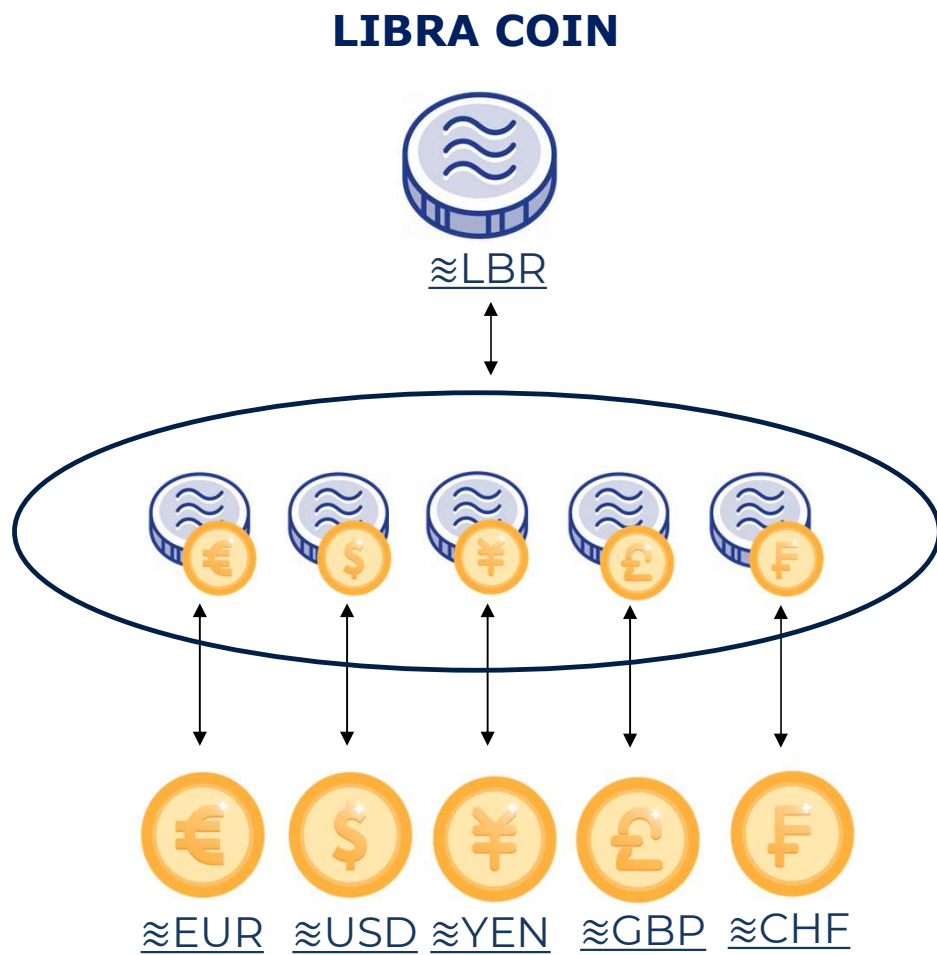
LIBRA ASSOCIATION



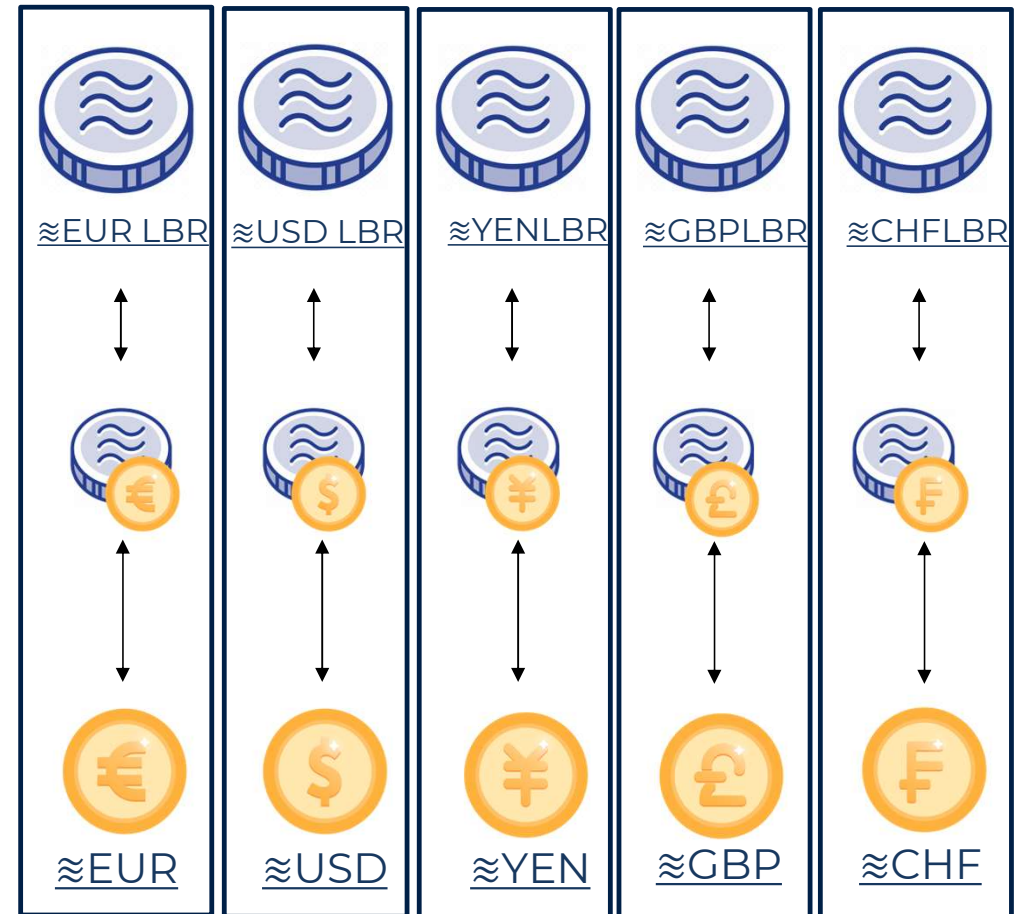
Libra Association is an independent non-profit organisation based in Geneva. The purpose of the association is to coordinate and provide a framework for network and reserve governance.

The Libra Association is also the entity through which the Reserve is managed and is the only entity that can create (issue) and destroy money.

...(Libra architecture)...



Stablecoins pegged to official currency



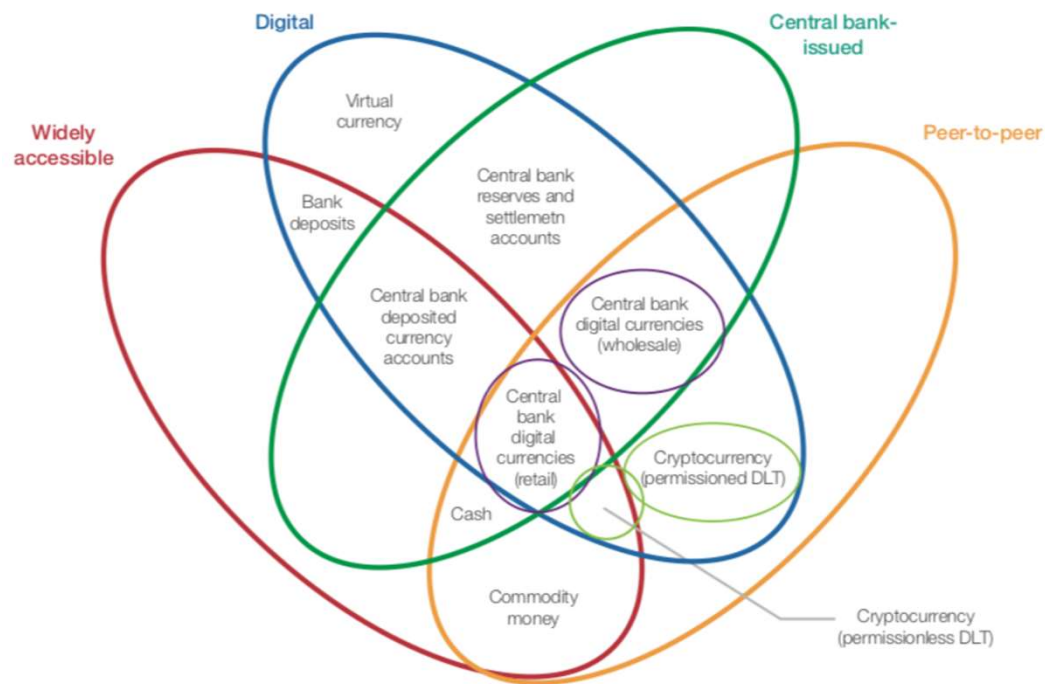
... a wake up call for central banks

Central bank biggest fears:

Losing monetary anchor

Losing monetary policy intervention

Citizens paying with foreign/ private currency



BIS – CBDC survey results

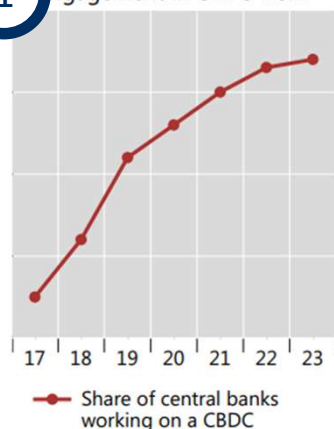
In June 2024, the BIS published the results of the CBDC survey, updating the data from the previous survey in July 2023. **Responding central bank jurisdictions account for 81% of the world's population and 94% of global economic output.**

Central bank involvement in CBDC work advances further¹

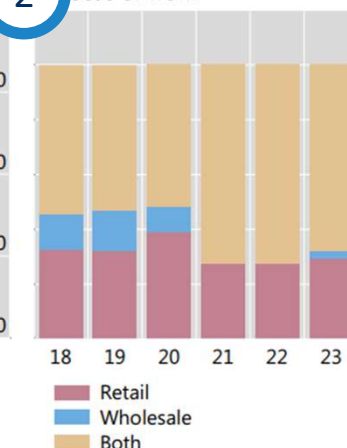
As a percentage of respondents

Graph 2

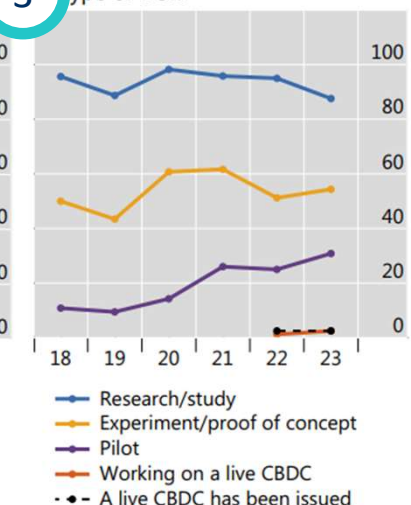
1 Engagement in CBDC work



2 Focus of work²



3 Type of work²



¹ Based on responses to the survey. Therefore, the results do not necessarily match with actual CBDC issuance as reported in other sources such as the database from Auer et al (2020), the CBDC Tracker at cbdctracker.org from Mikhalev et al (2021) and the CBDC Tracker from the Atlantic Council at www.atlanticcouncil.org/cbdctracker. ² Share of respondents conducting work on CBDCs.

Sources: BIS central bank surveys on CBDCs and crypto, 2017–23; authors' calculations.

What emerge from the study:

1

By 2023, the share of central banks engaged in some form of CBDC activity **increased to 94%**.

2

In contrast to previous surveys, there is a 2% of central banks that focus only on wholesale CBDCs, while **those working only on a retail version remain stable at around 30%**. The majority, just under **70%**, confirm that they are **working on both** areas of application.

3

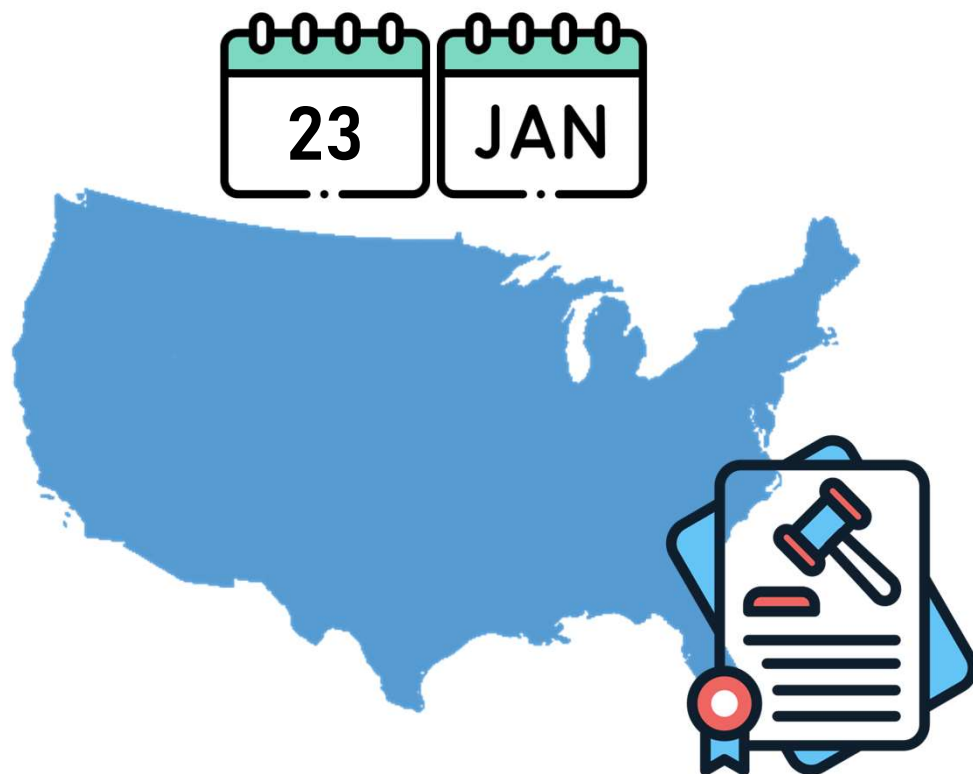
More than half of the central banks (**54%**) are **experimenting with PoC**, while about a third (**31%**) are **conducting a pilot project** (right-hand graph).

CBDCs issued and currently active

	Sand Dollar	DCash	eNaira	JAM-DEX
Central Bank	Central Bank of the Bahamas	Eastern Caribbean Central Bank	Central Bank of Nigeria	Bank of Jamaica
Issuance date	October 2020	March 2021	October 2021	July 2022
Use case	Retail	Retail	Retail	Retail
Architecture	Intermediate	Intermediate	Intermediate	Intermediate
Infrastructure	Hybrid	DLT	DLT	Traditional
Main reasons	<ul style="list-style-type: none"> • Financial inclusion • AML/CFT measures enhancement 	<ul style="list-style-type: none"> • Financial inclusion • AML/CFT measures enhancement • Facilitating banking activities in remote territories 	<ul style="list-style-type: none"> • Financial inclusion • Facilitating remittances 	<ul style="list-style-type: none"> • Reduce cash storage and its handling costs
Note	/	<ul style="list-style-type: none"> • Active in 8 countries • Between January and March 2022, the system was switched off, due to technical problems 	<ul style="list-style-type: none"> • Depending on the identity level provided, the transaction limit varies 	/
	Link	Link	Link	Link

Currently, none of these projects are attracting the interest hoped for by the relevant central banks, which are working to restructure the platforms or at least reposition them to increase the rate of use by citizens.

U.S. Executive order – January 2025



The Executive Order, among other things:

Prohibits any work on CBDCs

Under the Executive Order, federal agencies are **prohibited from “undertaking any action to establish, issue, or promote CBDCs” in the US and abroad**. This includes immediately terminating any active plans and initiatives related to the creation of CBDCs in the US.

Creates an interagency working group on Digital Assets Markets

The working group must elaborate recommendations on regulatory and legislative proposals, including (i) a **proposed federal regulatory framework** relating to the issuance and operation of digital assets; and (ii) the potential establishment of a **“national digital asset stockpile”**

Digital euro: what is and which benefits can bring

Digital euro would be a central bank liability made available in digital form for use in retail payments

Possible advantages in a range of scenarios, particularly:



Declining use of **cash** as a means of payment



Sovereignty concerns related to foreign CBDCs or private means of payment

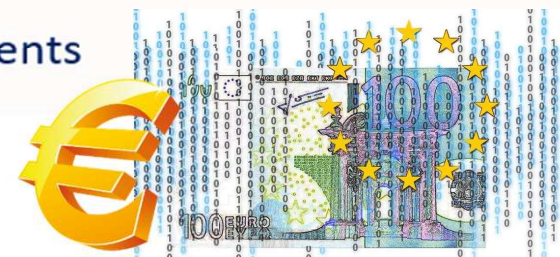


Supporting **digitalisation** in the European economy



Bottom line: To maintain public access and full **usability** of central bank money in a world in which consumers and firms turn more and more to electronic payments

Fonte: www.ecb.europa.eu



Investigation phase and preparation phase



The ECB conducted the **investigation phase** of the digital euro project **between October 2021 and October 2023**, with the aim of deepening and addressing the central aspects regarding the design and the associated deployment model.



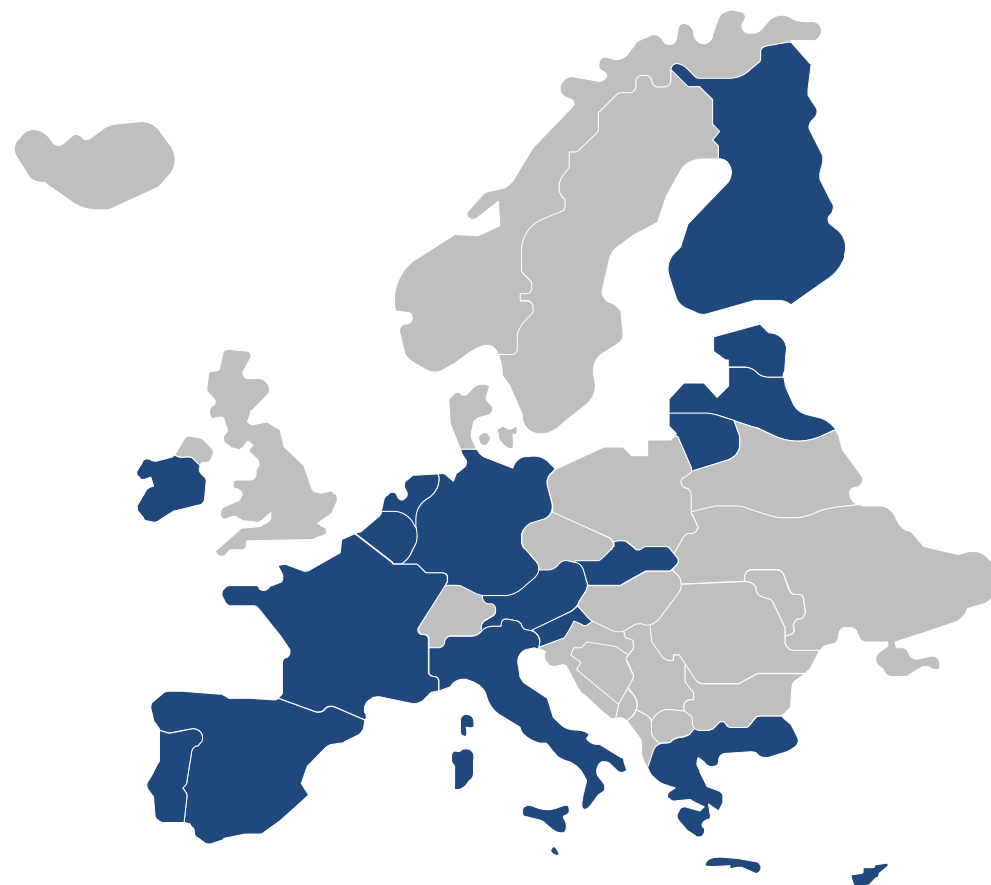
The investigation phase **benefited from the experimental work done by the ECB and national central banks** in the euro zone, which involved participants from academia and the private sector.



The **ECB established the MAG, ERPB and RDG**, which brought the views of users and distributors of the digital Euro during the investigation phase of the project.



On October 18, 2023, the Governing Council of the ECB announced the start of the **preparation phase**, with the aim of realizing the environment within which the digital euro could be issued, including through the development of the **Rulebook** and the selection of providers for the development of the platform and infrastructure.



Possible impacts of issuing a CBDC

Impact on monetary policy

- Control of monetary variables
- Holding outside the euro area

Impact on bank deposits and credit

- Banking disintermediation
- Mechanisms to prevent excessive use of digital Euro as a store of value

Financial stability

- Avoiding the spread of CBDCs and private stablecoins issued by other countries

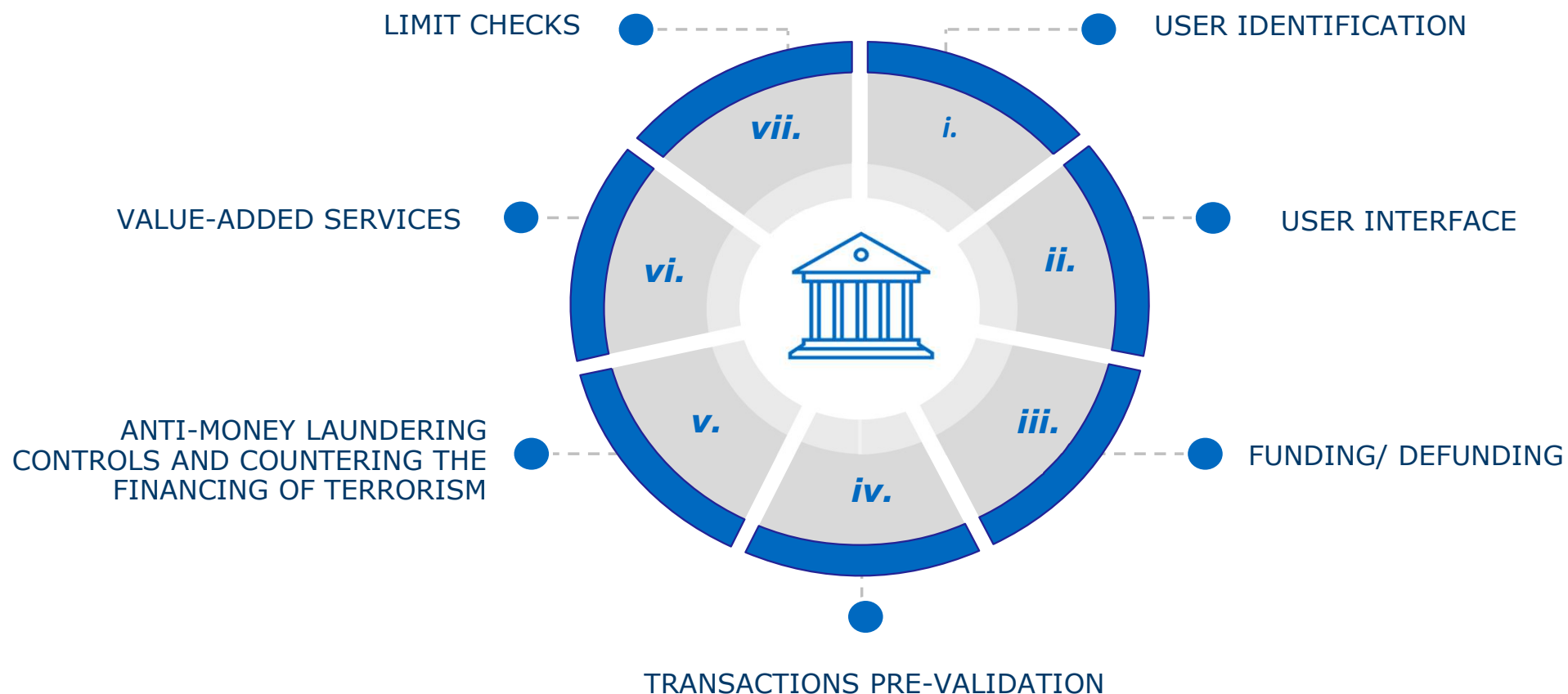
Payments

- Coherence with cash
- Consistency with electronic instruments already offered in the market

Role division between Eurosystem and private sector



Potential roles for banks



Where do we stand?



- ★★★★ 1. The digital (retail) euro will happen.
- ★★★★ 2. The digital euro will be legal tender.
- ★★★★ 3. It will be distributed by banks.
- ★★★★ 4. Basic services will be free for citizens.
- ★★★ 5. The digital euro will be remunerated at an interest rate.
- ★★★★ 6. There will be a maximum holding limit (to counterbalance the risk of not disintermediation of banks).
- ★★★★ 7. It will also be available offline.
- ★★★☆☆ 8. It will comply with the current AML regulation.
- ★★★☆☆ 9. It will be DLT-based.
- ?? 10. It will be a vehicle for innovation.

Note: stars indicate the probability of occurrence (in yellow) or not occurrence (in red)

Critical, but constructive: ABI's Position paper



INDEX

EXECUTIVE SUMMARY	4
ECB OBJECTIVES	6
DIGITAL EURO: ABI PILLARS	7
ROLE OF INTERMEDIARIES	9
Distribution model	9
Compensation model	10
Tools to avoid excessive use of digital euro	11
Funding and de-funding of digital euro positions	12
SETTLEMENT CHOICES	13
Transaction Validation	13
Privacy of personal data	14
TECHNOLOGICAL ARCHITECTURE	15
DLT infrastructure	15
Programmability	15
A concrete case of programmability: the Culture Pass	18
CONCLUSIONS	19
ANNEX: 10 CRITERIA FOR A CENTRAL BANK DIGITAL CURRENCY	20

*Italian banks believe that the **digital euro** could become a cornerstone of the European digital economy, especially if it enables supervised intermediaries to develop innovative value-added services, allowing them to meet currently unmet needs or simplify existing processes.*

In this way, it will be possible to: i) offer a basic service free of charge to consumers that is easily accessible; ii) provide advanced services alongside it, which can enable interested parties to carry out truly innovative payment processes; iii) fully implement a two-tier model, where a core set of components managed by the central bank acts as a catalyst for market development as a whole, enabling commercial banks to offer basic and value-added services competitively and independently from non-European players.

ABI key principles

Shared principles that constitute the position of the Italian banking industry in response to the ECB consultation on the Digital Euro:



01

the importance of safeguarding the intermediation role of banks for the economic system;

02

the need for the D€ to be functionally different from an electronic payment instrument in order to complement and not compete with commercial bank money, bank initiatives and investments (especially in the field of payment services);

03

the preference for the use of Distributed Ledger Technology - DLT to exploit the great potential of this new technology and provide functionalities based on distributed technologies: a **D€** built on DLT, thanks to its **programmability**, could balance, on one hand, the full control and governance of issuance by the ECB/Eurosystem and, on the other, allow banks to provide and offer new services, or services already offered in a much more efficient way.

The role of commercial banks – developing use cases



SAFE RETURN

The process of returning a purchase made through an e-commerce. Thanks to the implementation in a distributed ledger of instructions that are binding and executable only on the occurrence of predetermined conditions (so-called Smart contract), it is possible to make the process of returning purchased goods more reliable and consumer-friendly. At the time of delivery of the returned goods by the client, the sum of money can be blocked and kept in an escrow account, which only releases it after confirmation or rejection of the return.

Execution of payments for products on consignment. The case provides for the transparent management of the execution of payments for products on consignment in the so-called short supply chains, using the functionality of "split transaction" (atomic and instantaneous transactions). At the time of purchase, a single transaction is divided so that payment is directed to the seller of the product and to the various producers making up the supply chain.

PAY & SPLIT



CULTURE PASS

Culture Pass is related to the bonuses provided by the Government to support some kind of expenses: the development of this case will lead to the creation of specific smart contracts linked to the Digital Euro, which will allow to encode the logic and purpose of expendability of these tokens, making it possible to use the bonus only in compliance with the terms and conditions indicated by the issuing entity. In addition, a simplified prototype linked to the management of sums to minors (pocket money) will be developed, in order to limit the usability only to the categories of purchases allowed by law.

Performance of multiple payments expected at the time of purchasing a property through the granting of a mortgage. The execution of payments (to the seller, to the agency, to the notary, to the seller's bank to pay off a previous mortgage, etc.) through the enabled functionality of making a single transaction divided into multiple payments will simplify and automate the management of transactions towards the various actors involved in the process of buying and selling a property.

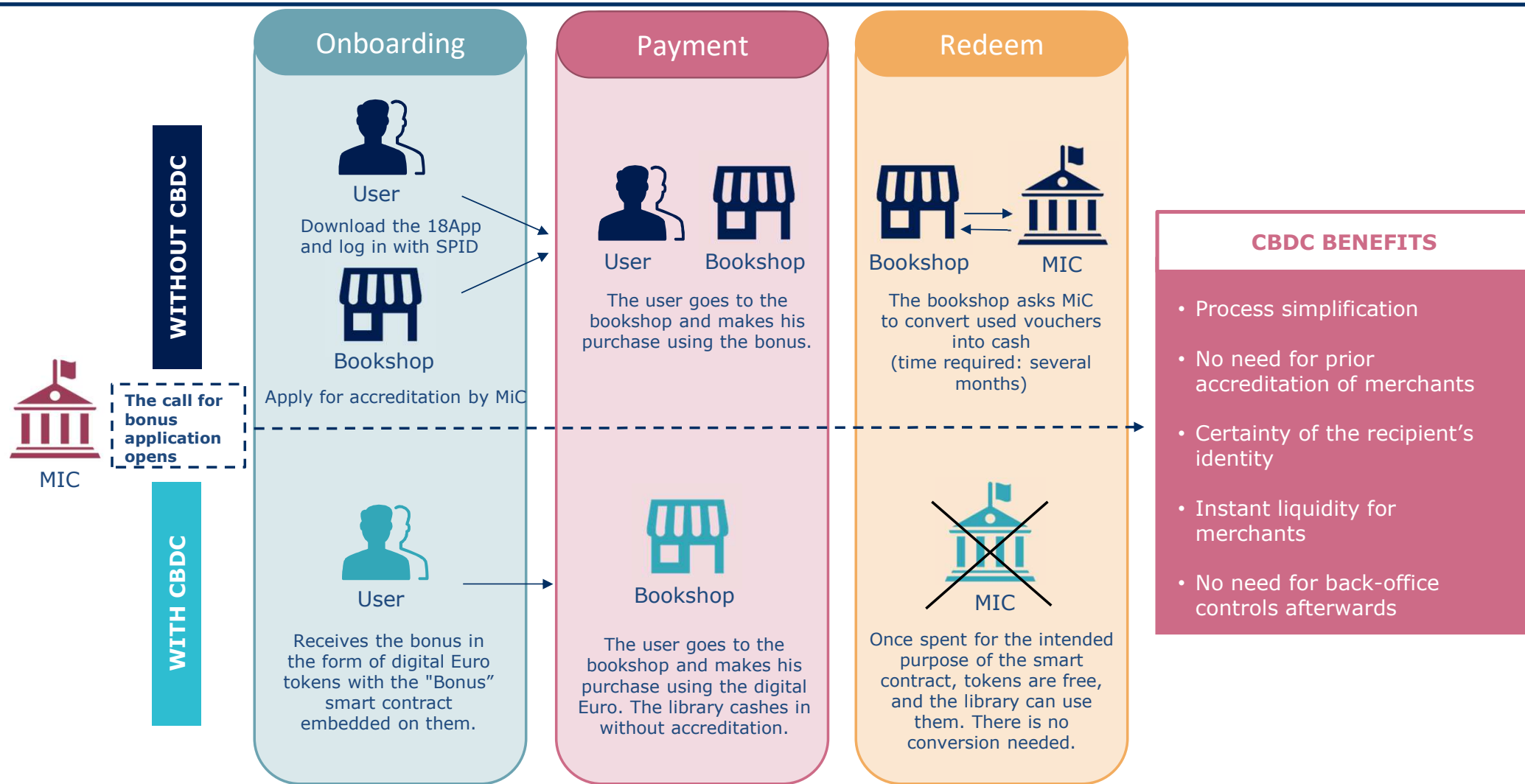
SIMPLY HOME



PROGRAMMABILITY

The value of using the Digital Euro in the cases presented is focused on the transfer of value that was not previously possible through the programmability of payments.

A first example – culture pass



Digital euro in the Metaverse innovative service

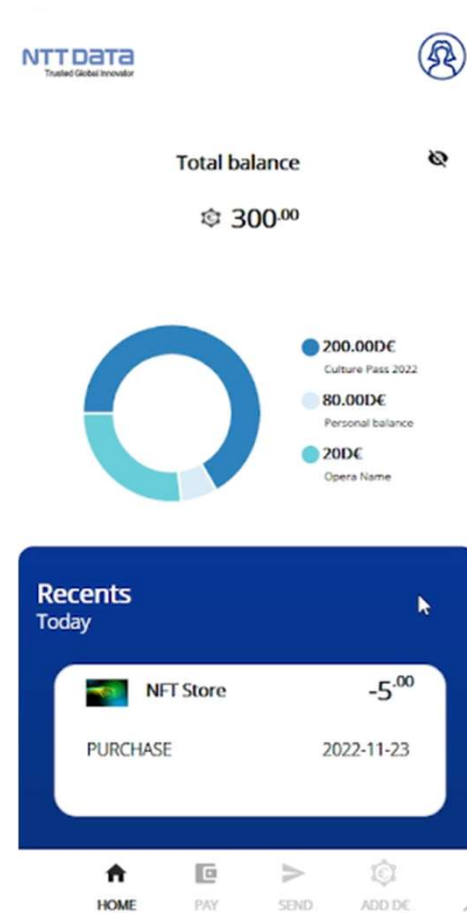
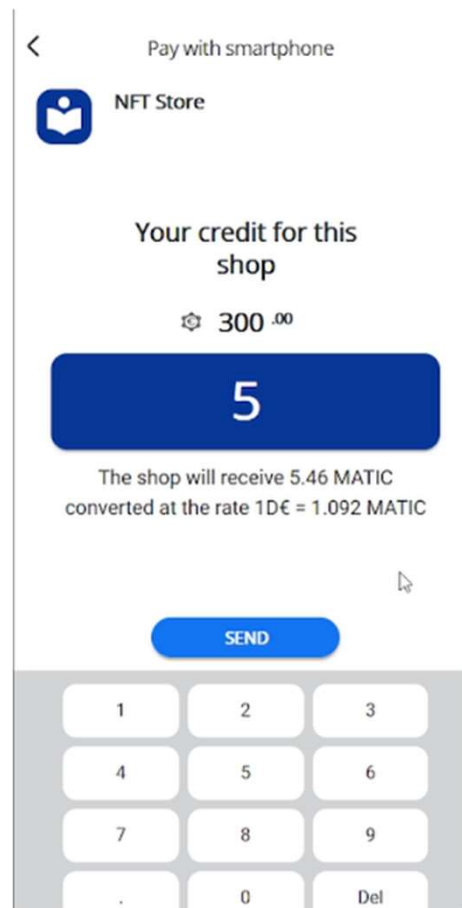
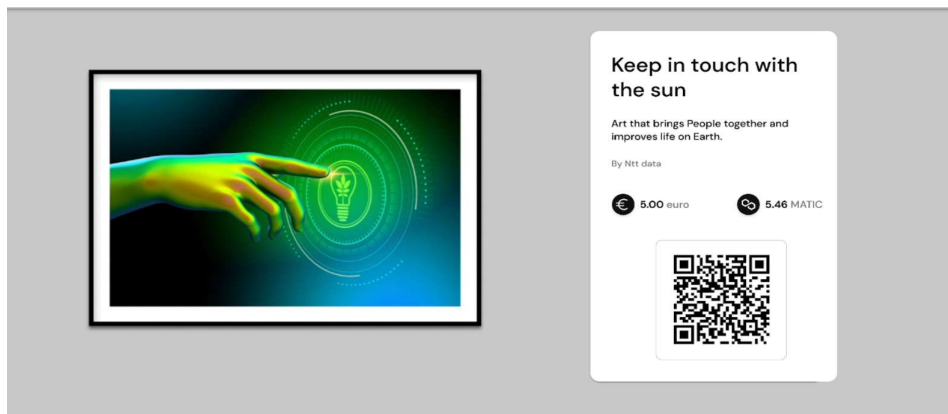
With a view to continuing to contribute to the definition of a suitable tool for the future, in collaboration with NTT DATA and taking advantage of what had already been achieved during the experimentation path on the digital Euro, a new use case was built focusing on the **purchase of products and services in the metaverse**.

Specifically, a space in the metaverse and a set of non-fungible tokens was developed for the use of a digital **Euro-denominated wallet for the purchase of a NFT (Non-Fungible Token)**. The bank can offer a service to protect the customer, in this case the young and very young, by avoiding direct exposure to crypto-assets; the customer, in fact, could only hold central bank digital currency, while the bank offers the online conversion and purchase service.

To help better understand the context, the main examples of companies (banking and non-banking) that have already invested in one or more virtual worlds, offering various types of experiences to the users of such platforms, were also shown.



Digital euro in the Metaverse innovative service



Agenda



1 CBDC Retail

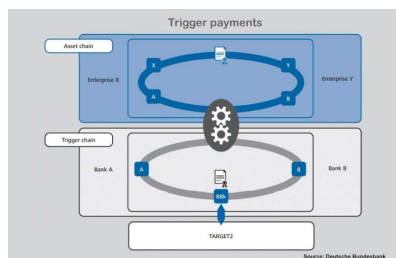
2 CBDC Wholesale

3 Crypto-assets

Eurosystem work on wCBDC – Interoperability solutions

As a part of the activities carried out by the Eurosystem regarding **wCBDC**, three main possible interoperability solutions have been identified, studied and designed by three different National Central Banks.

Trigger Solution

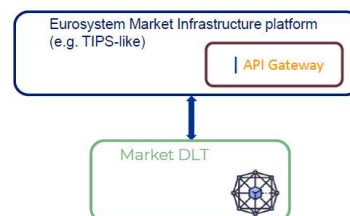


Asset leg: smart contract on a market DLT locks asset/payment and triggers the payment transaction via the Trigger Chain (Eurosystem DLT platform acting as “technical bridge”)

Cash leg: settlement of the payment occurs in the current TARGET Services (i.e. RTGS component of T2)

DvP/PvP: confirmation of payment in CeBM in the TARGET Services is forwarded to the market DLT (via the Trigger Chain) for the delivery of the asset/payment on the market DLT

TIPS Hash-Link

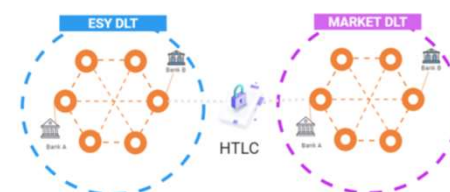


Asset leg: smart contract on a market DLT locks asset/payment and forwards payment transaction via an API and an interoperability mechanism (hash link)

Cash leg: settlement of the payment takes place via TIPS-like platform (which could become part of the central bank-run infrastructure and services in the future)

DvP/PvP: confirmation of payment in CeBM in the TARGET Services results in the delivery of the asset/payment on the market DLT

Full DLT



Asset leg: smart contract on a market DLT locks asset/payment and forwards payment transaction to the DL3S DLT (Eurosystem DLT platform for CeBM settlement) via an interoperability mechanism

Cash leg: settlement of the cash leg occurs in the DL3S DLT (which could become part of the central bank-run infrastructure and services in the future)

DvP/PvP: interoperability mechanism is responsible for finalising the delivery of cash leg (in form of cash token) on the DL3S DLT, which releases the asset/payment on the market DLT

Eurosystem exploratory work

Within the Eurosystem's work on **wCBDC** (wholesale Central Bank Digital Currency), a **public call for interest** has been initiated for the participation in the **exploratory phase**, which involves a series of experimentation activities. Below are the key details:



- **Participation Modes:** It was possible to participate in two ways: "trials" (with actual central bank digital currency regulations) or "experiments" (using simulated regulations).
- **Participation Waves:** There were two waves: one from May (the application deadline had been set for January 31st) and another from July, both until November 2024.
- **Interoperability Solutions:** Participants conducted experimentation activities using one or more interoperability solutions provided by National Central Banks.
- **Focus Areas:** The experimentation was primarily focused on Delivery vs Payment (DvP) cases, but Payment vs Payment (PvP) cases were also considered on a case-by-case basis.

Goals of the exploratory work



Compare the 3 Interoperability-type solutions from a business, operational and technical perspective
➤ relying on the **experience and input** provided by **market participants** during trials and experiments



Understand concretely the added value of new technologies to wholesale settlement and capital markets: potential expected gains (if any) compared to existing infrastructures (e.g. efficiency, competition, market access) and potential negative implications (e.g. fragmentation)
➤ based on the **business cases** put forward by **market participants** in trials and experiments.



Learning strategy and **detailed learning objectives** to achieve this

LEONIDAS in a nutshell

ABI Lab launched the Leonidas project in 2023, in collaboration with ABI, NTT, R3 and a group consisting of 17 banks. The initiative was selected as part of the second Call for Proposals - focused on the use of DLT for banking and financial services - of "Milano Hub", the innovation center created by the Bank of Italy to support the digital evolution of the financial market.



LEONIDAS

Liquidation
Effective
ONchain
Dlt
Asset on
Spunta



One step further: Leonidas and the Eurosystem Exploratory Work



Following the conclusion of the experimental work within the Milano Hub and leveraging the participants' willingness to **contribute to the ECB's initiated Exploratory Work**, ABI Lab, with the support of the Innovation Office of ABI, has applied for the Call for Interest along with 8 banks and **has been selected for the experimentation phase.**



The use case presented is the **settlement of liquid balances** resulting from the reconciliation process, in continuity with the work carried out at the Milan Hub, which is the Full DLT interoperability solution developed by Banque de France.



APPLICANT



OBSERVER

Banca MPS
BNL
Banco BPM
BFF Bank
BPER Banca
Crédit Agricole
Intesa Sanpaolo
Unicredit

Banca Mediolanum
BPS
BPPB
Banca Sella
Cassa Centrale
Cassa Centrale Raiffeisen
Cedacri
Credem
La Cassa (CSE)
Iccrea Banca
Mediobanca

The rationale behind the choice of the Full DLT solution

The decision to delve into the use of **DLT solutions** is consistent with what has been agreed on by the **Italian banking sector** when the first public consultation on this topic has been carried out. The associative stance has been to explore and deepen the benefits brought by distributed ledger technology, in line with by the positive experience with the paradigm at the industry level.

Our use case starts from **Spunta**, a DLT-based solution. Testing a **DLT-based interoperability solution** allows us to achieve the **maximum benefits** brought by the technology **streamlining the benefits** to the last phase of the **reconciliation process** (without having to go through traditional channels).

Among the benefits brought by an **end-to-end process on DLT**, the main ones in the field of wCeBM are **greater atomicity** and the **possibility of using programmability** logics using smart contracts on both legs of the settlement.

Being able to directly interact with the Banca d'Italia, we have **already delved into one of the solutions** proposed by the Eurosystem, namely TIPS-Hash link, we have assessed that it would be **more useful** for Italian banks to **explore a different solution**, in order to enhance knowledge on the subject and to experiment with different approaches.

Takeaways and what's next



Not only DvP use cases benefit from distributed technology: the **programmability** associated with smart contracts can also bring **great benefits to automated wholesale payments** and, regardless of the use case, where there is an **exchange of value** between banks



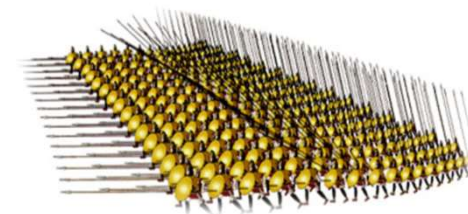
It is not about applying new technologies to old processes, but to **transform processes thanks to new technologies** to achieve **end-to-end** process and reap the **maximum benefits from technology itself**



The **evolution of infrastructure** can greatly benefit from the **use of DLT**, and it is, in our view, **the direction to take**.



Dialogue and collaboration between the **market and institutions** are of fundamental importance. It will be necessary to **understand together** what the next steps will be.



Agenda



1 CBDC Retail

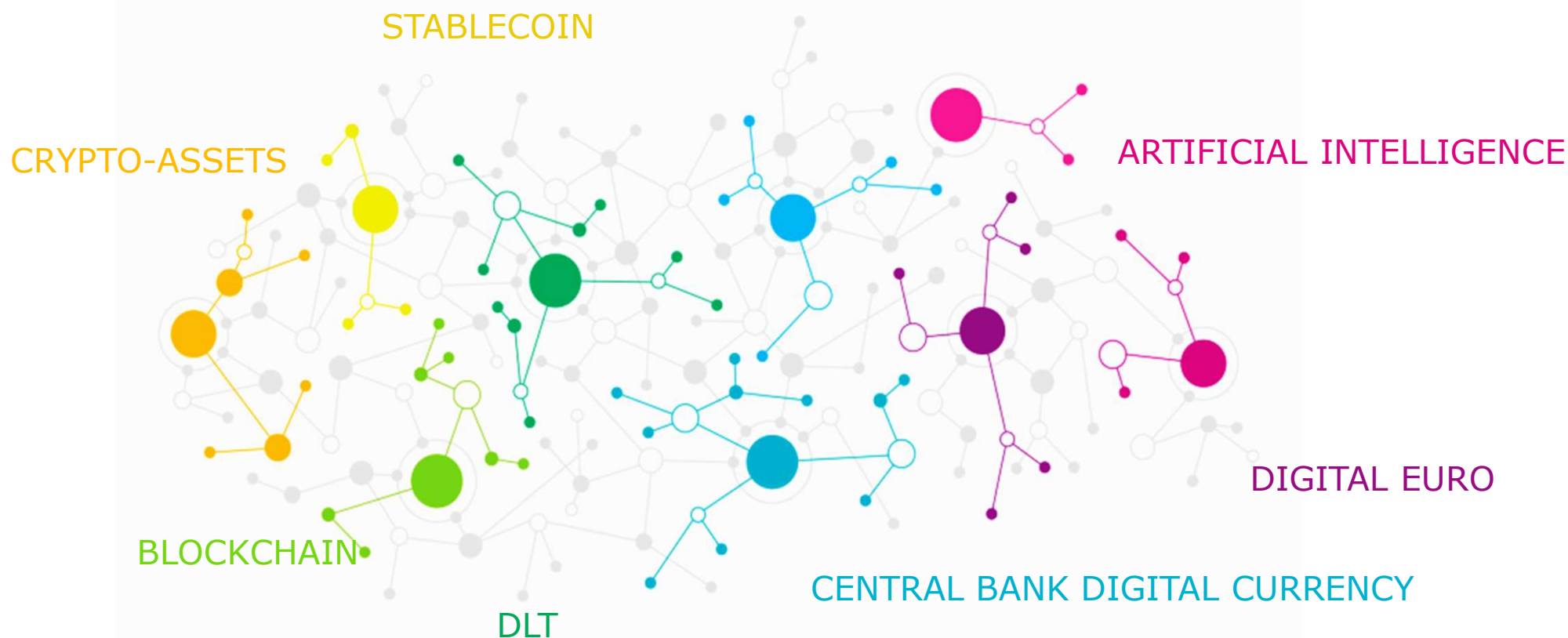
2 CBDC Wholesale

3 Crypto-assets

Misleading use of terms



A misuse of terms does not help to provide clarity, whereas working on definitions is a methodologically prerequisite.



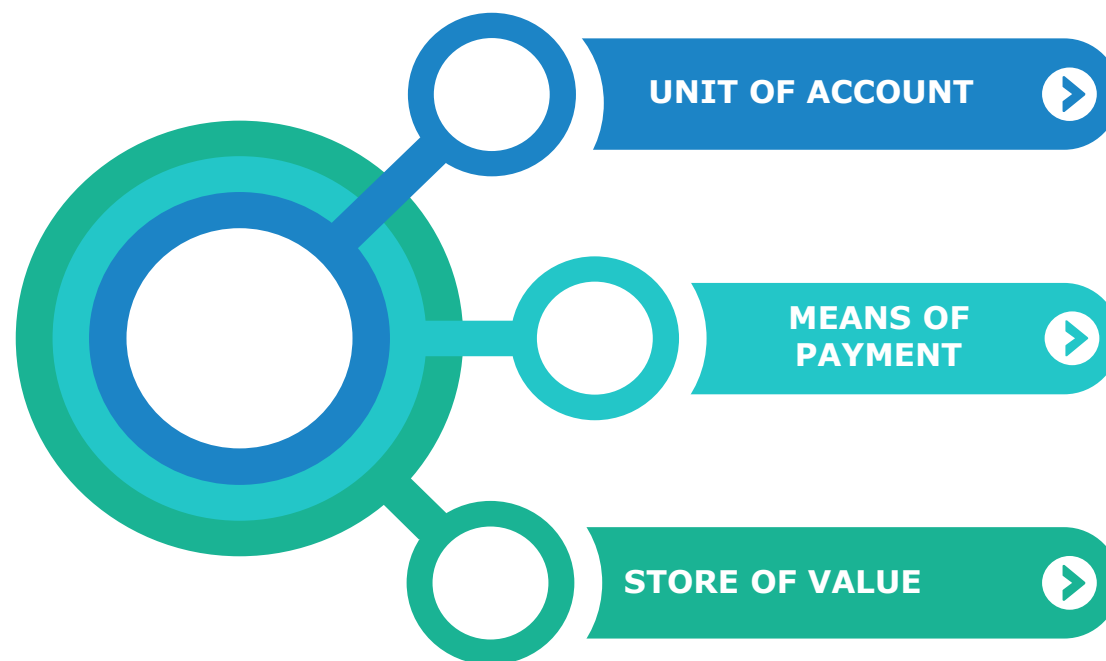
Misleading use of terms – an example

«CRIPTO-CURRENCY»

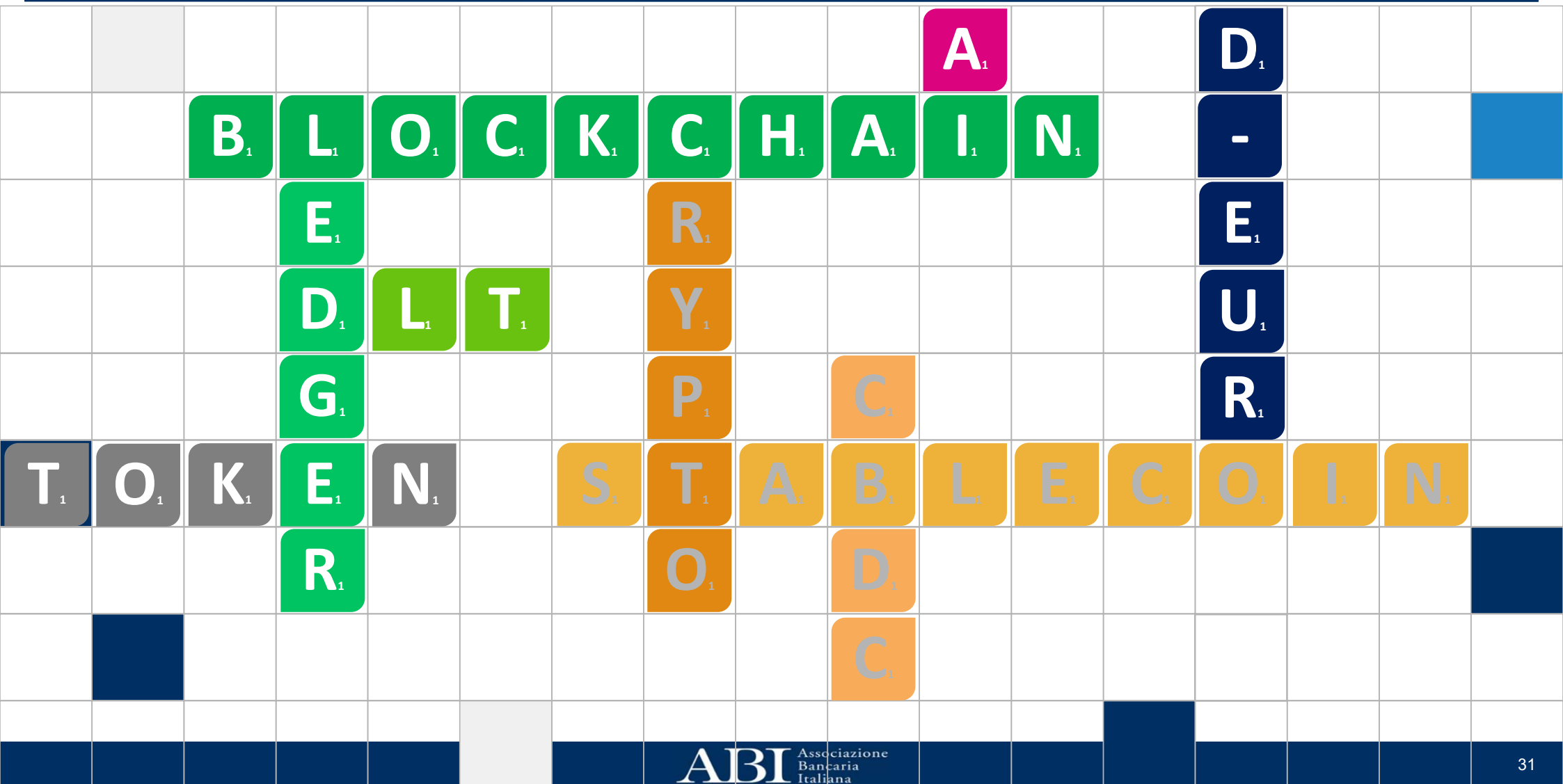
A term derived from the English word 'cryptocurrency', born from the union of 'cryptography' and 'currency'.

This term would therefore seem to suggest a certain similarity with 'currency', although this association is incorrect and misleading.

MONEY FUNCTIONS



Crosswords challenge



Markets in crypto-asset Regulation (MiCAR)

MiCAR

First European legislation to introduce a definition of crypto-assets and to establish uniform rules for three categories of crypto-assets

CRYPTO-ASSET = *means a digital representation of a value or of a right that is able to be transferred and stored electronically using distributed ledger technology or similar technology.*



e-money token

means a type of crypto-asset that purports to maintain a stable value by referencing the value of one official currency

asset-referenced token

means a type of crypto-asset that is not an electronic money token and that purports to maintain a stable value by referencing another value or right or a combination thereof, including one or more official currencies.

«Other than»

A category that includes all other crypto assets that are not asset-referenced tokens or e-money tokens.



**Central Bank
Digital Currency**

Security Token

MiCAR fact sheet

Asset-referenced token: means a type of crypto-asset that is not an electronic money token and that purports to maintain a stable value by referencing another value or right or a combination thereof, including one or more official currencies

e-money token: means a type of crypto-asset that purports to maintain a stable value by referencing the value of one official currency

Beyond the general definition of crypto-assets, MiCAR distinguishes three sub-categories of crypto-assets

«Other than» token: a residual category that includes all other crypto-assets that are not asset-referenced tokens or e-money tokens.

SCOPE
It regulates issuers of crypto-assets by requiring them to comply with general provisions including whitepaper publication obligations, capital and governance requirements, and specific ones depending on the category to which the issuance refers (e.g. specific rules for asset-referenced tokens regarding assets held in reserve).

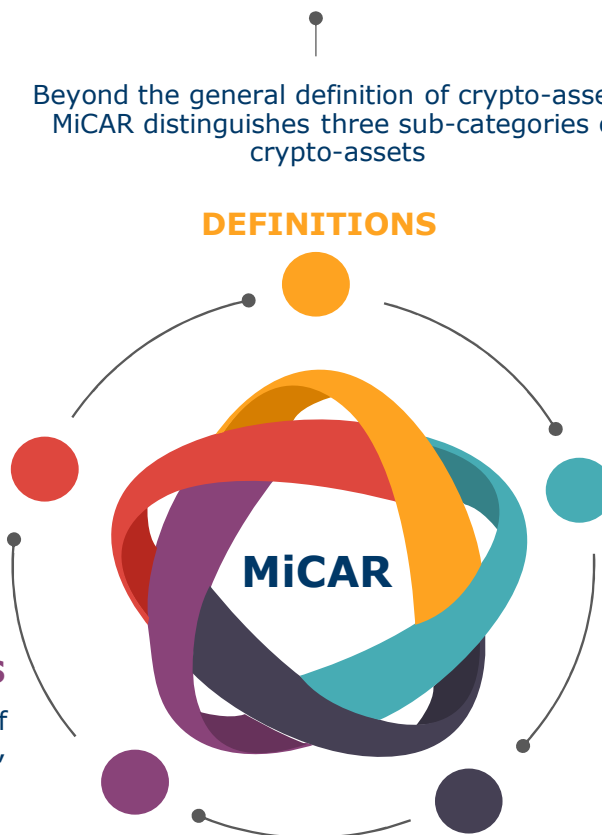
AUTHORITIES
Clear definition of the supervisory powers of the competent authorities, those of ESMA, EBA and the cooperation between them.

SIGNIFICANT CRYPTO-ASSETS

Asset-referenced tokens and e-money tokens may be considered systemically important and, given their nature and the associated risks specific to their widespread use, stricter requirements are imposed on their issuers. Crypto-asset service providers may also be considered systemically important.

CASP

Services involving crypto-assets must only be provided by a legal entity that has a registered office in a Member State and has been authorised as a crypto-asset service provided (CASP) by the competent authority of the Member State where its registered office is located.


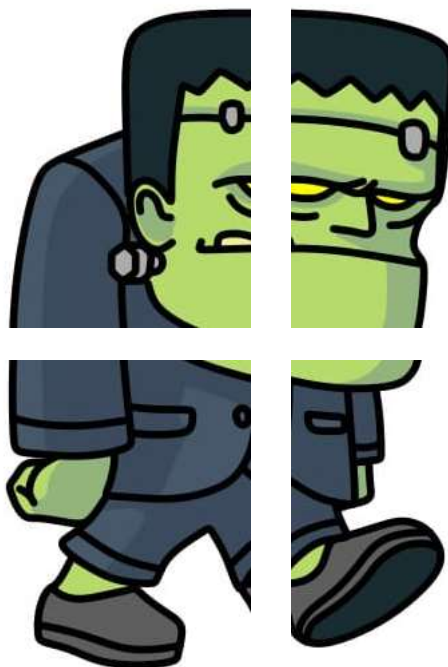



MiCAR aka Frankenstein



MiCAR draws inspiration from MiFID suggesting a crypto-assets closeness with financial instruments

ESMA's and EBA's approach recalls the supervisory discipline applicable to banks and to other regulated entities, belonging either to payments or to securities



MiCAR introduces rules to regulate also stablecoin (e-money token and EMD2) which are primarily payment instruments

MiCAR takes inspiration from Prospectus Regulation (white-paper discipline) and from Market Abuse Regulation

