The digital development of the financial system and of the payments market: the role of Bank of Italy's innovation facilitators

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Distributed Ledger Technologies (DLT) and blockchain

Distributed Ledgers and *Blockchains* are increasingly proposed as a technological solution **suitable for many business scenarios**.

The **key properties** are : decentralization, immutability , auditability

The **key potential** benefits are:

- efficiency gains in the provision of financial services,

- the extension of system operating hours,

- cost and time savings for cross-border transactions,

- faster transfer of financial assets and progress on the technological frontier

Need to consider:
- the **trilemma** (V. Buterin, 2017) which claims that blockchain systems can at most have only 2 out of 3 properties: *Decentralization*, *Scalability* and *Security*
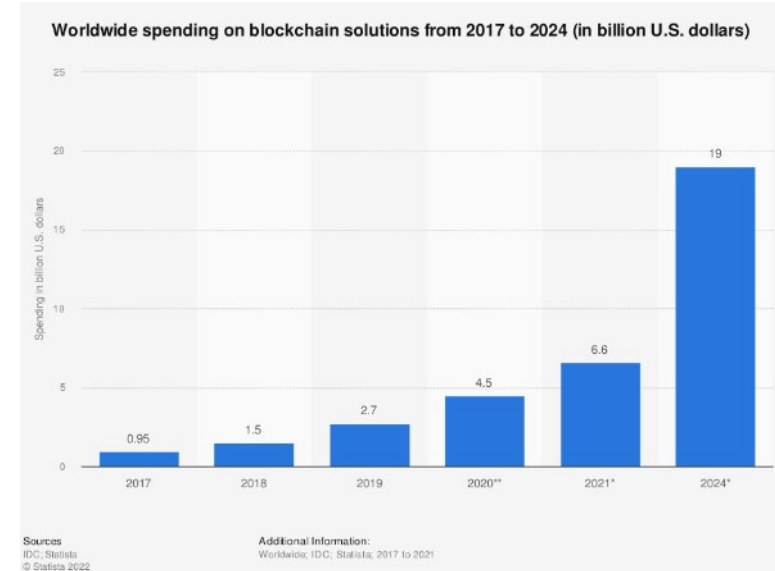- the environmental impact (sustainability issues)

Decentralization

Security *Scalability*
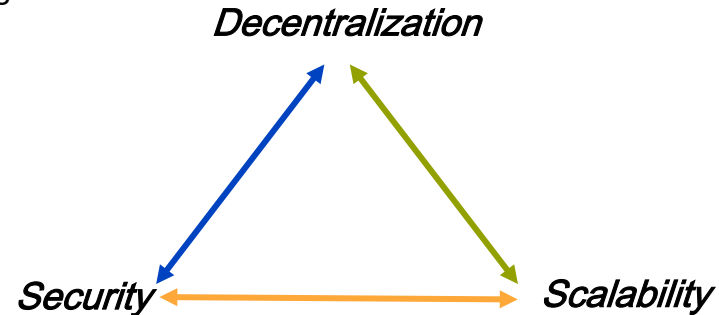
DLT opportunities

● Distributed ledger technology (DLT) has been viewed as a potential platform for the next generation of payment systems, enhancing the integration and the reconciliation of settlement accounts and their ledgers.

● An IMF study conducted in 2020 on the opportunities and on the use of DLT in payments and settlement highlighted that many central banks have taken a keen interest in DLT experiments in recent years.

Source IMF, DISTRIBUTED LEDGER TECHNOLOGY EXPERIMENTS IN PAYMENTS AND SETTLEMENTS, JUNE 2020

Worldwide spending on blockchain solutions from 2017 to 2024 (in billion U.S. dollars)

Year	Spending (billion U.S. dollars)
2017	0.95
2018	1.5
2019	2.7
2020**	4.5
2021*	6.6
2024*	19

Sources
IDC; Statista
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Additional Information:
Worldwide; IDC; Statista; 2017 to 2021

Forecasts suggest that worldwide spending on blockchain solutions will continue to grow in the coming years.

DLT risks

Despite the potential benefits that the use of DLT solutions could bring to the financial industry, these types of technologies are subject to multiple risks.
These risks can be classified according to two macro-categories: General risks and Specific risks

General Risks Applicable to the majority of DLT/Blockchains	*CyberSecurity: even if DLT/blockchain technologies are considered resilient due to the redundancy ensured by the distributed nature of the ledger, they are not immune to operational failures as well as cyber attacks*
	Governance: the decentralized nature of many DLTs/blockchains makes it very difficult to identify the actors responsible for decision-making processes
	Data Confidentiality: given the intrinsic nature of blockchains (especially public and permissionless ones), it follows that the data relating to the transactions carried out within each block can be seen by anyone
Specific Risks Applicable to DLT/Blockchains based on crypto-assets	*Market and credit risks: Most crypto-assets are characterized by high volatility (prices can fall and rise rapidly over short periods) Changes in a issuer's creditworthiness as well as events of default of a crypto service provider could also expose investors to significant credit and counterparty risks*
	Liquidity risks: The need to ensure the conversion of crypto-assets exposes issuers and crypto-service providers to significant liquidity risks (need to dispose, on an ongoing basis, of an adequate amount of liquid assets)
	Market integrity and Financial Stability risks: Absence of a regulated market with objective and transparent pricing mechanisms Growth of interconnections between the crypto ecosystem and traditional financial systems

Bank of Italy Communication on Distributed Ledger Technologies in Finance and Cryptoassets – 15 June 2022

I. **to remind** supervised intermediaries, supervised entities and all those who work in various capacities in decentralized ecosystems, including as users, of the **opportunities** and **risks** associated with the use of **decentralized technologies in finance** and with **crypto-asset-related activities and services** (issuance, custody, trading, loans, payment services)

II. **to highlight** a number of **aspects** that are **important** for **defining**, on the part of the abovementioned entities, **safeguards** to mitigate the risks associated with the use of decentralized technologies and/or trading in crypto-assets

*The **communication** is intended as a reference for users, intermediaries, technology providers, administrators of schemes, digital infrastructures and portfolios operating in crypto-assets, both **before the evolving European regulatory framework has been completely defined and afterwards**; indeed, this regulatory framework covers neither the entire chain of the entities mentioned above, nor the full complexity of the technological solutions supporting the ecosystems of crypto-assets*

Classification of crypto‑assets

Unbacked crypto‑assets (es. Bitcoin)

Crypto‑assets:

- without any stabilization mechanism anchoring their value to a benchmark activity;
- without any right of repayment to the owner;
- no intrinsic value, unrelated to any asset in the real or financial economy.

- High risk
- No protection for partecipants
- Cannot be suited to performing a payment or investment function

Their use should not be in any way be promoted

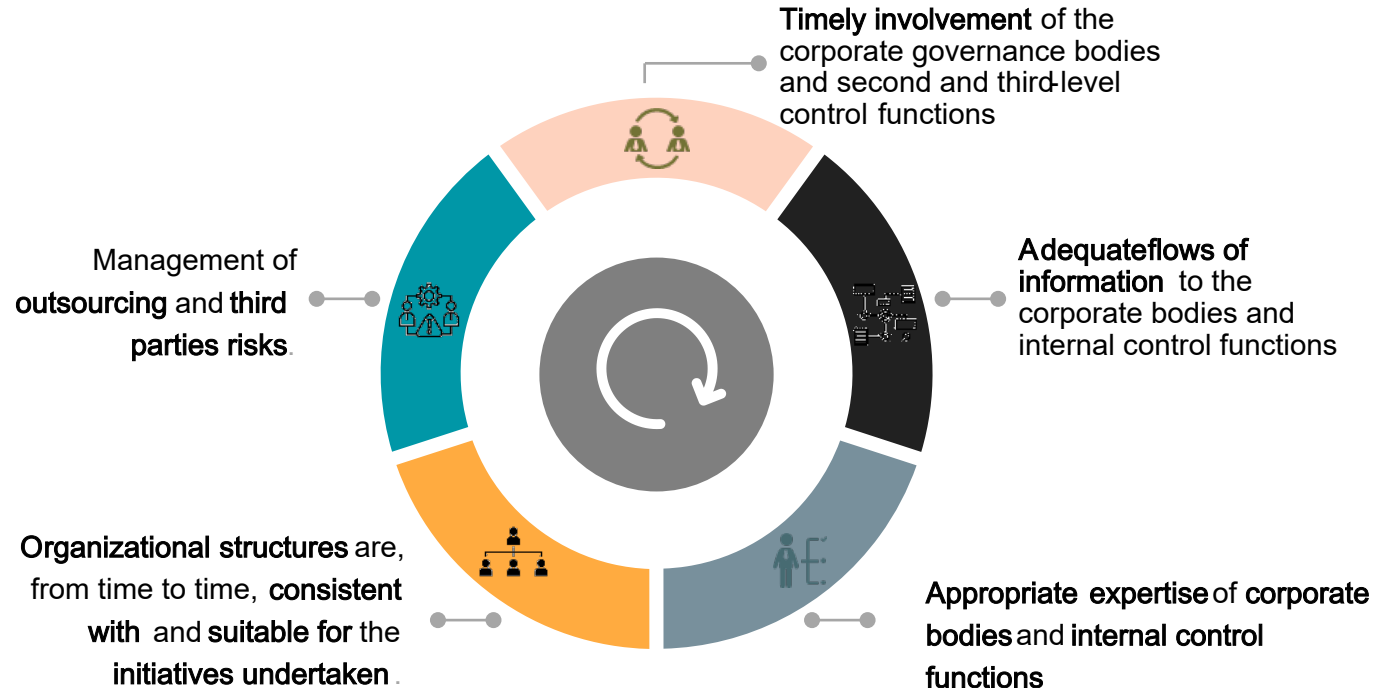## Asset linked stablecoins

Crypto‑assets:

- backed by underlying assets that aim to maintain a stable value against a fiat currency, a specific good or a pool or basket of assets;
- associated with a 'debt' of full repayment.

If pegged:

- to a **single fiat currency + associated** with a 'debt' of full **repayment** can be use as **means of payments**
- to **low‑volatility assets** and linked to a lender's **right to the market value** of the **underlying asset** a **trading** or **store** of **value function**
- to more **volatile instruments** such as financial instruments: may have an **investment function**

Benchmarks for intermediaries

Until the international and European guidance is completed, regardless of the specific type of crypto-asset activity, **the current prudential regimes contain principles to which banks and other supervised intermediaries can immediately refer in assessing and monitoring the risks associated with any start-up in crypto-asset services.** Intermediaries are urged to consider the importance of ensuring:

Timely involvement of the corporate governance bodies and second and third-level control functions

Adequate flows of information to the corporate bodies and internal control functions

Management of **outsourcing** and **third parties risks**.

Appropriate expertise of **corporate bodies** and **internal control functions**

Organizational structures are, from time to time, **consistent with** and **suitable for** the **initiatives undertaken**.

Benchmarks for intermediaries

Intermediaries also need to ensure:

The appropriate definition of the customer segments to which it is intended to offer/distribute products or services in crypto-assets

The mitigation of the new dimensions that the financial risks associated with the provision of crypto-asset services or the issuance of crypto-asset services could take on.

Fair dealings with customers providing adequate disclosure of the risks and characteristics associated with crypto-asset transactions and strengthening the procedures for detecting fraud and handling complaints.

A thorough assessment of the prudential treatment applicable to potential crypto-asset exposures which must be assessed on a case-by-case basis, in the context of a prior dialogue with Banca d'Italia.

The adoption of all the safeguards necessary to limit operational risks – with a particular focus on IT risk – and implementation of cybersecurity measures

In the asset management sector, the consistency and alignment between the funds' investment strategy, the liquidity profile, the redemption policy and the form thereof, as well as all aspects relating to the protection of investors.

Operators and technology providers

- **Technology management** based on i) clear and defined governance; ii) management requirements for different risks to which program developers that determine the functioning of DLT or subjects with powers for managing DLT functions should refer (e.g. transaction validation or governance in a broader sense.)

- **Technology service providers** may fall under the **supervisory rules** as an **outsourcee** of supervised intermediaries and/or **be subject to oversight controls** based on the application, under certain conditions, of oversight standards for the payment system ➔ the monitoring of peer-to-peer transactions enabled by software ('unhosted wallets').

- **The infrastructures** that **enable the transfer function of crypto-assets** (especially those linked to a single fiat currency) should **comply with** the **oversight standards applicable to financial infrastructures**, in particular those relating to governance and integrated risk management.

- **Crypto-assets** with a **payment function** and the **features supporting their supply and use** (e.g. wallets) should **comply** with the **oversight standards for instruments**, **schemes**, **arrangements**, (especially those concerning legal soundness, governance, and credit and liquidity risk) ➔ asset-linked stablecoin: conformity between reserves and peg.

Operators and technology providers

Banca d'Italia may consider using the prerogatives granted to it by Article 146 of the Italian Banking Law (**Supervision of the payment system**) if the **activity** is **relevant** to the **smooth functioning of the payment system** or the **individual components thereof**.

From a Eurosystem perspective, in the context of the **PISA framework**, recent **technological developments** justify **extending the scope of application** for the **oversight of payment instruments** to all **electronic payment instruments** that allow '**value transfers**' between end-users.

The possibility of intervening in the processes of drawing up and developing the **technological standards** used, with a view to strengthening the necessary risk mitigation safeguards, **merits further investigation** ('qualitative' reference points for smart contracts).

Co-regulatory approach - authorities continuously engage with technological operators to create shared benchmarks, so that **technology** can **evolve** in a manner that is **consistent and compatible** with **the rights and safeguards that deserve to be guaranteed**

2. Micar

EU Regulation on Markets in Crypto-assets

Micar - Timeline

Sep 2020

Legislative proposal by the European Commission for a regulation on markets in crypto-assets **(MiCAR)** aimed at **"filling the gap"** by creating a **holistic** regulatory and supervisory framework for crypto-assets which are not already covered by EU law

30 Jun 2022

Provisional political agreement reached by the Council and the European Parliament on MiCAR text

Q2 2023

Expected entry into force of MiCAR

MiCAR in a nutshell: scope

Definition	In-scope	Contents (rules for …)	❌ Out of scope
Crypto-asset: a digital representation of a value or a right which may be transferred and stored electronically, **using DLT** or similar technology	Unbacked crypto-assets (e.g. Bitcoin, Ether) Utility tokens **So-called stablecoins**	Offers to the public Stablecoin issuers Provision of crypto-asset services	CBDCs the tokenization of assets already covered by EU legislation (e.g. financial instruments)

(so-called) stablecoins under MiCAR

MiCAR does **not** use the term "**stablecoin**", which is considered a "marketing term", but **EMTs (e-money tokens) and ARTs (asset referenced tokens)** could be considered as such

EMTs	ARTs
▪ referenced **to a single official currency** (e.g. Euro, US dollar)	▪ referenced **other values or rights** (i.e. different from a single official currency)
▪ issued by banks or e-money institutions	▪ issued by banks or other issuers specifically authorized under MiCAR
▪ redemption right **at par value in funds** (1:1)	▪ redemption right **at market value,** in funds or by delivering the referenced assets
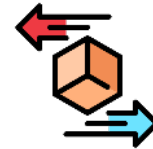
MiCAR in a nutshell: crypto-asset services

➢ Crypto-asset services include the operation of **trading platforms**, **exchange** services (crypto/funds, crypto/crypto), custody (**wallet** provision) and the execution of orders

➢ General provisions for all services (e.g. conduct rules and information to clients, prudential and governance requirements) and provisions specific to each service

These services can be provided by:

❖ crypto-asset service providers (**CASPs**) specifically authorized under MiCAR

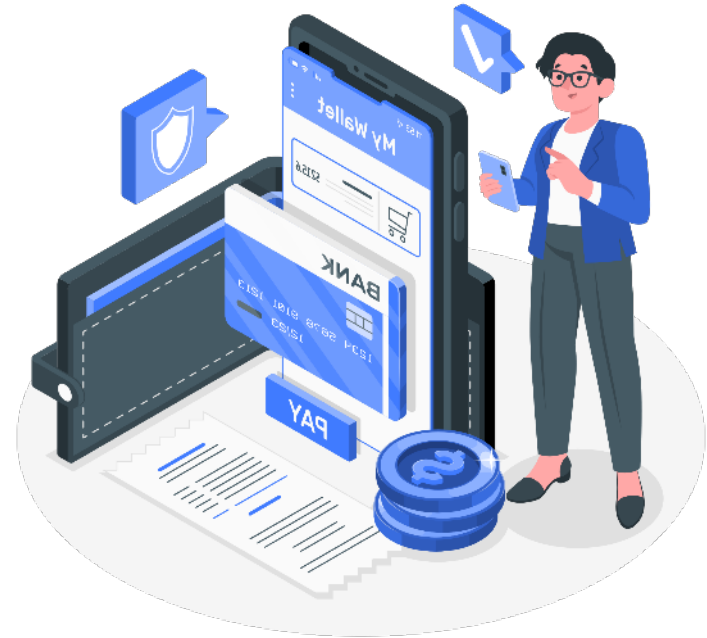❖ regulated **financial intermediaries**: banks, investment firms, management companies etc.

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3. PISA Framework

Eurosystem oversight framework for electronic payment instruments, schemes and arrangements

The oversight of the payment systems
The mandate of the BoI

- Article 127(2) of the Treaty on the Functioning of the European Union and Article 3.1 of the Statute of the ESCB and of the ECB "one of the basic tasks to be carried out through the ESCB is to **promote the smooth operation of payment systems**"

- Local regulation: art. 146 TUB
  The Bank of Italy supervises the payment system having regard to its smooth operation, reliability and efficiency as well as the protection of payment service users

PISA Framework

Eurosystem oversight framework for electronic payment instruments, schemes and arrangements

▶ Oct 2020
Public **release**

▶ 31 Dec 2020
End of the public consultation

▶ November 2022
Application starts

Alongside traditional payment instruments and schemes, PISA will also cover
- " digital payments **token**" such as *stablecoin*
- **"arrangements"**, as a set of operational functionalities which support the end users of multiple payment service providers in the use of electronic payment instruments. An electronic payment instrument arrangement is managed by a governance body which, inter alia, issues the relevant rules or terms and conditions

https://www.ecb.europa.eu/paym/intro/cons/html/pisa_oversight_framework.en.html

PISA framework – main issues

Due to the recent advancement of technology, PISA is an important reference point because:

It introduces two key concepts:
- Switching from «transfer of funds» to «transfer of value»
- From a geographical perspective, the framework covers electronic payment instruments regardless of where the governance body of the scheme or arrangement is incorporated

It will be a fundamental point of observation of new digital ecosystems where:

- agreements between participants are managed through the technological factor
- the governance is algorithm-based
- Tech providers have a decisive role compared to other actors (including financial ones)

Need for alignment with legislative acts not yet issued (eg. Micar)

The algoritm h m ic law/governance

Smart contracts - Memorandum of understanding

The Bank of Italy, **Università Cattolica del Sacro Cuore and Roma Tre University** have signed a memorandum of understanding (MoU) to carry out research on the characteristics of **smart contracts** used by distributed ledger technology (DLT) infrastructures for the **provision of banking, financial and insurance services**

The initiative - which follows up on what was set out in the Bank's Communication of 15 June 2022 on decentralized technologies in finance and crypto-assets - also aims to define **good practices to be offered as a reference point** to market operators, including technology intermediaries and algorithm developers

Other public or private entities, including foreign ones, wishing to contribute to the development of the project may join in the memorandum of understanding.
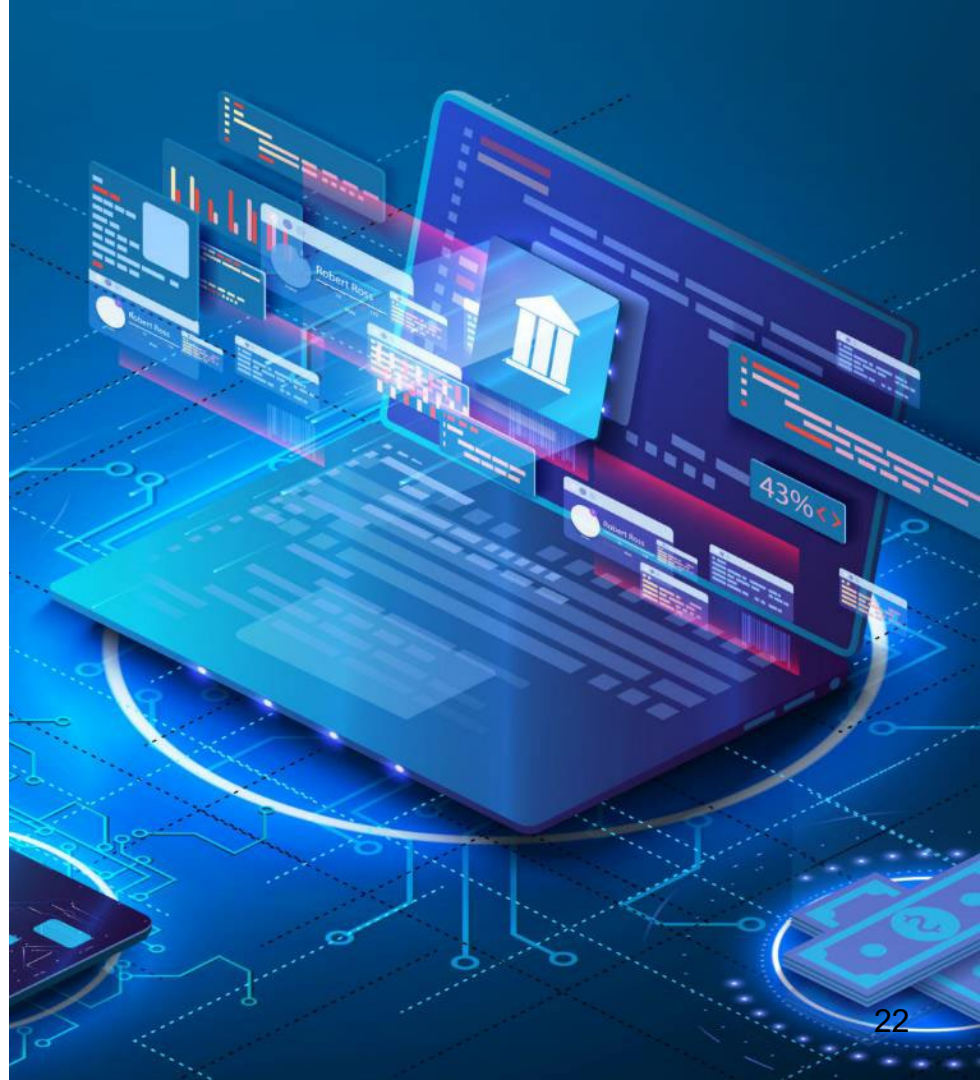
4. Innovation Facilitators (IFs)

Fintech Channel
Milano Hub
Regulatory Sandbox

Bank of Italy's initiatives for the market

Fintech Channel
Discussion

A communication channel that can be easily identified on the Bank's website and an immediate contact point capable of supporting and responding to the various needs of operators.

The discussion is multifunctional and involves the various Bank of Italy Directorates

Milano Hub
Development

A place to stimulate the adoption of the most advanced technologies in the banking and financial fields, to strengthen the level of knowledge and awareness of the opportunities offered by digitalization.

Analysis and design of solutions/models right up to the pre-marketing phase

Sandbox
Testing

(in coordination with Consob and IVASS) A space to allow operators to test innovative products, services and business models in a defined (and possibly adapted) regulatory context and under the supervision of competent Authorities.

Testing of the solutions in a real but controlled environment

REQUESTS FOR EXPLANATION   ANALYSIS   PLANNING   DESIGN   EXPERIMENTATION

Fintech Channel

108
Projects analyzed

77
Startups

31
Mature companies

75%
Pre-marketed projects

Canale FINTECH
BANCA D'ITALIA

250+
Professionals interviewed

IA, ML
DLT, Blockchain
Open Banking, API

Sandbox

21 applicant projects:
- 11 admitted
- 2 currrently under evaluation
- 8 not admitted

50 preliminary contacts

Frequent technologies:
Artificial intelligence
DLT/blockchain

SANDBOX
BANCA D'ITALIA
EUROSISTEMA

First cohort submission window:

15 nov. 2021
15 jan. 2022

Main topics:

Asset tokenization and crypto assets
Digital customer onboarding
Digital lending
Open finance

Milano Hub's Timeline

▶ **Dec 3 2020**

Public **announcement** of a new structure dedicated to Fintech and innovation:
Milano Hub

▶ **Sep/Oct 2021**

"**Call for Proposals 2021**" about Artificial Intelligence

▶ **Feb 2022**

Announcement of selected projects

▶ **Apr/Oct 2022**

Milano Hub support activities

G20
Techsprint
2021

▶ **May 7 2021**

Presentation event of the G20 Techsprint

▶ **Oct 25 2021**

Techsprint final event:
Winners Ceremony

Launch of the CFP 2022

Nov 2022 ◀
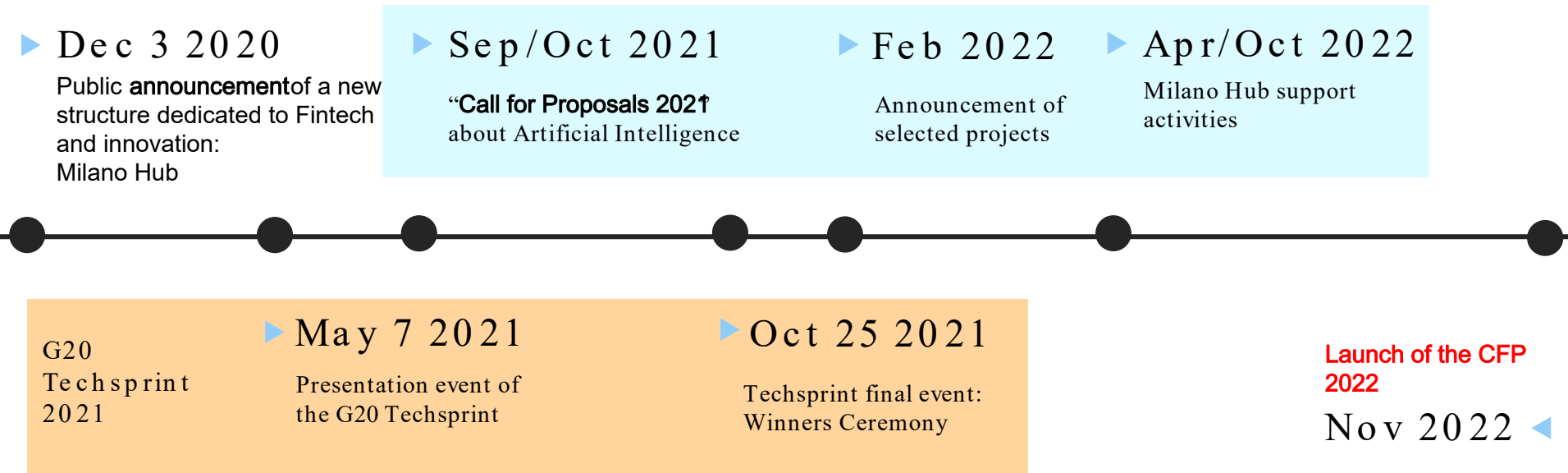
Milano Hub Activities

The Hub offers assistance to the selected projects in one or more of the following areas:

- **Expertise** (banking, financial and insurance, IT, legal)
- **Regulatory in-depth studies**
- **Logistics**
- **Networking** (organization of seminars, themed events, conferences with institutions, operators, and research centres)

The Hub's activities **DO NOT INCLUDE** :

- Financial contributions to the participants;
- Acquisition of goods or services by the Bank of Italy;
- Promotion of initiatives related to individual participants;
- Support during any marketing campaign.

Networking

Regulatory topics

Logistics

Expertise

Only new projects for which the marketing phase* has not started **are eligible** for admission to Milano Hub.

*any activity related to the promotion and/or commercial exploitation of the product/service presented
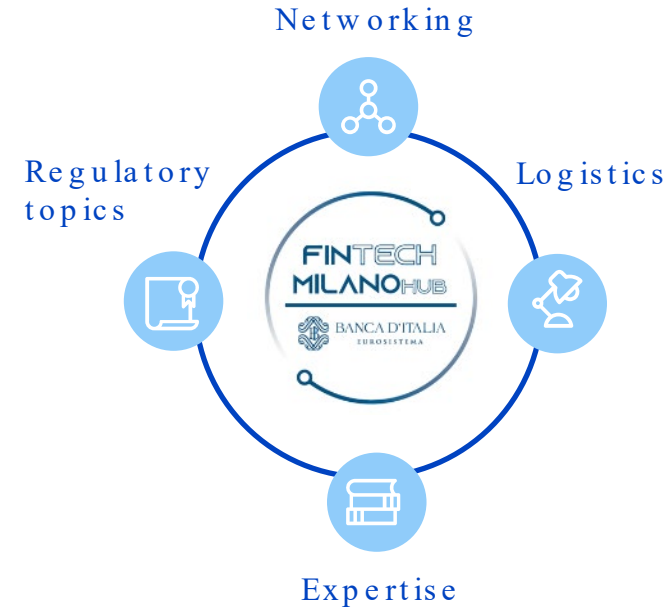
The contribution of **artificial intelligence** in improving the supply of banking, financial and payment services to businesses, households and the public administration, with particular regard to **financial inclusion, effective consumer protection and data security**
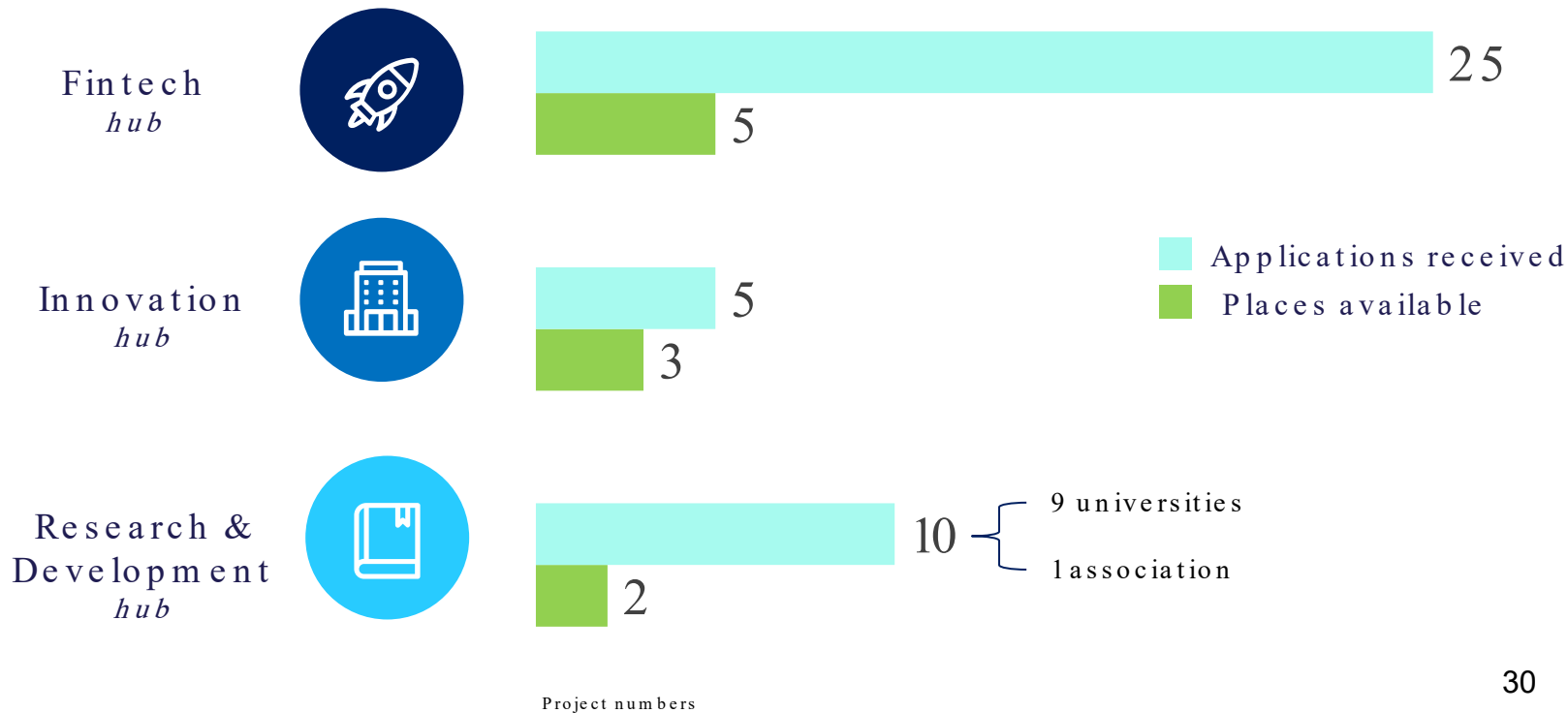
Call for Proposals 2021

Milano Hub's three areas of operation

40 projects submitted by a total of **62** entities (applicants + participants)

		Applications received	Places available
Fintech *hub*		25	5
Innovation *hub*		5	3
Research & Development *hub*		10	2

9 universities
1 association

Applications received
Places available

Project numbers
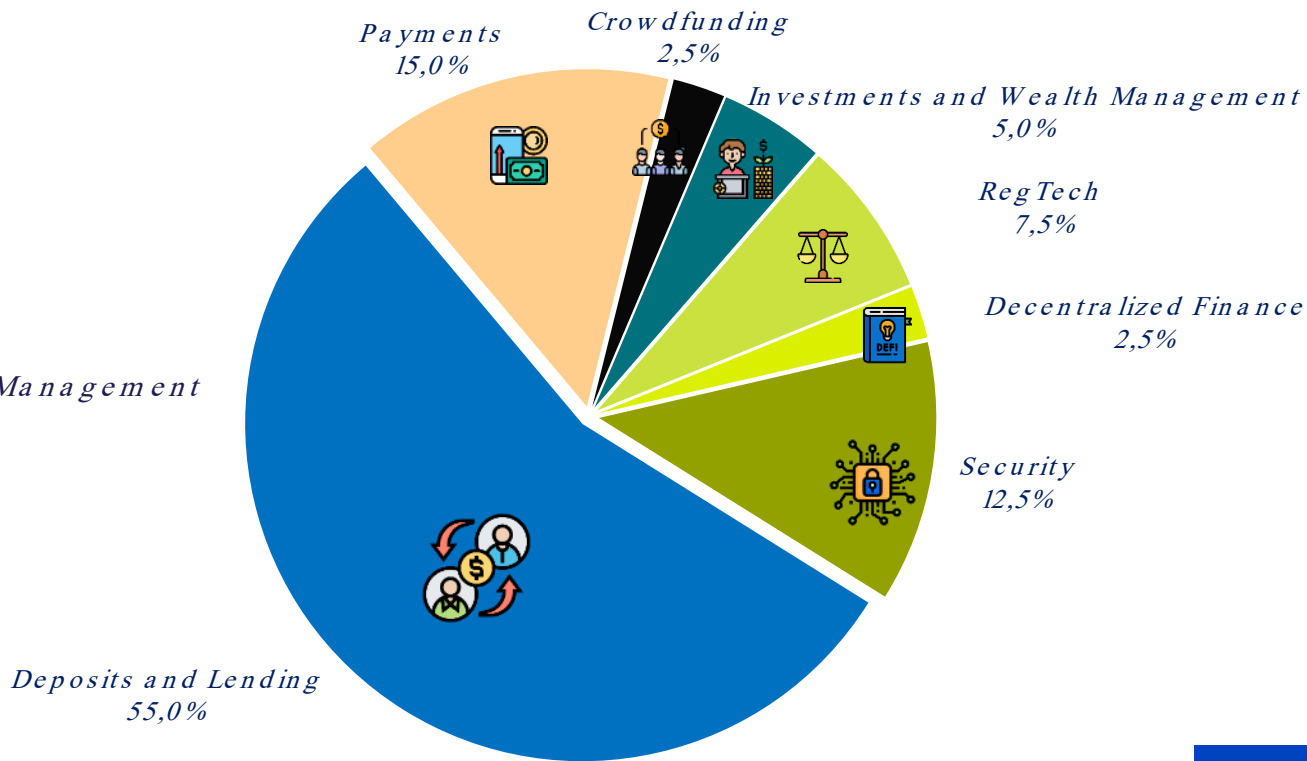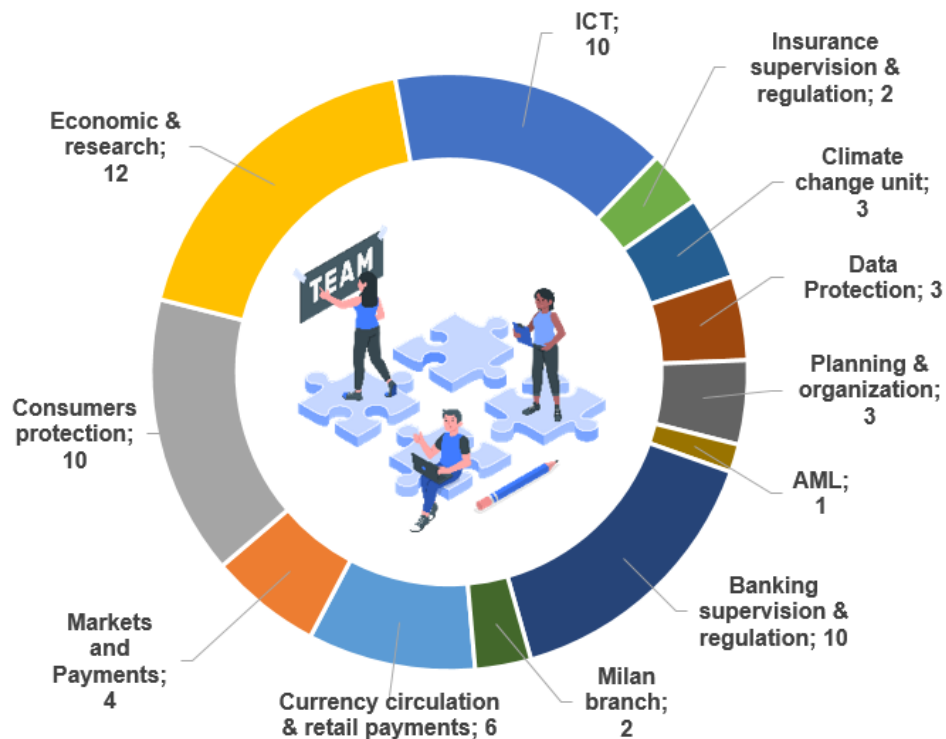
Milano Hub Main areas of the projects

Breakdown of the 40 projects:

- 22 Deposits and Lending
- 6 Payments
- 5 Security
- 3 RegTech
- 2 Investment and Wealth Management
- 1 Crowdfunding
- 1 Decentralized Finance

Payments
15,0%

Crowdfunding
2,5%

Investments and Wealth Management
5,0%

RegTech
7,5%

Decentralized Finance
2,5%

Security
12,5%

Deposits and Lending
55,0%

Percentage breakdown

Milano Hub - Support

Chart values:
- ICT; 10
- Insurance supervision & regulation; 2
- Climate change unit; 3
- Data Protection; 3
- Planning & organization; 3
- AML; 1
- Banking supervision & regulation; 10
- Milan branch; 2
- Currency circulation & retail payments; 6
- Markets and Payments; 4
- Consumers protection; 10
- Economic & research; 12

10 teams
For each admitted project, a multidisciplinary support team has been set up

12 functions
7 Directorates, 1 Branch, 2 indipendent units and 2 internal structures

66 people
A single team is composed on average by 6 members

6 months
The support phase for each project within the Hub will have a maximum duration of six months

The Committee

The Italian Payments Committee (IPC) represents a permanent forum to discuss key issues pertaining to the payment industry. It acts as a hub for the collection and forwarding of requests from the Italian financial sector to the Euro Retail Payments Board (ERPB), coordinated by the European Central Bank.

The membership

The IPC is chaired by the Bank of Italy. Its members are representatives of the supply and demand side of the market (representatives of the banking community, payment institutions, retailers and consumers), payment service providers (banks, payment institutions), technical service providers and the Public Administration.

23, 24, 25 November 2022 – Milano Salone dei Pagamenti. *During the three days dedicated to the topics of payments and innovation, Bank of Italy was present with a stand in which it presented the activities of "Milano Hub", the fintech innovation Center of the Bank, hosting the 10 admitted projects of the Cfp 2021 in the Bank's space inside the trade- fair.*

During the closing plenary session of the event, the Deputy Governor presented the results of the first Call for proposals 2021, dedicated to the topic of Artificial Intelligence, and, together with **Governor Visco**, *announced the topic of the second Call 2022 .*

Application of technology based on distributed ledgers **(Distributed Ledger Technology - DLT)** to banking, financial, insurance and payment services, with special regard to ensuring:

- **governance reliability** and compliance with the applicable provisions and guidelines expressed by the Authorities ;
- **robust settlement mechanisms** with particular regard to solutions capable of ensuring the final settlement of payments in central bank money;
- **interoperability** with other DLT platforms or platforms based on alternative models (e.g. API);
- **certainty and security of operations** from a technical and legal standpoint (for example, in terms of the finality of transactions);
- **consumer protection**

Milano Hub
Call for
Proposals 2022

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