



**Politecnico
di Torino**

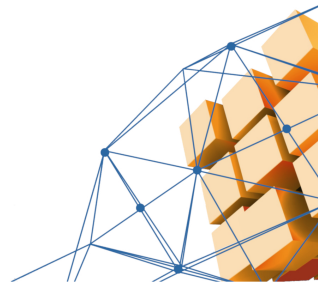
Dipartimento di Scienze
Matematiche "G. L. Lagrange"



Blockchain for business:

Industrial Applications of Blockchain technology

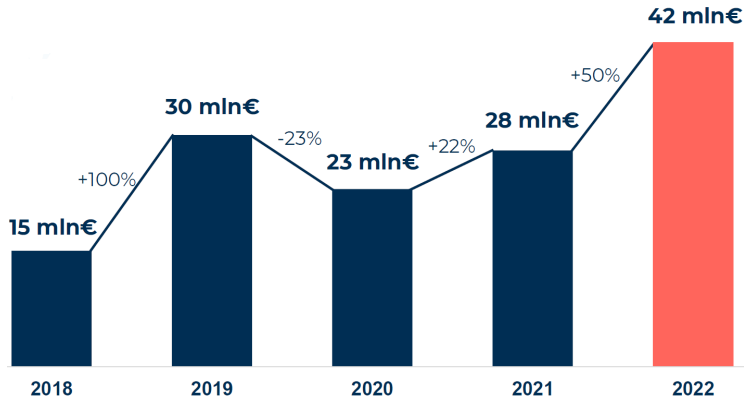
Enrico Guglielmino
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May 25th 2023



Blockchain and DLT projects in Italy

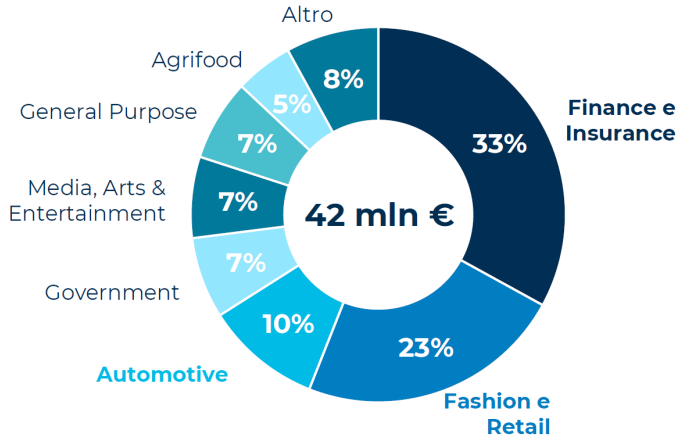
The Italian market value

After the period of crisis that has characterised the past few years, investments in Blockchain projects by Italian companies increased in 2022.



Blockchain and DLT projects in Italy

The main sectors

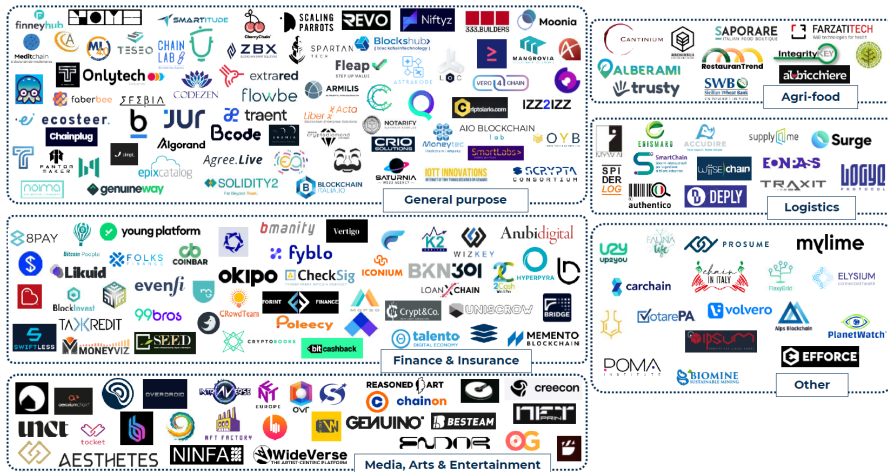


Blockchain and DLT projects in Italy

The image displays a collection of logos for various Italian companies and organizations, organized into five main categories:

- Other:** Includes logos for Sara, ospon, Sivit, mela, fl, FEDESPEDI, AGID, PEAS, DIESEL, GCD5, BORGESIA, and 1873.
- Media & Art:** Includes logos for ANSA, Rai, wecontent, SIRE, Forbés, FLP, BINANCE, and others.
- Fashion & Luxury:** Includes logos for BVLGARI, PINKO, WOMSH, and various fashion brands.
- Utility:** Includes logos for Terna, alperia, PLASTICFINDER, acea, sfrido, netservice, Schneider electric, and METEL.
- Agri-food:** Includes logos for TIM, L'Espresso, and various food and agricultural brands.
- Government:** Includes logos for PlanetWatch, INPS, TerraSorrentina, and other public sector entities.
- Finance:** Includes logos for UniCredit, young platform, CREDITO Valtellinese, satsipay, Oval, and other financial institutions.

Blockchain and DLT startup in Italy



The image displays a collection of logos for Italian blockchain and DLT startups, organized into four main categories:

- General purpose:** Includes startups like finneyhub, Hedichain, CA, MLK, TESEO, CHAIN LAB, ZBX, SMARTITUDE, SCALING PARROTS, REVO, Niftyz, 3SLBUILDERS, Moonia, SPARTAN, BlocksHub, Fleap, MANGROVIA, Onlytech, extrared, ARMLIS, faberbee, SFERIA, CODEZEN, flowbe, traent, Acta, ecosteer, Chainplug, JUR, Bcode, NOTARIFY, CRYPTO, AIO BLOCKCHAIN, OYB, Algorand, Agree.Live, SATURNIA, BIT INNOVATIONS, and SCRYPTA.
- Logistics:** Includes startups like CANTINIUM, SAPORARE, FARZATITECH, ALBERAMI, trustworthy, RestaurantTrend, Integrity, albicchiere, Agri-food, supply@me, Surge, SPT DER LOG, authentic, DEPLY, and TRAXIT.
- Finance & Insurance:** Includes startups like BPAY, young platform, bmanity, Vertigo, fyblo, Anubidigital, Likuid, FOLKS, COINBAR, WIZKEY, OKIPO, CheckSig, ICONIUM, BKN301, LOANXCHAIN, HYPERVISA, evenfi, CrowdTreas, FINANCE, Crypt&Co, UNICROW, Polcecy, talento, MEMENTO, TAXKREDIT, 99bros, CRYPTOROCKS, bitcashback, and SWIFTLESS.
- Media, Arts & Entertainment:** Includes startups like UNCT, AESTHETES, NINFA, WideVerse, REASONED ART, chainon, BESTEAM, NET, AETHER, ELOKAR, NFT FACTORY, and SUDOR OG.

DLT and Central Database

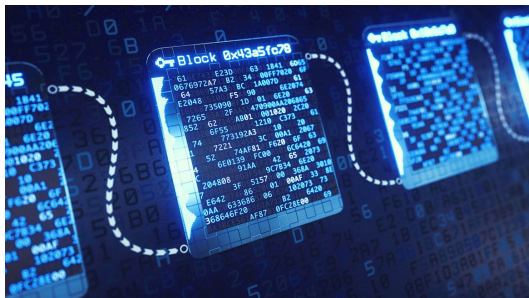
Property

The most relevant properties of distributed ledgers and centralized systems are:

- **Public Verifiability**
- **Transparency**
- **Privacy**
- **Integrity**
- **Redundancy**

	Permissionless Blockchain	Permissioned Blockchain	Central Database
Throughput	Low	High	Very High
Latency	Slow	Medium	Fast
Number of readers	High	High	High
Number of writers	High	Low	High
Number of untrusted writers	High	Low	0
Consensus mechanism	Mainly PoW, some PoS	BFT protocols (e.g. PBFT [5])	None
Centrally managed	No	Yes	Yes

What is Blockchain?



Blockchain is a specific type of DLT which allows:

- **asset tokenization**
- **use of smart contracts**
- **immutable transactions**

When does a Blockchain make sense?

There are three main categories of Blockchain:

- **Public permission-less**
- **Public permissioned**
- **Private permissioned**

Precondition

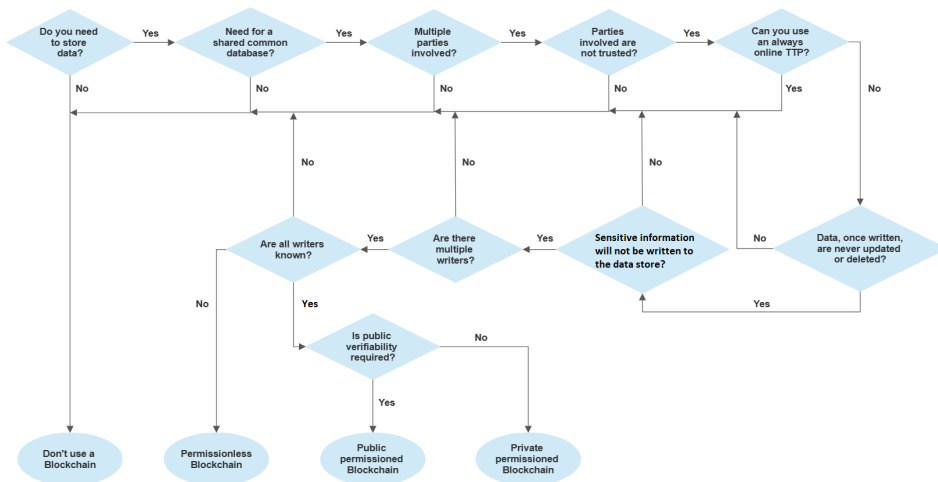
In general, using an open and permissioned blockchain makes sense only when multiple mutually mistrusting entities want to interact, change the state of a system, and are not willing to agree with an online trusted third party (TTP).

There are some simple cases where it doesn't make sense to use a blockchain:

- If no data needs to be stored
- If only one writer exists
- If all the writers trust mutually

Evaluation for Suitability

Decisional flowchart



The collapse of Terra-Luna





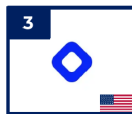
Top 10 startups by funding



1
FTX Exchange
1,729 mln \$
Exchange & custody
2019



2
Figure
1,552 mln \$
Blockchain solutions
2018



3
BlockFi
1,256 mln \$
Exchange & custody
2017



4
Fireblocks
1,039 mln \$
Exchange & custody
2018



5
Bakkt
932 mln \$
Exchange & custody
2018



6
Forte
910 mln \$
Dev tools
2019



7
Sorare
739 mln \$
NFTs, Gaming and
Metaverse
2018



8
MoonPay
642 mln \$
Exchange & custody
2019



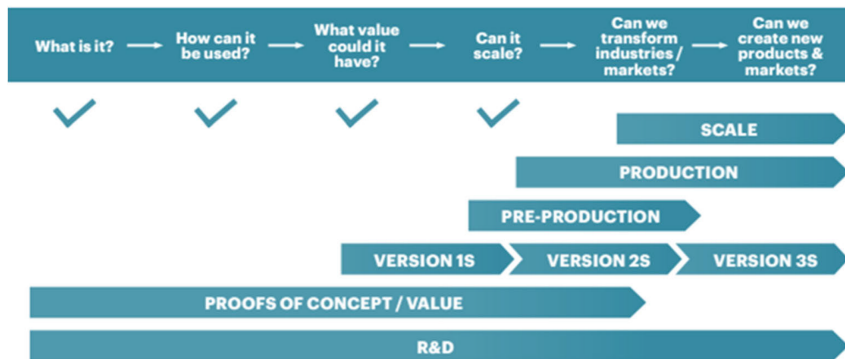
9
Dapper Labs
607 mln \$
NFTs, Gaming and
Metaverse
2018



10
Alchemy
564 mln \$
Dev tools
2017

Blockchain adoption path

As blockchain trends continue to emerge and develop, it remains uncertain how they are being translated into business solutions.



Applications of Blockchain technology

Applications of Blockchain technology can be classified into 3 macro-categories:

Internet of Value

Applications focused on value exchange, such as cryptocurrencies, stablecoins, and virtual currencies promoted by central banks - CBDCs



Blockchain for business

Projects where traditional business processes are replicated using Blockchain technologies



Decentralized web

Blockchain becomes an enabling infrastructure for the creation and development of innovative business solutions



Startup clusters

Methodology

The analysis includes many recently born startups , which have already closed large funding rounds.



BORDERS

- World



STARTUPS CRITERIA

- Born after **30/06/2017**
- With funding rounds in the last 24 months (**institutional investors or ICO**)
- Total funding amount ≥ 1 mln\$



SOURCE

- Crunchbase (30/06/2022)



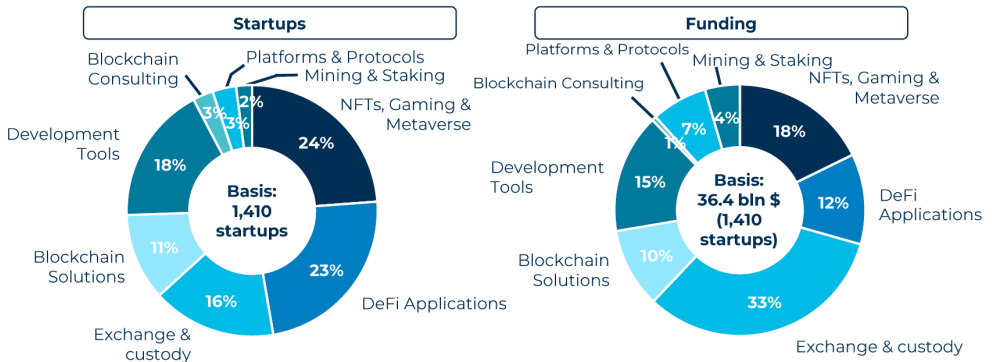
WHITE PAPERS
WEBSITES
SECONDARY SOURCES

1,410
Startups

36.4 bln\$
Funding

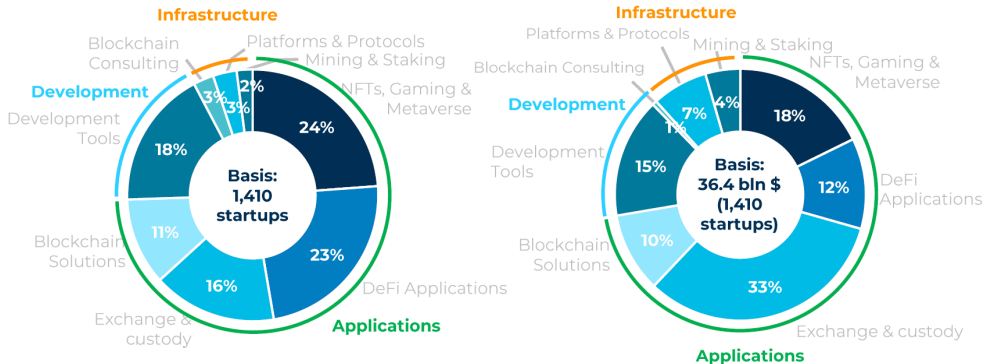
Startup clusters

Majority of startups are **NFTs, Gaming & Metaverse, DeFi Applications, Development Tools, Exchange & Custody**.



Startup clusters

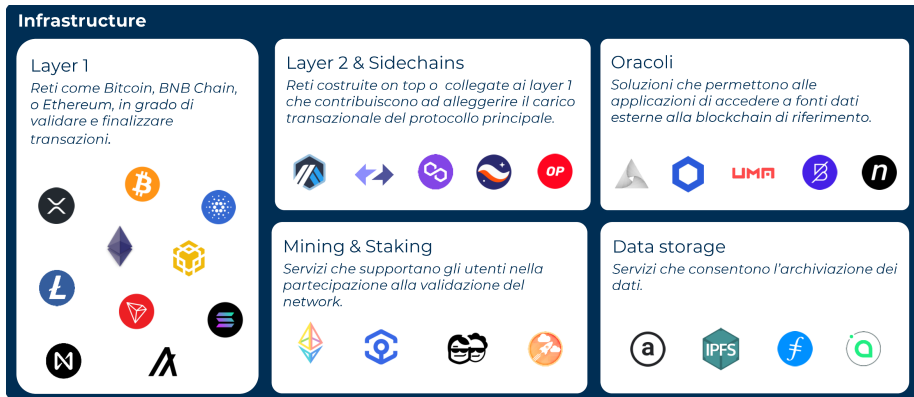
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Infrastructure

Layers

From an infrastructural point of view, different layers come into play in the realization of a Blockchain-based project: Layer 1, Layer 2, Oracle, etc.





Blockchain in the automotive industry

In the last century, the automotive industry has arguably transformed society, being one of the most complex, sophisticated, and technologically advanced industries, with innovations ranging from the hybrid, electric, and self-driving smart cars to the development of IoT-connected cars.

However, conventional security and privacy methods often tend to be ineffective because of:

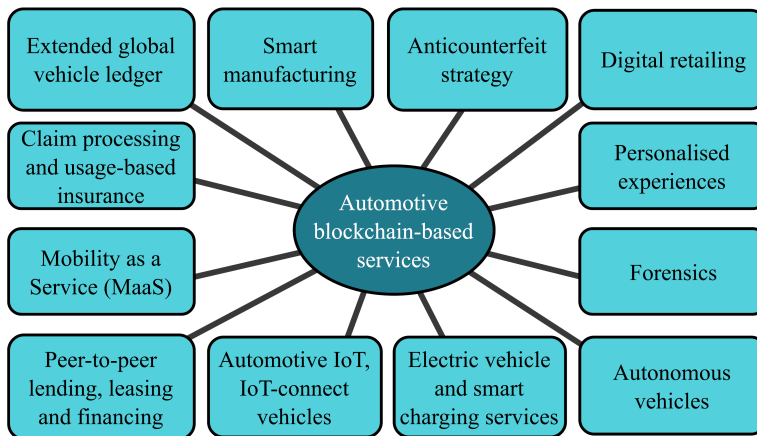
- Centralization
- Lack of privacy
- Threat to security

Blockchain as a solution for the automotive industry

The blockchain can improve the development of the automotive industry by ensuring: **security**, **privacy**, **anonymity**, **traceability**, **integrity**, **transparency** and even **authentication protocols**.

Blockchain in the automotive industry

Automotive blockchain-based services



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Thank you for your attention



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