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The Blockchain Ecosystem in Italy

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Preface

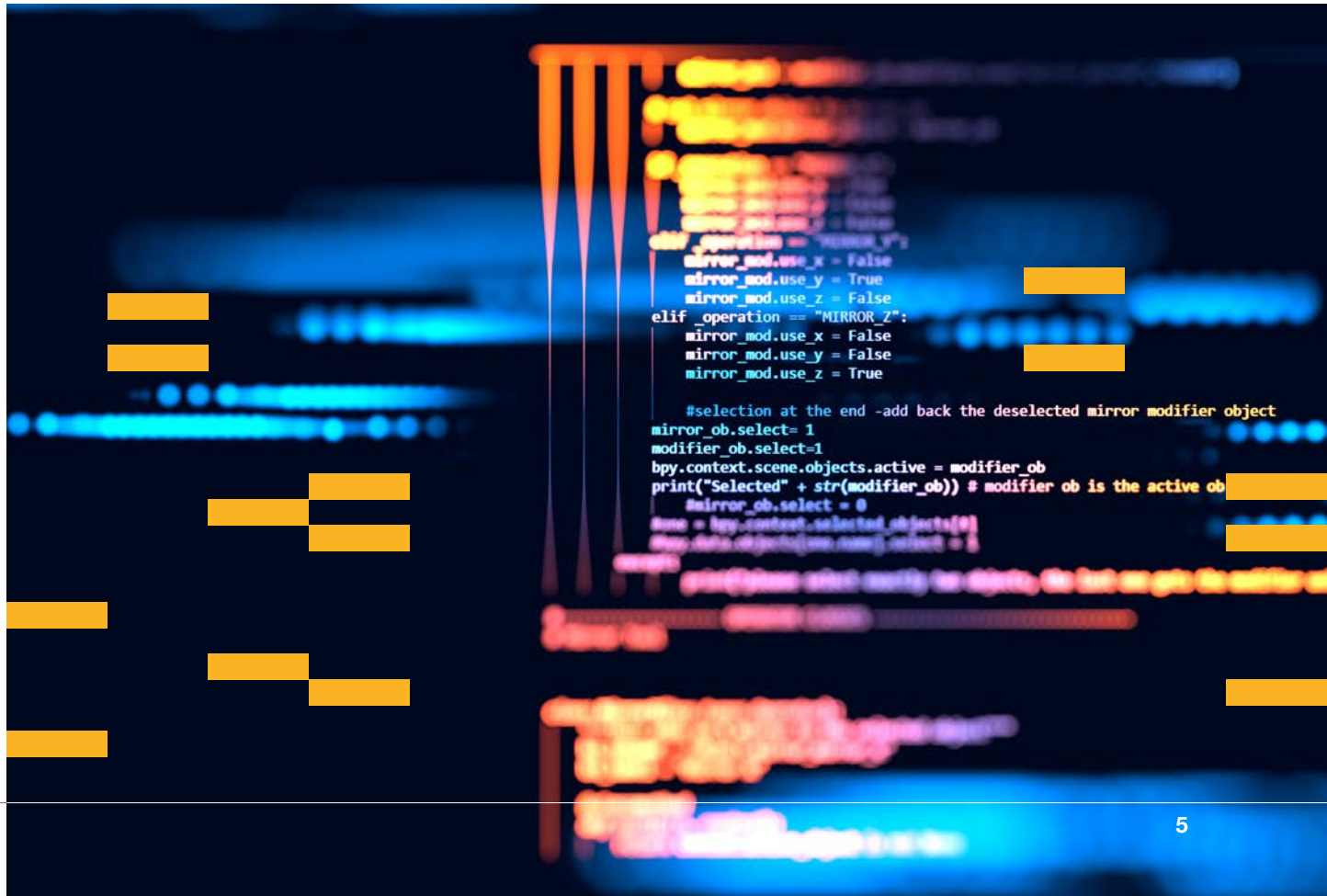
2022 has been a turbulent year in the Digital Asset World. Following the high prices recorded in late November 2021, which pushed the **market capitalization of Crypto Asset to 3 trillion dollars**, the ecosystem experienced significant downturns and bankruptcies, undermining the large public's confidence in the crypto industry.

The **collapse of the Terra-Luna ecosystem** in May 2022 highlighted the importance of **stablecoin regulation and design** in order for them to be used as a reliable form of payment and settlement. Furthermore, the **recent bankruptcy of the FTX** exchange underscored the importance of **investor protection practices** as well as **overall regulation of centralized exchanges**.

While these events are threatening investor confidence in the crypto space, the broader world of Digital Assets is experiencing a flourishing period of growth in terms of both the relevance of products developed and the birth of new projects. Among these, **BNY Mellon's announcement** of the launch of the Digital Asset Service **paves the way for institutional adoption of Digital Assets** in a safer and more regulated environment. **NASDAQ**, **State Street**, **Societe Generale**, and **BNP Paribas**, to name a few, **have revealed plans** to follow America's older bank and anticipate an increase in interest in how tokenized assets could be regulated, and how these could impact the current financial industry.

Moreover, while Central Banks continue to experiment with **Central Bank Digital Currencies** and the **potential use of Blockchain in the financial sector**, the industry sector is heavily involved in developing sound applications.

PwC intends to provide a **market overview of the Blockchain market in this report**, with a **focus on the Italian startup ecosystem**. The objective is to highlight emerging trends in industries where Blockchain technologies can be applied, as well as relevant and concrete examples of applications and startups in the Italian landscape.



1.

Introduction

This report is a collaborative effort between **PwC Italy's Blockchain Competence Center** and the **Politecnico of Milan's Observatory of Blockchain & DLT**. The two parties' relationship originated from a shared goal of monitoring the development of the Italian Blockchain ecosystem. Specifically, both PwC's Blockchain Competence Center and the Politecnico of Milan's Observatory of Blockchain & DLT are active entities in the Blockchain space, and both contribute to the ecosystem's development by providing clients with consultancy and knowledge-specific support.

Participants

Blockchain Competence Center of PwC Italy

PwC's Italian Blockchain Competence Center was established in **2016** as a working group specializing in **Digital Assets and Blockchain solutions**. The Italian group is part of a **global network** of PwC teams specialized in Digital Assets and Blockchain Technology who share their knowledge and expertise. The Italian Blockchain Competence Center, in particular, was one of the first teams to enter the domain and has acquired extensive knowledge and experience in the Digital Asset Market.

Since its beginnings, the Blockchain Competence Center has attracted professionals who specialize in providing both technological and business solutions to a wide range of clients. Thanks to the heterogeneity of knowledge of the team, the Blockchain Competence Center (BCC) has been able to **develop** and **design technology solutions** based on **Blockchain and Distributed Ledger Technology Protocols** to streamline traditional business processes and enable clients to reach advantages in terms of cost reduction and operational efficiencies and increasing control of business processes.

Moreover, the team was able to provide **business support** to a variety of clients in designing their **entry strategy into the Digital Assets environment**. The development of a **Digital Asset Custody Layer**, which sustains the management of the wallets governing the Digital Assets, has been a **critical entry point for the implementation of those strategies**.

Furthermore, the Blockchain Competence Center of PwC is involved with **Financial Institutions** and **Industry leaders** across various sectors. In this sense, PwC offers multiple value propositions across the Digital Asset Ecosystem.

Blockchain & Distributed Ledger Observatory of Politecnico di Milano

Established in **2018**, the mission of the **Blockchain & Distributed Ledger Observatory** is to **generate** and **share knowledge** on **Blockchain and Distributed Ledger** related topics and contribute to the **development** of the **Italian market** by creating discussions, meetings, and comparison opportunities for the main players that are active in this field.

Thanks to the collaboration between the Management, Economics and Industrial Engineering Department and the Department of Electronics, Information and Bioengineering, the Observatory analyzes these topics from both a **business and technical perspective**. The research on the role of Blockchain and Distributed Ledger technologies in business development lays the foundation for the creation of reports, in-depth events, and updates on the most relevant initiatives in this sector, both at the national and international levels.

Furthermore, in **2021** – from the Blockchain & Distributed Ledger Observatory – the **Blockchain Innovation & Solutions HUB** was founded as an impartial player that aims to promote, facilitate, and enable Blockchain projects involving different players through the creation of a pre-competitive development environment where companies can conduct applied research activities.

Objectives

The joint research activity of the PwC Blockchain Competence Center and the Politecnico di Milano's Blockchain & DLT Observatory emphasizes **the importance and urgency of staying up to date on the evolution of the Blockchain industry**. The research aims to **analyze the ecosystem in its entirety** and then **dive deep into the most interesting and representative solutions** to assess how this technology is evolving within the Italian territory.

The study aims to **determine which sectors are most advanced among those affected by the Blockchain revolution and which are still in the early stages** of growth and internalization of potential. In addition, the study aspires to provide a **clear picture** of the **Italian Blockchain startup market** to identify emerging use cases and compare the level of maturity of the **Italian market** to other **European ecosystems**.

The final part of the study identifies and provides an overview of **15 startups** representing the most **significant clusters** of companies identified in the analysis. In conclusion, the research will seek to anticipate **future trends** in the Blockchain market and highlight issues that need to be addressed to foster the evolution of the ecosystem.

2.

Market Overview

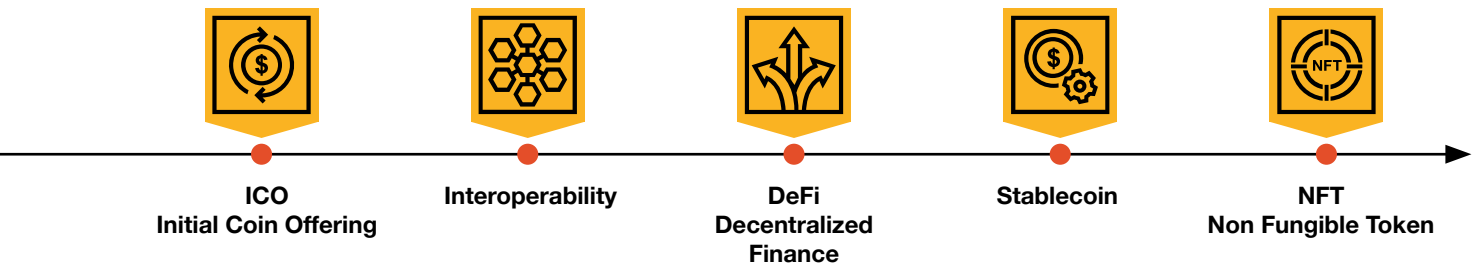
Blockchain is a new technology developed in recent years that has seen exponential growth in terms of volume, price, and interest in various sectors. Since the emergence of Bitcoin and Ethereum, the **Blockchain ecosystem** has grown exponentially and reached a market capitalization of **$3 trillion in 2021**.
This exponential growth has attracted the attention of both financial institutions and regulators, who are seeking to understand the potential benefits that this technology could bring to the financial sector.

While the technology matures, user expertise grows, and entry barriers are reduced, Blockchains are enabling the development of new applications and solutions in a wide range of fields. The relevance of this technology is expanding, with **applications ranging from financial to industrial**, and in **both the public and private sectors**. Indeed, new applications and use cases are finding their way into a variety of processes that help to automate and improve information exchange.

Being a relatively young technology, this is still a phase of experimentation. Companies are creating knowledge on the topic, and increasing awareness and integration capabilities with traditional processes. Hence, it can be said that as of today the industry has merely explored the tip of the iceberg. The number of Crypto Assets users worldwide, which amounts to only **350 million**, or 4.2% of the world's population, supports this viewpoint.
These numbers are fascinating from a variety of perspectives. The technology is still in its early stages and institutional interest has just begun to grow, meaning that **mainstream adoption** is not reached yet. Secondly, the onboarding of **institutional players**, specifically banks and corporations, will certainly be one of the key factors in getting Blockchain to more and more people. The **custody of Digital Assets** by major banks and the introduction of **services/products** based on **Blockchain technology** to be used in everyday life could definitely bring a benefit over traditional systems and at the same time could offer new revenue streams for those service providers.

Thus, we will try to delve into the trends that are shaping the Blockchain ecosystem to better understand the history and evolution of the technology in recent years.

Trends in the Blockchain Market



ICO – Initial Coin Offering

Initial Coin Offerings (ICOs) were one of the first trends in the Blockchain world, attracting the attention of several regulators concerned about the large number of nonexistent and fraudulent projects in **2017**. ICOs are a process in which a company (particularly a startup) attempts to raise capital by selling its token in the marketplace to attract investors in the hope that the token's value will increase or that the token can later be used for services provided by that company.

Interoperability

Blockchain interoperability refers to Blockchains' ability to communicate with one another natively. Cross-chain messaging protocols are the foundation of Blockchain interoperability, allowing Blockchains to read data from and/or write data to other Blockchains quickly and easily for the user. Several protocols, such as **Polkadot and Cosmos**, which emphasize **interoperability and cross-chain functionality**, have focused on developing solutions for networking Blockchains that can communicate with each other at the start of **2019**.

DeFi – Decentralized Finance

DeFi, or Decentralized Finance, emerged in the **early 2020s** as a trend that is still shaping the world of finance today. Decentralized Finance refers to the use of **Smart Contracts** on the Blockchain to provide **financial services and financial instruments without the use of intermediaries** such as brokers, exchanges, or banks. DeFi services include lending and borrowing, DEX, or Decentralized Exchange, on-chain insurance, and derivatives trading. The infrastructure and regulation of DeFi are constantly evolving, and **regulators are paying close attention to the development of these services**.

Stablecoin

Stablecoins are tokens with stable prices that track the performance of an underlying asset, typically the US dollar (USD). These tokens enable the use of a digital and programmable version of fiat currencies in the Blockchain environment. Stablecoins currently account for **approximately 15% of total cryptocurrency market capitalization and have grown by 3280%** in three years. The **capitalization** was $5.58 billion at the end of January 2020, and it is at the date of writing worth **more than $140 billion**. There are several stablecoins that are currently pegged to various fiat currencies. The two largest, however (Tether and USD Coin), account for morethan 77% of total market capitalization.

NFT – Non Fungible Token

The year **2021** was undoubtedly the year of the **Non-Fungible Token** (NFT) explosion with lots of projects launched and volumes growing quickly on major marketplaces. An NFT is a unique digital object that cannot be copied, replaced, or split. It is registered on a Blockchain and is used to verify authenticity and ownership. NFTs can be used in a variety of applications and contexts, including access tokens, Proof of Attendance Protocol (POAP), Crypto Arte, Digital Real Estate, etc.

2022: the year of Institutional Adoption

Despite the market's steep decline from the highs reached in 2021, the year **2022 has so far proven to be the year in which Financial Institutions have shown the most interest in Digital Assets**. The entry of major traditional players into offering **Digital Asset Custody services**, such as State Street, NASDAQ, and BNY Mellon, to name a few, demonstrates the strong effort to provide services and exposure to their clients.

From a regulatory standpoint, Europe is taking a proactive approach to Digital Assets. The **MiCA Regulation**, in particular, will impose specific market discipline on Crypto Assets that are not financial instruments, while the **DLT Pilot Regime** will allow market infrastructures to experiment **with trading and post-trading functions of tokenized securities on DLT platforms**.

How to define high-level Blockchain areas for businesses

Blockchain, as an information exchange technology, does not have a single reference area in which it can be applied. However, the application range is determined by the industry in which it is introduced. From a high level, Blockchain for Business can be applied to **two reference macro-areas: the Financial Services (FS) world and the Corporate world facing the web3**. This macro-division distinguishes Blockchain's purely financial and native applications from those that are alternative applications in both the industrial and process domains. Within each division, we can find many interesting use cases, though not all of them are currently in production but are being tested to define the added value and potential integration with traditional systems. But what are the main use cases that are being developed in the market and applied in the two macro areas just presented?

Evidence from the market

As PwC, we work closely with many companies and entities interested in entering the world of Blockchain and web3. The market evidence shows strong interest in this technology from many different angles, and while the market is not at the most satisfactory stage in terms of pricing, interest remains very high, and companies are eager to discover the potential that Blockchain has to offer. **Bearish market conditions** in the past have allowed developers and builders to better manage timelines and **focus on the quality and utility of the services offered**.

Financial Services

In the financial services industry, there is a significant amount of discussion about **Digital Asset Custody and Tokenization of Financial Instruments**. The **former is without a doubt the most important and necessary step for banks** to take in order to provide new value-added services to their clients by leveraging this new asset class. On the other hand, **when it comes to Tokenization, the AWM (Asset Wealth Management) and Capital Markets worlds are very interested in DLT experiments** using the infrastructures that are currently available on the market. For the second use case, we are still in the process of discovering the potential and efficiency of some of the processes that are still in place today.

Initial evidence shows that from a technical point of view the technology is ready and working, considering however the need of some improvements for scalability and UX. Nevertheless, a **regulatory framework must be defined** in order for it to be securely integrated and fully exploited. Market participants are actively experimenting with new technology, even in applications that were previously thought to be of marginal relevance to Financial Institutions. For example, **JP Morgan executed a DeFi trade on a public Blockchain in November 2022**, demonstrating that, **with the proper safeguards in place, the use of Digital Assets in decentralized finance has the potential to transform capital markets**.

Corporate & Industry

In the private sector, companies are primarily focused on two areas: **enabling Crypto Asset payments for asset purchases and using NFTs for market engagement and seeking new customer niches**. In the first case, an increasing number of businesses, particularly in the **luxury market**, are interested in supplementing traditional payment systems with Blockchain systems in order to attract new customers and position themselves as innovative. Companies that act as payment processors by providing software that can accept Crypto Asset payments but invoice traditional currencies directly in bank accounts are one of the most important enablers in this area, allowing them to receive crypto payments while avoiding exposure to the high volatility and complexity of Digital Asset custody. In the world of **NFTs**, on the other hand, businesses are increasingly exploring methodologies to attract new customers and **leveraging this type of token to create engagement and attract a new customer base**. While NFTs, as we know, can be used in a variety of industries, **Soulbound Tokens (SBTs)**, a subset of non-fungible tokens, are gaining popularity. SBTs are non-fungible, non-transferable tokens that can be used to represent a certificate of participation in a specific event, among other things. Experiments in HR and ticketing, for example, show how these tokens can be used as credentials and tickets.

2022: The Italian Blockchain Market

Looking at the Italian ecosystem, we can see a thriving environment in which companies are experimenting and **building long-term infrastructure to support the sector's future expansion**. In the financial sector it is worth mentioning that also the **Bank of Italy** is actively **experimenting** reliable **solutions to support the traditional financial ecosystem for the safe transition to the market of Digital Assets**. Namely, the Bank of Italy has focused in experimenting technical interoperability models for synchronizing the asset transactions in DLT and the corresponding cash transaction in legacy platforms that already constitute the financial payment and settlement system. Furthermore, **several experiments involving asset tokenization are being carried out in Italy**. In particular, **Assogestioni**, the Italian association of asset management companies, is conducting **research on the potential impacts and benefits of tokenization of fund shares and Digital Asset investments in the Asset Management ecosystem**.

In the meanwhile, also the enterprise ecosystem is leveraging Blockchain technology. In particular, in 2022, **several companies**, particularly in the fashion and luxury sectors, **began using NFTs for marketing and loyalty program purposes**. **GUCCI**, for example, produced a limited-edition series of CryptoJanky NFT in collaboration with SUPERPLASTIC. **Tod's Group** also experimented with selling a Hogan's NFTs collection during the Metaverse fashion week in the Decentraland metaverse.

Given this flourishing market and experimentations, in future sections we aim to provide a deep analysis of the Italian ecosystem. Specifically by studying the evolution of Italian startups we aim at identifying future trends and understand how the business ecosystem could evolve in the future.

3.

Methodology of the analysis

In this chapter of the report, we aim to describe the methodology used in the various steps of the study, from the research of **Italian startups** to the shortlisting of them and the final interviews. The methodology used can be divided into four main points:

1. **Data collection on the Italian blockchain startup ecosystem**
2. **Database creation and selection of variables**
3. **Selection of a short list of the most relevant startups**
4. **Interviews with the shortlisted startups**

The initial startup sample has been drafted collecting data from different sources. The first list has been obtained through extraction from the crunchbase.com dataset, using the keywords “Blockchain”, “Distributed Ledger”, “Virtual currency”, “NFT” and “Bitcoin”.

The extracted sample has then been filtered considering only **startups headquartered in Italy or with Italian founders and active in the Italian market, born in the last 5 years, and that have received their last funding round in the last 2 years**. Since the extraction has been performed in July 2022, this implies that he filtering criteria are the following:

- **Date of foundation: from August 2020 to July 2022 included**
- **Last funding round date: from July 2020 included**

However, Crunchbase is not particularly focused on Blockchain and DLT technologies and is not a comprehensive source for all Italian startups. Many of the newly established companies in Italy are not present in the Crunchbase dataset, especially those that have not yet received or disclosed the funding received. Therefore, the information extracted has been integrated with additional data from other Blockchain-specific sources, and with a stronger focus on the Italian landscape.

Moreover, the Blockchain and Distributed Ledger Observatory **conducted an investigation through an open call to its network of supporters and connections in the Blockchain sector to identify additional entities operating in Italy**. Additionally, all the reported startups have been examined through secondary sources. The phase included the creation of a database with a list of startups that satisfy methodological boundaries and a set of relevant variables along which startups have been analyzed. Several secondary information sources have been used to collect the additional data which can be subdivided in:

- Information disclosed directly by the startup:
  - Whitepapers
  - Startups’ websites
  - Startups’ social network pages (e.g. LinkedIn, YouTube, Facebook, Twitter)
- Information disclosed by other sources, independent of the startup:
  - Specialized websites on blockchain news, such as coindesk.com, cointelegraph.com, ledgerinsights.com, and also more general news websites such as bloomberg.com.
  - Specialized websites in data collection of Blockchain startups and ICOs, such as icobench.com and icorating.com.

Moreover, the variables selected and used in the census were the following.

- Organization Name Total funding amount
- ICO funding amount
- Traditional funding amount
- Business sector
- Business process
- Customer segment
- Business solution
- Blockchain offering
- Blockchain platform
- Permissioned/Permissionless
- Public/Private
- Token typology
- Fungible/Non-fungible
- Foundation date
- Last funding date
- Headquarter location

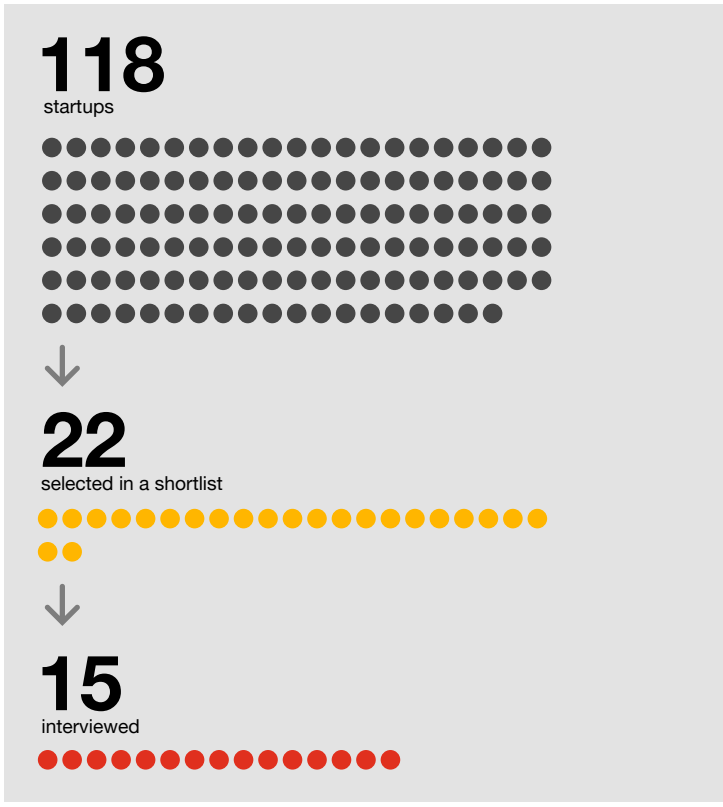
Each startup has been analyzed individually, both to check whether it complied with the methodological boundaries described above, and to integrate information on additional variables.

Once the census was completed, some of the startups deemed most interesting in terms of both future potential and current business model were selected. The selection was carried out jointly by the teams of **PwC Italia** and the **Blockchain and Distributed Ledger Observatory** with the aim of delving into the business and technological aspects of the selected startups.

The last phase of analysis was carried out with the help of interviews conducted with the selected startups. The **interviews** were conducted between **September** and **October 2022**, using a common analysis scheme focused on census variables to ensure the comparability of responses. The startups interviewed are the following:

- Alps Blockchain
- Anubi Digital
- Astrakode
- Blockinvest
- CryptoBooks
- Deply
- Memento Blockchain
- Eonpass
- Fyblo
- Hex Trust
- Mangrovia Blockchain Solutions
- Over (formerly OVR)
- Scrypta Consortium
- WizKey
- Young Platform

In conclusion, the first database included 118 startups, of which 22 have been selected for a short list and 15 of them have been interviewed to get additional insights on the industry and sector in which they operate.



4.

The Blockchain Startup Italian Ecosystem

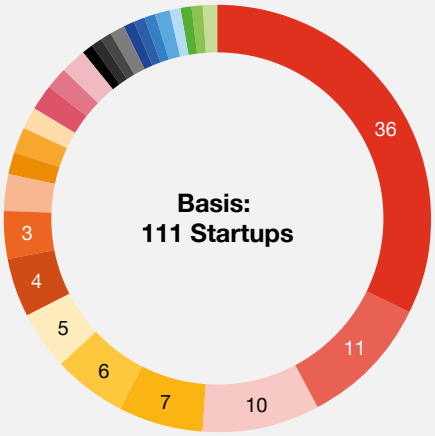
As specified in the introductory section, Blockchain is an enabling technology that can be used in different target areas and industries. Blockchain can be exploited both for the native features that define it and for the benefit it brings in a reflexive way. Thus, **the startups analyzed in this report leverage the technology in different ways: some focus on the management of Digital Assets, others use the technology for its ability to immutably store information, and others leverage Blockchain protocols to create added value services for end customers**.

From consulting firms to mining firms, all of the companies in the study were either born in Italy or founded by Italians. We will examine in depth the evidence that emerged from the research.

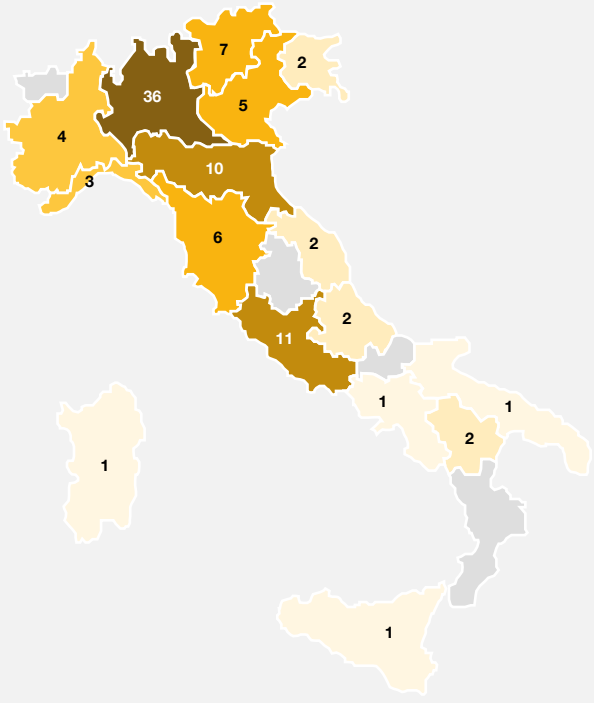
Specifically, the purpose of this section is to present the results of the census, analyzing the selected sample according to **geographic distribution, value proposition, and technical solutions adopted by the startups**.

Startups Geographical distribution and growth rate

Number of startups for each region



- Lombardia
- Lazio
- Emilia Romagna
- Trentino Alto Adige
- Toscana
- Veneto
- London
- Piemonte
- Liguria
- Friuli Venezia Giulia
- Marche
- Cantone Ticino
- Abruzzo
- Basilicata
- Central Region
- Sardegna
- Umbria
- Canton Zurigo
- Massachusetts
- San Marino
- Sicilia
- Pays de Gex
- California
- Campania
- Hong Kong
- Puglia
- Olanda Settentrionale



- <25 Startups
- 9 – 25 Startups
- 5 – 8 Startups
- 3 – 4 Startups
- 2 Startups
- 1 Startups

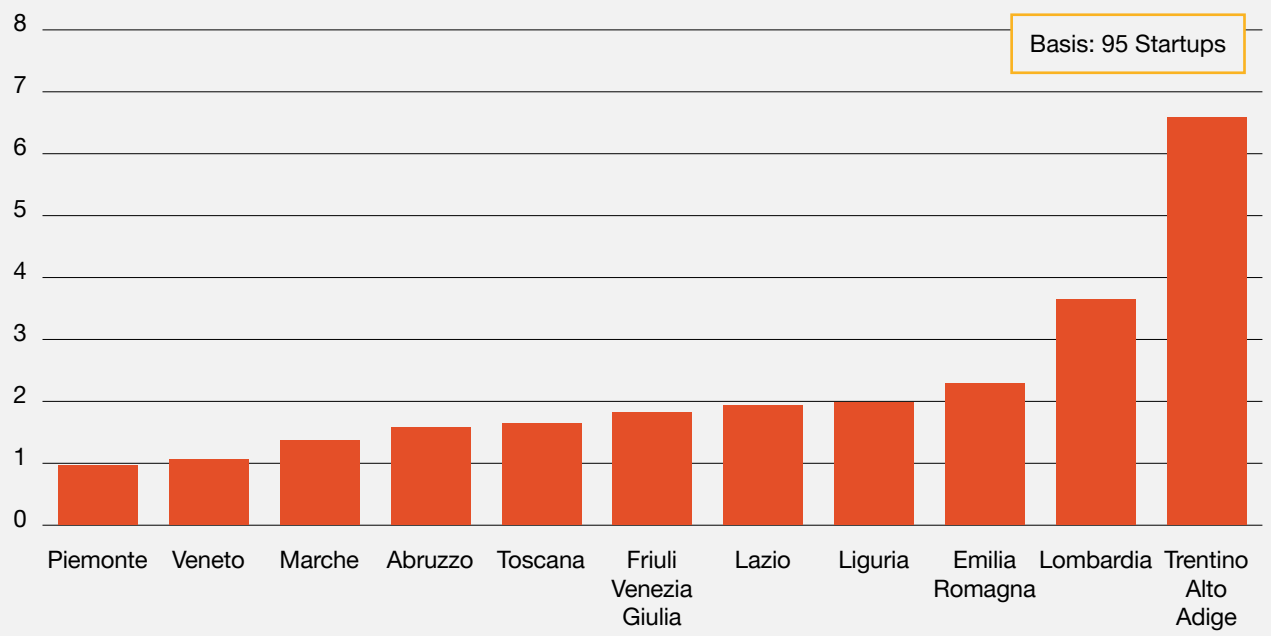
Rest of the world: 17 Startups

Considering the geographical distribution of the startups, the figure shows how the northern part of Italy has a higher concentration of initiatives. More specifically, **Lombardy is home to more than 32% of all startups**, with **Milan being by far the most attractive city**, accounting for nearly 29% of all Italian projects. **Rome comes in second**, with more than 10% of the startups in the census based there.

As can easily be inferred, this distribution among regions is a direct consequence of the higher opportunities offered by the two richest and largest cities in Italy. However, **the ranking changes when considering the population and the density of start-ups per inhabitant**.

The new results presented in the figure confirm a well-documented and historical characteristic of the **Trentino Alto Adige** region. In fact, **the region ranks as first among the areas with the highest innovation density**. For the experts of this sectors this should come as no surprise. In 2015 indeed, a bitcoin focused Italian company started the #bitcoinvalley project in the city of Rovereto. This initiative aimed to encourage bitcoin adoption among the city's merchants, as well as spread education about Blockchain technology. Beyond Blockchain's local popularity, this region also ranks among the most innovative area of the country, in many different sectors. Trentino-Alto Adige is indeed the region with the highest incidence of innovative startups in relation to total number of corporations with less than five years of age and five million of annual revenues.

Blockchain innovation density (number of startups per 1 mln people)

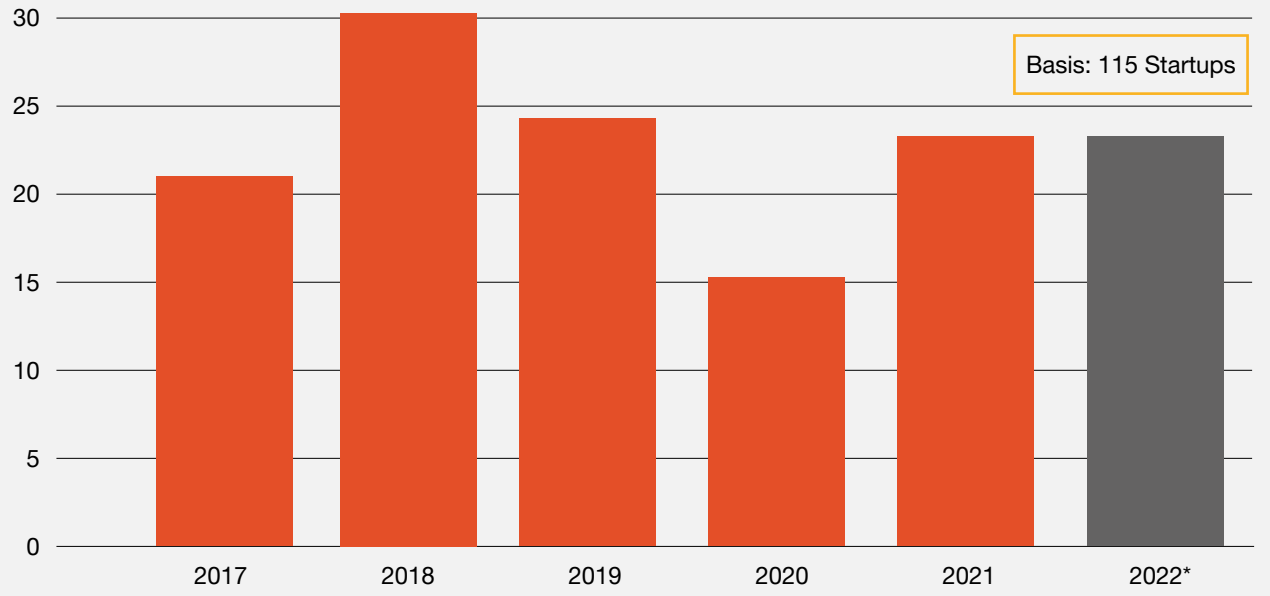


By analyzing the number of startups that were founded each year it emerges that from **2017** to **2021** an average of at least **22** new **Blockchain startups** are founded every year. The analysis however includes only those registered on the Cruchbase database at the time of the extraction, **therefore it does not aim to be comprehensive of all cases as many new initiatives may be excluded from this census**.

Many of these new ventures are **proposing innovative solutions that exploit Blockchain technology for a new purpose, or with a different formula than already existing ones**. An example could be given by the tokenization market, segment in which Blockchain technology is used for one main purpose (the tokenization of real-world assets), but it is characterized by different solutions. **The Italian Blockchain startup landscape appears dynamic and heterogeneous as a result of the flourishing of new approaches**.

The variety of the proposed applications and the constant birth of new use cases reflect the potential of this technology. Indeed, originally designed for peer-to-peer value exchange, over time the Blockchain has gradually evolved to include new instruments, leading to its adoption in many different processes and sectors. As will be shown in the next paragraph the **Blockchain is penetrating in more than 10 different market segments by both improving existing processes, and creating new value propositions**.

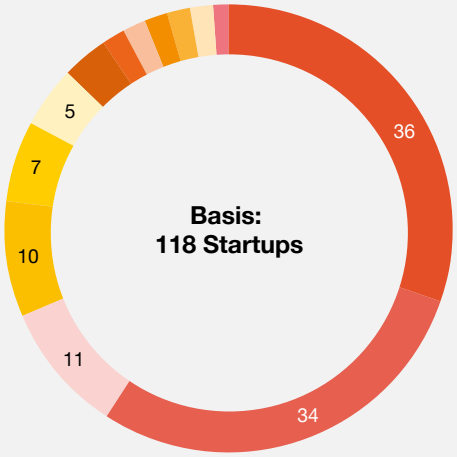
New startups yearly distribution



*2022: The extraction of the startups has been performed on July 2022; the results shown in the figure include an estimate of the number of startups founded in 2022

Market Segments, Processes and Trends

Startups 2022 sectorial distribution

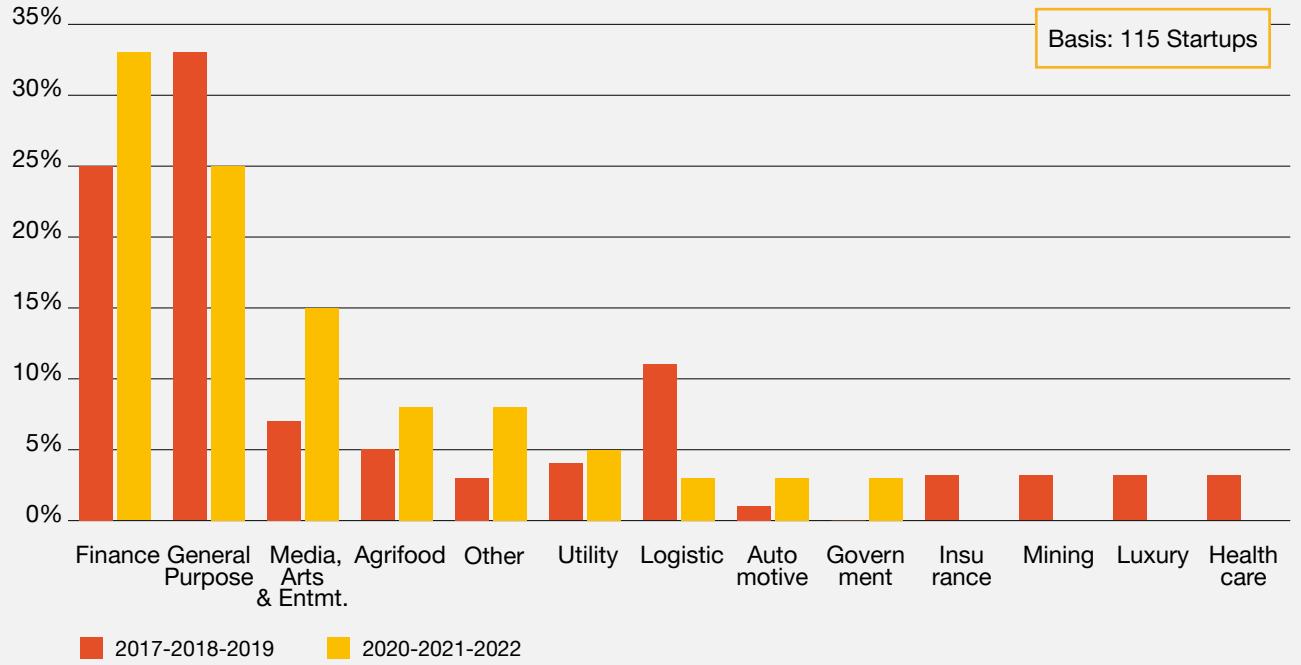


- General purpose
- Finance
- Media, Arts & Entertainment
- Logistic
- Agrifood
- Utility
- Other
- Automotive
- Mining
- Healthcare
- Luxury
- Insurance
- Government

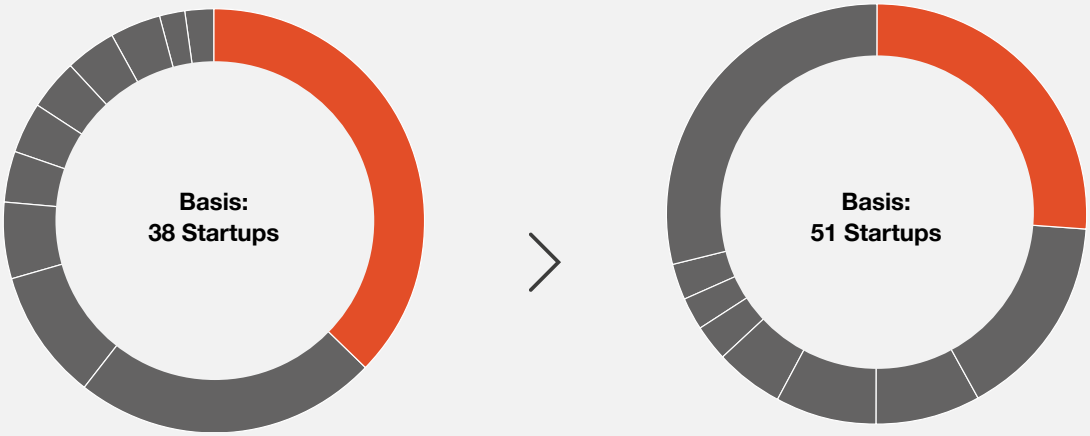
The analysis of different market segments impacted by the use of Blockchain technology is a first dimension of analysis to discriminate among the many use cases of Blockchain technology.

Together with the **Finance sector, General Purpose** startups **account for more than 60% of all startups**. Initiatives classified as **"General Purpose" are those which do not belong to a specific sector**. This cluster is composed for the majority by **consulting companies and new Blockchain protocols**. Most consulting firms, in fact, do not specialize in a specific market segment, but rather provide a wide range of services with the goal of leveraging Blockchain technology to assist firms across markets in introducing process efficiencies. A similar logic can be applied to new Blockchain protocols, which may be used for a variety of applications and sectors. These clusters, along with the **Financial sector, which accounts for approximately 29%** of all initiatives, **have historically been the most targeted by Blockchain startups**. The roots of this technology can explain why **finance is ranked as the primary sector for new Blockchain-based applications**. Indeed, Blockchain was created primarily to be used for financial solutions, and its first use case was the creation of Bitcoin.

New Startup breakdown by sector: comparison of 2017-2018 and 2020-2021



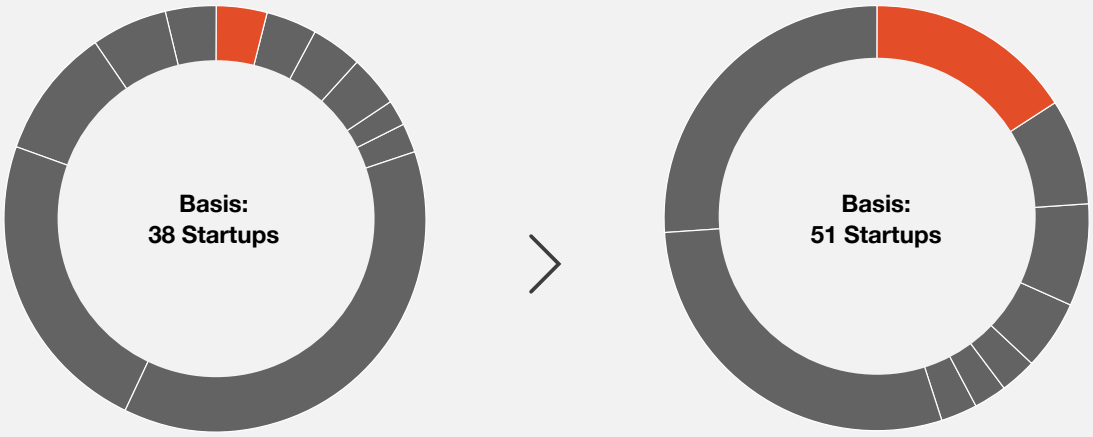
New General Purpose Startup breakdown: comparison 2017-18-19 and 2020-21-22



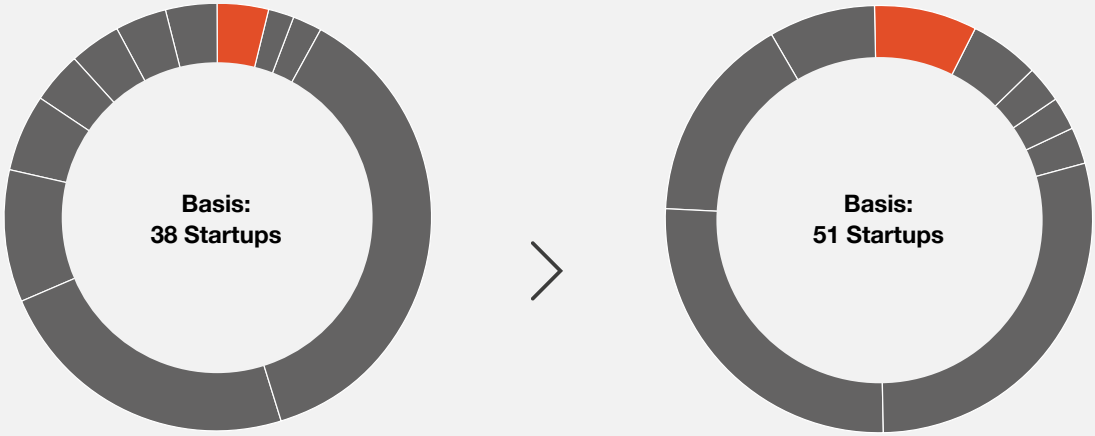
The data confirms not only the dominance of these two market segments (General Purpose and Financial Sector), but also their **consistent growth over the last five years**. However, the number of **"General Purpose" startups is growing at a slower rate than other market segments, resulting in a decline in their dominance**.

The reason for this observed trend is the **progressive specialization of new startups in various market segments**. As this technology matures, real use cases are being adopted, resulting in a greater need for solutions built for specific use cases and a lower need for general and infrastructure projects.

New Media, Arts & Entertainment Startup breakdown: comparison 2017-18-19 and 2020-21-22



New Agrifood Startup breakdown: comparison 2017-18-19 and 2020-21-22



The analysis also highlights how the **Media, Arts & Entertainments sector** has experienced the fastest growth in the years of scope compared to other segments. Compared with 2017-2018-2019, the dominance of this sector more than doubled, representing more than **15%** of all new **startups** of 2020-2021-2022. **The drivers of this growth can be identified in initiatives related to Blockchain-based games, and the adoption of NFTs for ticketing and digital art**.

Another honorable mention can be made about the **Agrifood** sector, which accounts for about **8% of all new cases of 2020, 2021 and 2022**. Blockchain applications for this market segment are gaining more traction in the recent period. **In the last four years indeed, the number of projects concerning agrifood Supply Chain nearly doubled**.

In order to increase the level of the analysis each startup of the census has been assigned to an additional cluster. This **second level segmentation comes from the necessity to highlight additional information and analyze the interviewed startup with clusters that could reflect the emerging trends**

in the broad Blockchain ecosystem. A sectorial analysis alone is indeed unfit to cover all use cases as within the same market segment there may be different applications, solutions and purposes for which Blockchain technology can be applied.

The clusters identified are the followings:

- **Cryptocurrency exchange and custody:** Businesses that allow customer to trade cryptocurrencies with other cryptocurrencies or fiat money, or companies that offer Digital Asset custody services for institutions, or private users.
- **DeFi applications:** Startups that develop decentralized applications that offer Blockchain-based financial services using smart contracts and tokens. Primarily focused on the end user, they also engage consumers in platform-based business models. These applications are often developed by foundations or independent developers.
- **NFT collectibles, Gaming & Metaverse:** Businesses that develop solutions related to the creation of collectibles, or gaming and metaverse experiences using smart contracts, tokens, and NFTs.
- **Blockchain solutions:** Startups that have developed a solution, or a suite of services that make use of Blockchain technology to improve "traditional" business processes. They typically sell their B2B solutions to solve business problems or to improve business operations.
- **Development tools:** Startups developing on-chain services, SDKs and analysis tools that simplify the development of Dapps and other Blockchain-based services.
- **Platforms and Protocols:** Startups working at the development of new Blockchain protocols. This cluster includes both L1 platforms and scaling solutions like L2s or sidechains.
- **Mining and staking:** Startups focused on the transaction's validation processes of different Blockchain platforms. They may directly operate a validation node or develop mining and staking «as a service» for other players.
- **Blockchain consulting:** Startups focused on consultancy services in the Blockchain industry. They have strong in-house development capabilities but have not developed a specific business solution.

Due to the broad definition of the "Blockchain solutions" category, the startups included in this cluster have been subsequently divided by market segments.

Startups breakdown by solution cluster

The chart shows how rather than developing a specific product or solution, **more than 20% of all startups offer consulting services**. These businesses help companies in the adoption of already existing Blockchain-related products or offer technical assistance in the development of new initiatives based on this technology.

At the second place, with a share larger than 15%, there are **startups that developed Blockchain-based solutions for the finance sector. The innovations proposed mainly belong to three subcategories: Tokenization, payment programmability and traceability, and Blockchain analysis**. Tokenization solutions make possible the digitalization of illiquid assets such as receivables, financial participations in private companies, bonds, real estates and many more.

Payment programmability and traceability instead, use Blockchain properties to efficiently program ahead the execution of payments at a given condition, and to efficiently keep track of all transactions among parties.

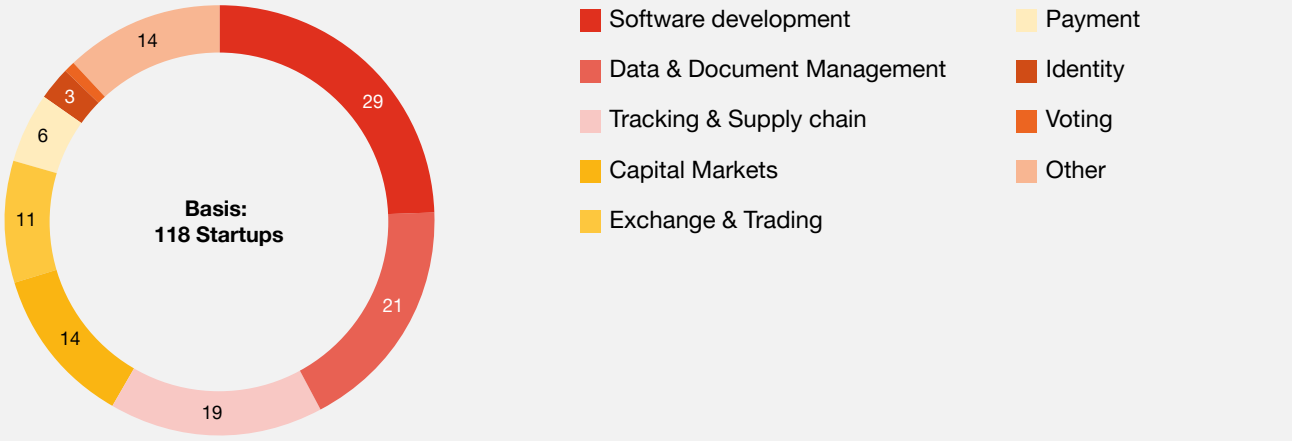
Lastly, Blockchain analysis solutions use **machine learning** and **AI algorithms** to analyze **Blockchain transactions** and information given by cryptocurrency wallets. Analysis tools are then applied mainly for two purposes: offer to both institutions and private users an instrument which helps them to be compliant with tax regulations, and to detect probable frauds or anomalies which may be related to money laundering schemes.

Another relevant segment that requires special attention is **Blockchain solutions for the logistics sector. These startups account for more than 7% of all cases and use Blockchain's ability to immutably store information to record the production and delivery steps of a product**. These solutions commonly incorporate IoT (Internet of Things) devices to generate data that is then notarized on the Blockchain. These use cases make **use of Blockchain features to timestamp all information exchanges and to continuously monitor who is generating the information**. Such solutions lead to a variety of practical applications; for example, tracked product origins enable businesses to share product information with their customers in a transparent manner.

Another example can be found in Supply Chains; **by having a single source of truth for Supply Chain information, companies and suppliers can settle disputes such as delivery issues more efficiently**.

Moreover, an **analysis of the processes allows to understand which activities and processes are being impacted the most by the implementation of Blockchain technology**.

Processes impacted by the startups solutions



The **most impacted process, accounting for more than 24.5% of all cases, is Software Development**. This observation is consistent with consulting startups' market dominance. These are indeed **focused on providing consulting and software development services to companies and institutions that do not have the necessary know-how in-house**. Furthermore, the majority of Blockchain-related projects will inevitably necessitate software development skills.

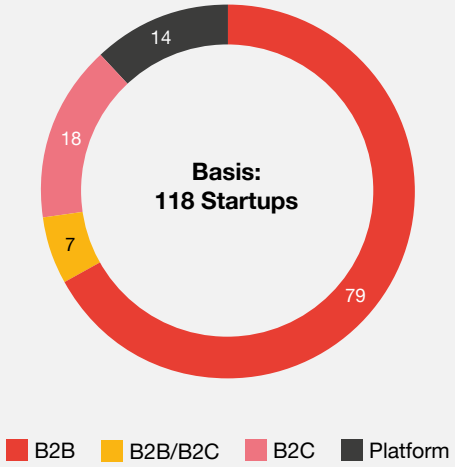
Data & Document Management is another process heavily influenced by Blockchain startups. One of the characteristics of Blockchains is the **ability to store data in an immutable and permanent manner, which simplifies processes related to data gathering, storage, extraction, and verification**. Some examples are NFT ticketing for concerts and events, the storage of data related to medical records, solutions for keeping track of equity investments, tax reporting tools and many others. Blockchain potential for data management is not a new discovery and it has already penetrated many market segments such as insurance, healthcare, finance, automotive and others.

Tracking and Supply Chain processes have also been deeply impacted, innovations such as the integration of distributed ledgers with IoT devices have indeed generated a great interest towards these solutions from the logistic, luxury and agrifood sectors.

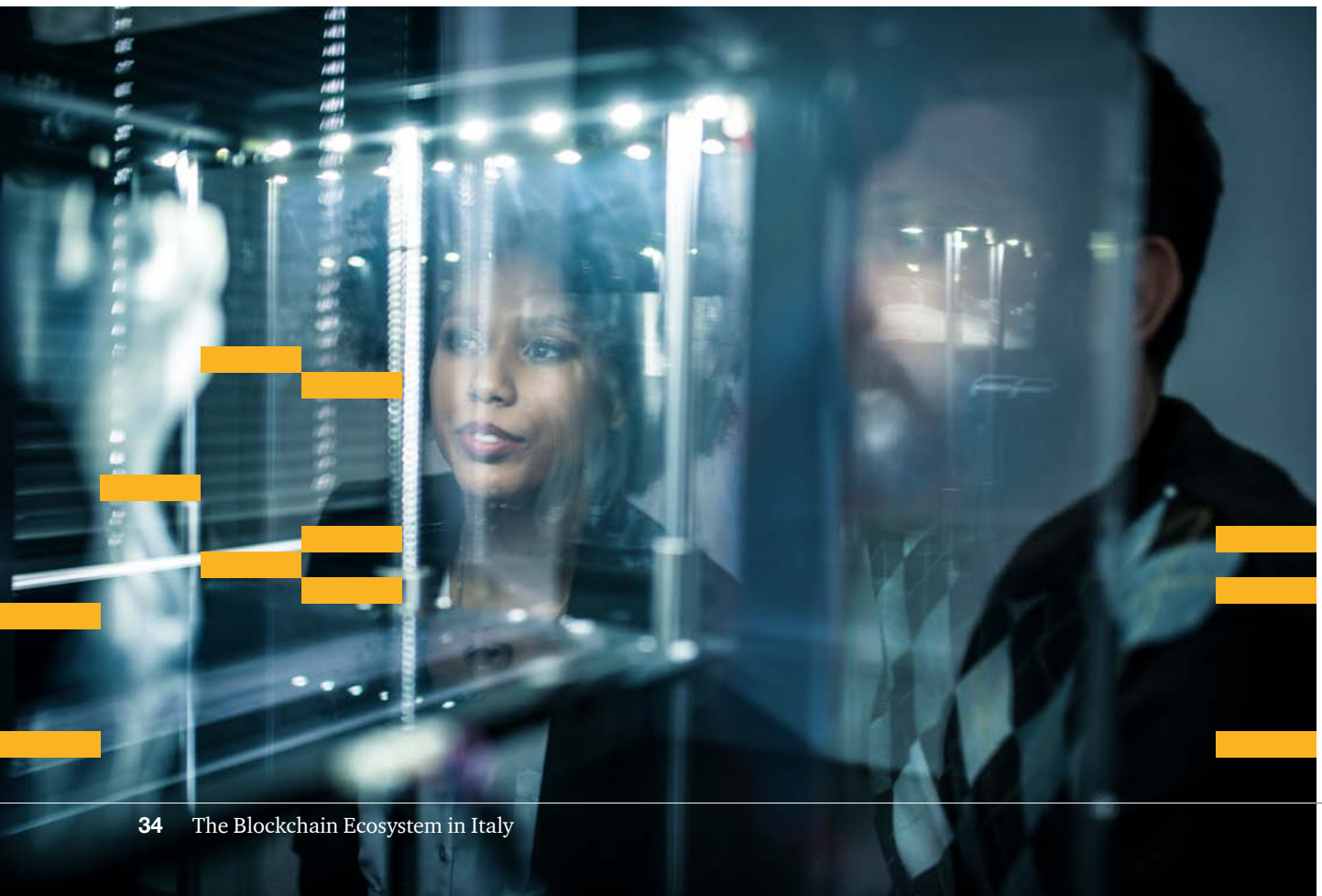
While Digital Assets such as **Cryptocurrencies have driven the development of new solutions for Exchange & Trading, Capital Markets processes are now facing the emergence of tokenization**. Tokens can represent a wide range of goods, and the innovations proposed by these startups range from new tokenization solutions to custody, as well as the development of new methods and paradigms for investing in Digital Assets.
Other processes impacted by Blockchain technology that are worth mentioning are **Payment Processing, Identity Verification, and Voting Processes**.

Target Clients

Distribution of the startups target clients

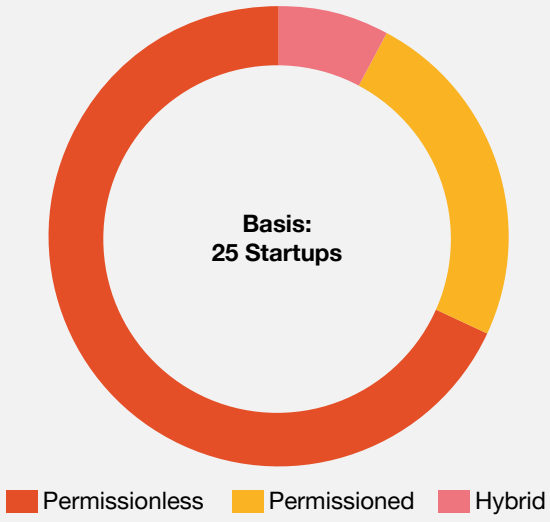


Another dimension of analysis of Italian startups in the Blockchain sector is given by the **typology of customers targeted by such initiatives**. **The majority of startups target businesses as their clients**; from consulting services to the logistics sector to mining solutions, **the landscape is currently dominated by B2B initiatives. Startups focusing on B2C clients account for only 15% of the total**. Cryptocurrency exchanges, custody services, tax compliance analysis tools, DeFi applications, Gaming and NFT collectibles marketplaces, and a few other isolated cases are examples of private user-oriented initiatives.
Solutions included in the **Platform cluster instead are those services which are capable of connecting private users to companies and institutions**, and that therefore do not belong neither to the B2B, or the B2C section.
In conclusion, companies labeled as B2B/B2C offer their services to both market segments. These may offer the same products to both market segments or have different services and product lines. **However, differently from those clustered as "Platform", B2B/B2C startups do not aim to connect private users to businesses and institutions**.

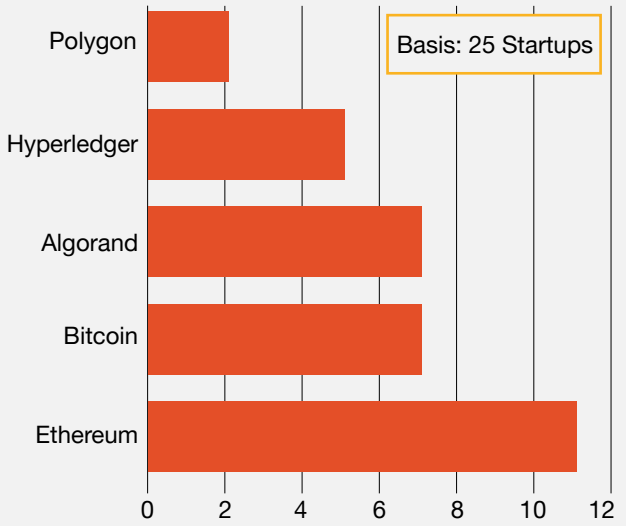


Protocols & Tokens

Distribution of the typology of blockchain network exploited by Italian startups



Most common blockchain protocols



Blockchain networks can be distinguished in Permissioned and Permissionless protocols. Permissioned ones are Distributed Ledger platforms in which transaction validators are limited to a predetermined set of actors identified anagraphically, if not simply cryptographically. Permissionless Blockchains, on the other hand, are Distributed Ledger platforms that allow anyone to participate in transaction validation activities.

Permissionless Blockchains are the most represented in the sample. More specifically, this preference is emphasized for startups that include the use of tokens. **Permissioned platforms, on the other hand, are frequently used for processes involving a consortium of actors**, such as supply chain tracking and management.

According to our the research, **Ethereum is the most widely used Blockchain protocol**. Unlike Bitcoin, which is primarily used to store the value of its native currency (bitcoin) and for notarization, Ethereum's programmability features and token standards (ERC-20, ERC-721, ERC-777, and ERC-1155) allow for a wide range of use cases. However, its **high gas fees are driving some initiatives toward alternative protocols, such as Algorand, or layer 2 solutions and sidechains (e.g, Polygon)**.

One important distinction is whether the company uses tokens in the implementation of its solution. Tokens are a tool used within a Blockchain platform to manage non-native Digital Assets. Tokens can be used to represent digital or physical goods, as well as rights such as asset ownership or access to a service.

Initiatives belonging to the Media, Arts & Entertainment often use both fungible and non-fungible tokens. **NFTs** in particular are used to uniquely identify artworks such as digital art, or songs, but also digital properties such as lands and in-game assets in different metaverse and gaming platforms. Another use case of non-fungible tokens in the entertainment sector exploits the verifiable uniqueness and authenticity of NFTs to issue Blockchain-based digital tickets for concerts and events.

Another sector in which tokens are frequently used is the financial one. Solutions vary from investments and asset management to **custody** and **exchange** services to **asset tokenization**. **In the asset management field, tokens enable the possibility of directly participating in an investment pool, which may be in control of a DAO** (decentralised autonomous organization), **or of a portfolio manager**. Among other advantages, this innovation allows for a direct transaction from the customer to the investment venture and enables the issuance of a token, which univocally represents the stake of the user in the investment initiative. This process drastically simplifies the investment process, cutting off intermediaries, increasing transparency, and granting final users access to services which in the traditional financial sector have high entry barriers.

Algorand takeaway

As seen in the image figure of the most commonly used Blockchain by Italian startups, **Algorand is one of the most widely used, competing with the two most capitalized protocols, Ethereum and Bitcoin.** Algorand is a reliable player that is heavily investing in integrations with information systems and collaborating with institutions to bring technology and innovation into the traditional world. This is not surprising given that **Algorand is working directly with Italian institutions to deliver solutions to integrate their protocols with existing ones**. In fact, Algorand has been involved in a **large experiment promoted by the Bank of Italy, which is attempting to integrate Algorand with the Target Instant Payment Settlement (TIPS) in order to find a viable way to develop a DvP system**, Delivery versus Payment, to increase the use of cash on chain and promote the exchange of securities over DLT systems. This experimentation, in particular, attempts to analyze the various interoperability models between the two systems and describes the results of two experimental activities that evaluate two different solutions to synchronize the securities “leg” (asset-leg) and the cash “leg” (cash-leg).

As a Blockchain, Algorand has a strong Italian soul given by the founder Silvio Micali, Turing award for Computer Science in 2012 for studies on cryptography, and has also collaborated with the SIAE for the recognition of copyright.

5.

Conclusions

The research provides a glimpse of trends and relevant information on how the Italian Blockchain ecosystem is evolving. Several pieces of information were included in the study on the distribution of startups in the different processes and sectors involved. This provides a quantitative perspective of the market, but **it is critical to determine what qualitative information is hidden behind the numbers**. In this part, we'll try to figure out what conclusions we can derive from this research.

The need of knowledge to push the adoption

Our analysis reveals an increase in the number of Italian startups developing business solutions based on Blockchain technologies and enabled use cases. We discovered, in particular, that there is a large number of startups focusing on consulting services to assist other companies in the adoption of Blockchain solutions in various business processes. Indeed, because a **lack of knowledge and technical skills is one of the main factors slowing the sector's development, several startups emphasized the importance of a solid education and awareness about the true benefits and risks of Blockchain-based technologies**.

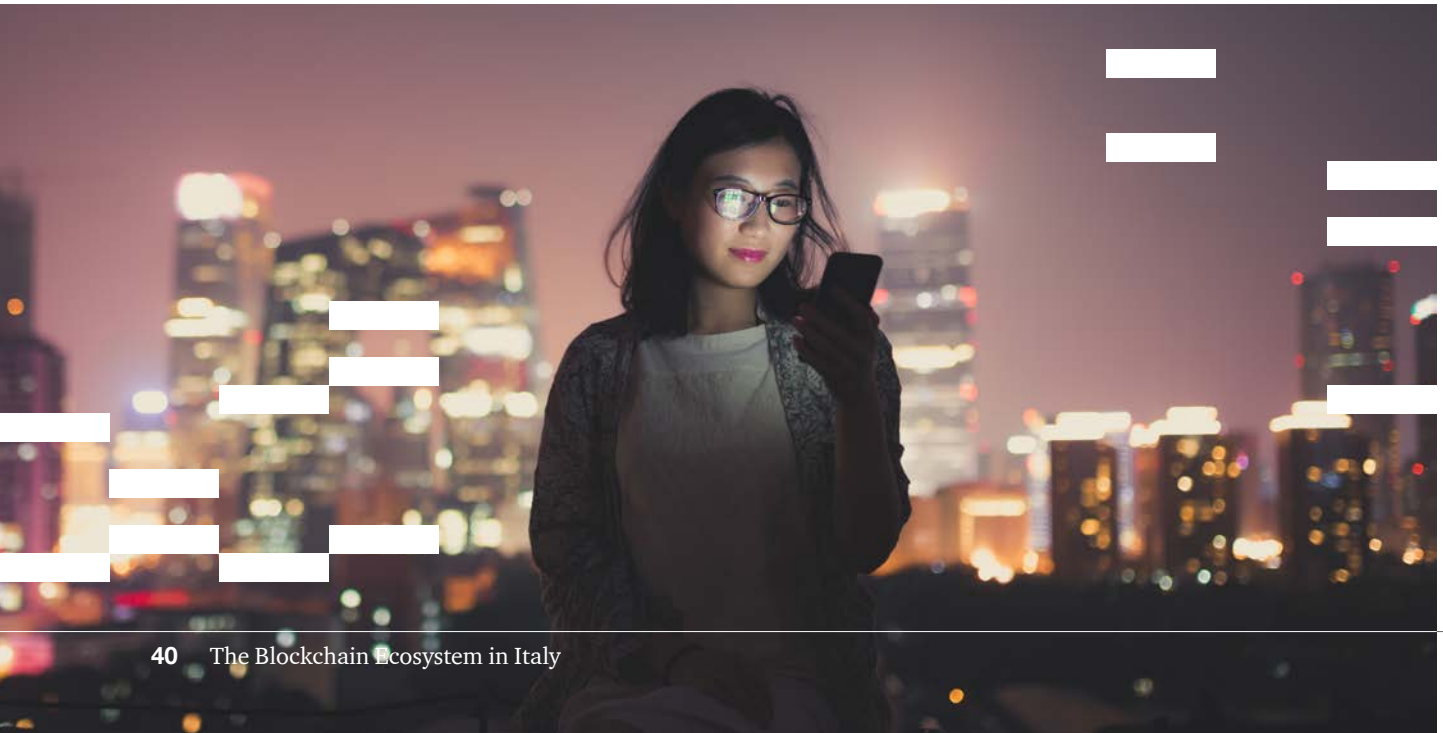
Regulation to foster innovative solutions

Finance emerged as the second-largest market segment in terms of the number of Italian startups. This is not surprising given that Blockchain solutions were originally designed to provide an alternative infrastructure to the traditional finance market. However, the interviews revealed that the current Italian **regulatory framework is impacting the development of some of the most exciting innovative solutions**. Specifically, those new innovations, such as the tokenization of assets and financial instruments, are being developed by other startups in other European countries. **In the long run, this may result in a loss of competitiveness for Italian startups in comparison to European ones**.

Confirming this point, **the analysis and interviews with the startups revealed a strong interest in regulation and the need to have a regulatory framework to be able to sustain the potentialities of the new technology**. From a technological point of view, Blockchain and Digital Assets allow for innovation in different sectors and areas that today use manual and non-automated mechanisms. In fact, looking at the benefits and potential innovations, the new technology will impact and shape future businesses in several ways. Although Blockchain technology is facing a **transition phase in improving the infrastructure and scalability of its systems**. It is therefore crucial to define a regulatory perimeter that can allow the technology to expand and improve while providing a safeguard for end users. Innovation should not be blocked but rather incentivized by allowing startups to experiment with innovative solutions allowing the whole system to benefit.

NFT future prospective

The analysis revealed that the **Media, Arts and Entertainment sector is among the fastest growing sectors**. The development of the sector is undoubtedly related to the growing interest in the use of NFTs for game-based initiatives, digital arts, and ticketing solutions. **NFTs represent the first entry point into**



the web3 world for many companies in the private world, experimenting and internalizing the technology while attracting new, young and more digitally oriented customers.

NFTs have the potential to revolutionize many industries, and the variety of types on the market will certainly help the discovery of new use cases. One of the latest trends visible in the market is that of the so-called Soulbound tokens, also known as non-transferable NFTs that bind to the initial wallet to which they are sent. This new type of token could impact the world of HR and ticketing, helping to solve issues related to bagging and counterfeiting. In general, then, **experimentation with new NFT-based solutions will surely foster growth in many other sectors**.

Supply Chain: between experimentation and consortia

Supply Chain and Logistics are two industries that have seen a significant push toward digitization and the use of Blockchain as an enabling technology, with a large number of startups seeking innovative solutions. Despite the strong move toward Blockchain-based solutions for certification, no enterprise-level solution that can guarantee process efficiency has been found to date. As stated in the preceding paragraphs, **Blockchain is a digital native technology that requires a bridge to the real world to receive information about Supply Chain movements**, which is why IoT and sensors combined with tags are also used for real-time tracking.

The formation of various consortia aimed at efficiency and ease of information sharing is one piece of evidence that can be seen in the market. **Consortia, in fact, enable the gathering of both suppliers and producers of goods under a single network to use the same shared information record**. These solutions are frequently permissioned (particularly DLT solutions) and allow only limited nodes to enter relevant information about the lifecycle of the managed products. Existing experiments involve both “open” consortia, which allow firms to enter and test the technology’s potential, and “closed” consortia, which offer access only to specific companies of interest to the consortium itself.

In general, we can say that **Supply Chain is an area in which various solutions are being tested, and that by bringing together multiple players and multiple technologies, processes can be made more efficient**, bringing added value to the end customer.

Europe vs. Italy: the gap that needs to be filled

Beyond regulatory issues, the interviews have also revealed how one of the weak spots of the Italian Blockchain startup market is the financing power.

- The startups interviewed indeed pointed out how their **international competitors were able to quickly collect higher funding amounts**. This is undoubtedly a significant competitive advantage for competitors with greater economic power, both in the bootstrap and later stages. As a result, the Italian ecosystem is less competitive than the European ecosystem due to a lack of confidence and a predisposition to invest in innovative technologies.

- Another gap with other European countries that has been highlighted as a barrier to the adoption and understanding of this technology is the lack of **digitization of processes and documents among companies**. This aspect leads the Italian ecosystem to **internalize new technologies more slowly than foreign competitors**, reducing the speed of technology adoption and not supporting startups developing innovative solutions.

- Regarding Blockchain applications, comparison with a census conducted by the Blockchain Observatory shows that **in Italy there seems to be a lower frequency of startups related to Defi applications and the NFT, Gaming and Metaverse cluster**. This is something to take into consideration as these sectors represent a key part of the new economies that can be created on top of this technology. This situation can be viewed from two perspectives: the first is that in Italy **most of startups are focusing on improving existing processes without disrupting and creating new ones**, and the second is the fact that **true innovations brought by technology take time to be understood and incorporated into everyday life**.

On the contrary **Italian startups seems to have a higher tendency to focus on Blockchain consulting and Blockchain solutions**. A possible explanation for this difference can be found in the Italian business landscape that is dominated by SMEs. Mostly targeting B2B clients, **Italian Blockchain startups operate in an environment in which the average company does not have the internal expertise to integrate Blockchain solutions to its processes, thus these initiatives are needed to fill this gap**. Consulting and software development firms are critical in the early adoption phase of technology because

they play a dual role: the first is to create immediately usable solutions, while the second is to raise awareness of the phenomenon and the potential of the technology.

Custody of Digital Asset: the prerequisite for the market

Moreover, considering the evidence of a **PwC survey on the Digital Asset Custody we expect that the startups active in the Finance sector that are offering Execution, Trading, Tokenization and Custody services will have the opportunity to contribute to enabling Financial Institutions to enter in the Digital Assets market**. The sector is expected to growth exponentially in future years as Financial Institutions and Market infrastructures jump in the Digital Asset world by providing a safe entry point to the use of the new technology for finance applications.

As discussed in previous chapters, **the Custody of Crypto Assets by Financial Institutions is a critical component of bringing technology to users who are not yet in this world**. By lowering the entry barriers and providing more web2-friendly interfaces, users will be able to tap into the Blockchain's potential without having to be exposed to the technicalities behind it.

Many major players are already moving into the market to integrate these solutions and will start offering value-added services once the regulations are clear and effective. In this regard, the **Italian market appears to be on broadly in line with both EU and global competitors, with many startups providing custody services that are becoming increasingly significant** in terms of both funding and potential projects. Without a doubt, reliable Custody services are the first requirement for making this technology a vailable to the next billion people.

Final Thoughts

PwC has a broad view of the Italian ecosystem and the evolution of this technology across the country's various sectors. **We anticipate significant growth in this technology over the next few years, both in terms of users and actual use**. We are still in the early stages of the phenomenon, assessing the robustness of the technology and its potential benefits for end users.

Mapping startups in the area is critical for keeping track of activity and identifying the most viable market solutions that have the potential to revolutionize any industry.

This study has uncovered trends that are already well known but there is the need to give both companies and regulators instruments to understand and encourage the application of this technology into traditional information systems.

Payments and the development of new ways for users to interact with businesses are likely to be the most impacted areas. Tokenization trials may lead to improvements in current systems, but the **transition will take time to be understood by the operators and for institutions to get involved**. In general, Blockchain can bring significant advances in information exchange, as well as increasing digitization and process efficiency.

We believe that digitalization is an unstoppable trend that must be followed if the Italian ecosystem is to lead the way rather than follow what others do, as has been done in the past. The United States and Asia are the primary regions where this technology is evolving, but **Europe has a significant opportunity following the official release of MiCA regulation in 2024**.

Another important consideration for the coming years is the **relationship between Blockchain, traditional systems, and the physical world**. This **will play a significant role in bringing new technology into our lives by connecting real-world events to Blockchain Smart Contracts and automating processes and user interactions**.

Finally, we are confident that this **technology is reaching a point of maturity that will lead to mainstream and mass adoption**. Although there are still some technical aspects that need to be improved, such as scalability, interoperability, and user experience, the technology is solid and continues to grow rapidly. New use cases are discovered on a daily basis, and we believe that the entry of institutions into the market will benefit the ecosystem greatly. The Blockchain's growth trajectory is similar to that of the Internet in the early 2000s, and the capabilities of this technology have the potential to truly disrupt many different areas of our real world, bringing real benefits to users and businesses.

The best is yet to come, and we at PwC will be there every step of the way to help our clients succeed in this space.

Annex

Clusters and Startups interviews

Disclaimer: The startups included in the appendix were selected from a cluster of 118 startups, which may not include all startups in the Italian ecosystem. The parameters used for the selection are based on the market experience and sector knowledge of the participants in this report. The startups presented are only an example for illustration purposes of the various sectors included in the analysis.

In this section we will proceed with the **analysis of the interviewed startups during our research, grouping them by the clusters previously indicated in the paper** (Cryptocurrency exchange and custody, DeFi applications, NFT collectibles, Gaming & Metaverse, Blockchain solution, Development tools, Platforms and Protocols, Mining and staking, Blockchain consulting). This section aims to provide a clear picture of the most exciting areas of Blockchain technology development by presenting representative use cases from interesting companies in the Italian landscape.

All the clusters and relative startups are presented with a brief description of their features.

Cryptocurrency exchange and custody

Startups in this cluster provide safe infrastructure for the custody of Digital Assets or enable exchange between cryptocurrencies and traditional currencies. These firms enable customers to exchange their currency without having to interact directly with the major crypto trading venues, and they **can provide safe custody services to both retails and institutions**. In this regard, safe custody and secure asset handling are the fundamental starting points for providing customers with additional value-added services.

Anubi Digital

Anubi Digital is an Italian startup that offers a Custody service allowing customers to easily and securely hold their cryptocurrencies and to trade them through an OTC service. The added value of the service offered by Anubi Digital is that, in a single environment, customers can also use the Staking service and, through the proprietary DUO platform, access the DeFi ecosystem in a secure way. As for the target clients, the company is focusing on both Institutions and HNWIs.

Scheda di dettaglio	Anubi Digital
Foundation Year	2020
Headquarters	Torino, Piemonte, Italy
Website link	www.anubidigital.com
Sector	Finance
Process	Capital markets
Funding	
Total funding amount (€)	€ 5.300.000
Funding type	Traditional
Investors (Name)	Banca Sella
Investors (Typology)	Venture capitalist, Business Angels
Generating Profit	No
Founder(s)	Diego D'Aquilio (Co-founder e CEO), Adriano Marconetto (Co-founder e Managing Partner), Federico Nitidi (Co-founder e Managing Partner)
Partners & Clients	
Active Partnerships	Technology provider, consulting, legal
B2B/B2C	B2B, B2C (HNWIs)
Client Target description	Institutionals (Banks and Investment Funds) and HNWIs
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	Cryptocurrency Exchange and Custody
Competitive environment	Anubi Digital has a unique business proposition in the market, adding many value added services in addition to the custody of digital assets. In the custody market competitors are represented by Checksig and Conio.
Development stage description	Core product: **Market fit** Increasing number of staking opportunities for clients: **In development** Enable recurring purchases on the platform: **In development**
Technical description	Anubi Digital ensures the safekeeping of Digital Assets by taking advantage of the service of technology provider Fireblocks to store its clients' private keys. Staking on the platform is ensured by partnership with the service of Figment, a leading company in this field and also used by major exchanges regarding staking their users' cryptocurrencies. Duo is a proprietary platform that allows users to earn rewards from Defi by placing cash in both fiat and crypto at the decentralized exchange Uniswap.
Blockchain protocol	Ethereum
Permissioned/ Permissionless	Permissionless
Private/Public	Public
L2	–
Token type(s)	Fungible, NFT

Hex Trust

The Hex Trust Group is the leading fully licensed and insured provider of bank-grade custody and associated services for Digital Assets in Asia. Led by veteran banking technologists and award-winning financial services experts, the Hex Trust Group has built Hex Safe, a proprietary bank-grade platform that delivers custody, DeFi, brokerage, and financing solutions for financial institutions, Digital Asset organizations, corporations and private clients. The Hex Trust Group has offices in Singapore, Hong Kong, Dubai, Italy, and Vietnam. The startup is currently redesigning its whole platform from scratch in order to scale for the future needs of this ever-evolving market. Hex Trust has also recently launched its Joint Venture with Animoca Brands named Gryfyn - an NFT centric wallet designed as the passport to the metaverse for the GameFi sector.

Scheda di dettaglio	Hex Trust
Foundation Year	2018
Headquarters: Province, Region, Country	Hong Kong
Website link	www.hextrust.com
Sector	Finance
Process	Capital Markets
Funding	
Total funding amount (€)	€ 100.000.000
Funding type	Traditional
Investors (Name)	Animoca Brands, Liberty City Ventures, Ripple, Algorand
Investors (Typology)	Private Company, Venture capitalist
Generating Profit	No
Founder(s)	Alessio Quaglini
Partners & Clients	
Active Partnerships	Consulting & Hardware (IBM), Distributor (SIA, Nexi,) Crypto companies (Clearpool, Gryfyn, Polygon, Hedera Hashgraph, Animoca Brands, Algorand, Klaytn, Celo)
B2B/B2C	B2B
Client Target description	Financial institutions, digital asset organizations, corporations and private clients - any company willing to hold digital assets and integrate it within their business operations like fashion brands moving into the metaverse.
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	Cryptocurrency exchange and custody
Competitive environment	Main competitors within the category of licensed digital asset custodians worldwide include Fireblocks (USA), Anchorage (USA), BitGo (USA) Copper (UK/EU), Metaco (Switzerland), Cactus Custody by Matrixport (Singapore), Finoa (Germany), SEBA Bank (Switzerland).
Development stage description	**Market fit**
Technical description	Hex Trust's custody software operates thanks to the company's nodes that allow the platform to interact with the Blockchain networks. The infrastructure also includes different layers for managing authorization, company policies, and regulatory compliance issues. There are different wallet solutions covering a spectrum of different trade-offs between security and efficiency. Their services range indeed from cold wallets (security-focused), to warm and hot options (efficiency-focused). As of today, Hex Trust's software is compatible with 12 different Blockchain protocols and more than 300 digital assets.
Blockchain protocol	Various
Permissioned/ Permissionless	Permissionless, Permissioned
Private/Public	Public, Private
Token type(s)	Fungible, NFT

Young Platform

Young Platform offers many services, from its cryptocurrency exchange platform to custody services, to guidance and consulting services for companies interested in learning about NFTs and cryptocurrencies. Since the launch of the STEP wallet, Young Platform introduced more than 1.2 million private users to cryptocurrencies. The B2C platform represents a safe space where people can trade, earn, and learn about cryptocurrencies. Their offer includes indeed a standard and a pro version of the cryptocurrency exchange, an academy section in which are explained basic concepts about Blockchain and cryptocurrencies, and the Young Platform Step wallet, which allows users to hold and earn tokens by performing various actions such as walking, answering a quiz and many others. Their B2B services instead include a business wallet, and guidance to companies in the creation and issuance of NFTs. The startup is also working on various solutions to ensure KYC compliance in the DeFi space (to ensure identification of NFTs buyers), the release of a non-custodial wallet, and the introduction of their "Euro-only account" solution for companies.

Scheda di dettaglio	Young Platform
Foundation Year	2018
Headquarters: Province, Region, Country	Torino, Piemonte, Italy
Website link	www.youngplatform.com
Sector	Finance
Process	Exchange & Trading
Funding	
Total funding amount (€)	€ 20.600.000
Funding type	Traditional
Investors (Name)	Azimut Holding, Sygnum, United Ventures, Banca Sella
Investors (Typology)	Venture capitalist, Private company, Public company
Generating Profit	No
Founder(s)	Andrea Ferrero, Alexandru Stefan Gheban, Samuele Raimondo, Andrea Carollo, Daniele Rinaldi, Marco Ciarmoli
Partners & Clients	
Active Partnerships	Technological (Chainalysis, Satispay, Fireblocks)
B2B/B2C	Both
Client Target description	Private users, Companies interested in holding digital assets, Companies interested in creating NFTs
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	Cryptocurrency exchange and custody
Competitive environment	B2C services: The cryptocurrency exchange sector is higly populated by big actors such as Binance, Coinbase, Kraken and many others. B2B services: The market in which Young Platform operates is broad, however, some competitors which may offer similar services are identified in Kraken, Bitpanda, Anubi digital and Börse Stuttgart.
Development stage description	**Market fit**
Technical description	Young Platform offer to companies and institutions is strongly focused on a fully compliant approach. Their business wallet solution indeed includes tools to detect and avoid interactions with risky counterparts and the possibility to receive periodical reports on the wallet holdings and activities. The "Euro-only account" instead is meant for companies and institution, it allows these actors to receive cryptocurrencies that are then instantly converted to Euros as soon as they are received.
Blockchain protocol	Various
Permissioned/ Permissionless	Permissionless, Permissioned
Private/Public	Public
Token type(s)	Fungible, NFT

DeFi applications

Startups belonging to this cluster develop **decentralized applications** using a Blockchain-based solution that execute financial transactions. Building DeFi applications gives way to no longer needing intermediaries, providing users more flexibility, faster transactions, lower costs and the possibility to have more control on their assets.

Memento Blockchain Pte Ltd

Memento Blockchain Pte Ltd is a Singaporean company, founded by Italians, specialized in DeFi products and Blockchain-based services. The main product is an infrastructure on Blockchain for digital fund management. As per today the infrastructure is live on mainnet Ethereum and Avalanche ("Domani Protocol) , on Algorand ("AlgoCellar"), on Klaytn ("KlayCellar") and on testnet on ZkSync. These platforms belong to the category of asset management DeFi applications and they bring together private investors and portfolio managers under one roof. Anybody is allowed to create its portfolio (acting as the manager) that can be subscribed by other investors. Differently from traditional asset management, DeFi applications require no intermediaries and manage fractionable assets, this drastically cuts down administrative costs, as well as many other entry barriers. As of today, the portfolio management protocol is limited to cryptocurrencies investments, however, the aim of the platform is to enable the same dynamics for all types of Digital Assets. Whether it will be tokenized stocks, bonds, or wine bottles, portfolio managers will be able to propose their portfolio structure including any type of supported assets.A different product was launched last year and called ComSwab. CombSwap is a multiswap aggregator that allows users to sell one token, receiving different tokens in return (and viceversa) all in one transaction. Beyond developing DeFi protocols, Memento Blockchain Pte Ltd also offers consulting and software development services to companies and institutions.

Scheda di dettaglio	Memento Blockchain Pte Ltd
Foundation Year	2017
Headquarters: Province, Region, Country	Singapore
Website link	www.mementoblockchain.com
Sector	Finance
Process	Capital Markets
Funding	
Total funding amount (€)	€ 500.000
Funding type	Traditional
Investors (Name)	LuneX Ventures, SGInnovate
Investors (Typology)	Venture capitalist
Generating Profit	No
Founder(s)	Federico Cristina
Partners & Clients	
Active Partnerships	Financial Institutions
B2B/B2C	Both
Client Target description	Private investors, Portfolio Managers, Financial Institutions, Companies interested in investing in Digital Assets
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	DeFi applications
Competitive environment	Domani protocol, KlayCellar, and AlgoCellar operate in the DeFi asset management sector, their main competitors therefore are TokenSets, and Enzyme Finance.
Development stage description	**Market fit**
Technical description	The operations of the asset management DeFi protocols entirely run on-chain, with no need of external intervention, or information sources, such as oracles. Investors willing to join a portfolio send the right proportion of assets to a smart contract, receiving in exchange a token that represents their stake in the asset pool.
Blockchain protocol	Ethereum, Avalanche, Klaytn, Algorand
Permissioned/ Permissionless	Permissionless
Private/Public	Public
Token type(s)	Fungible

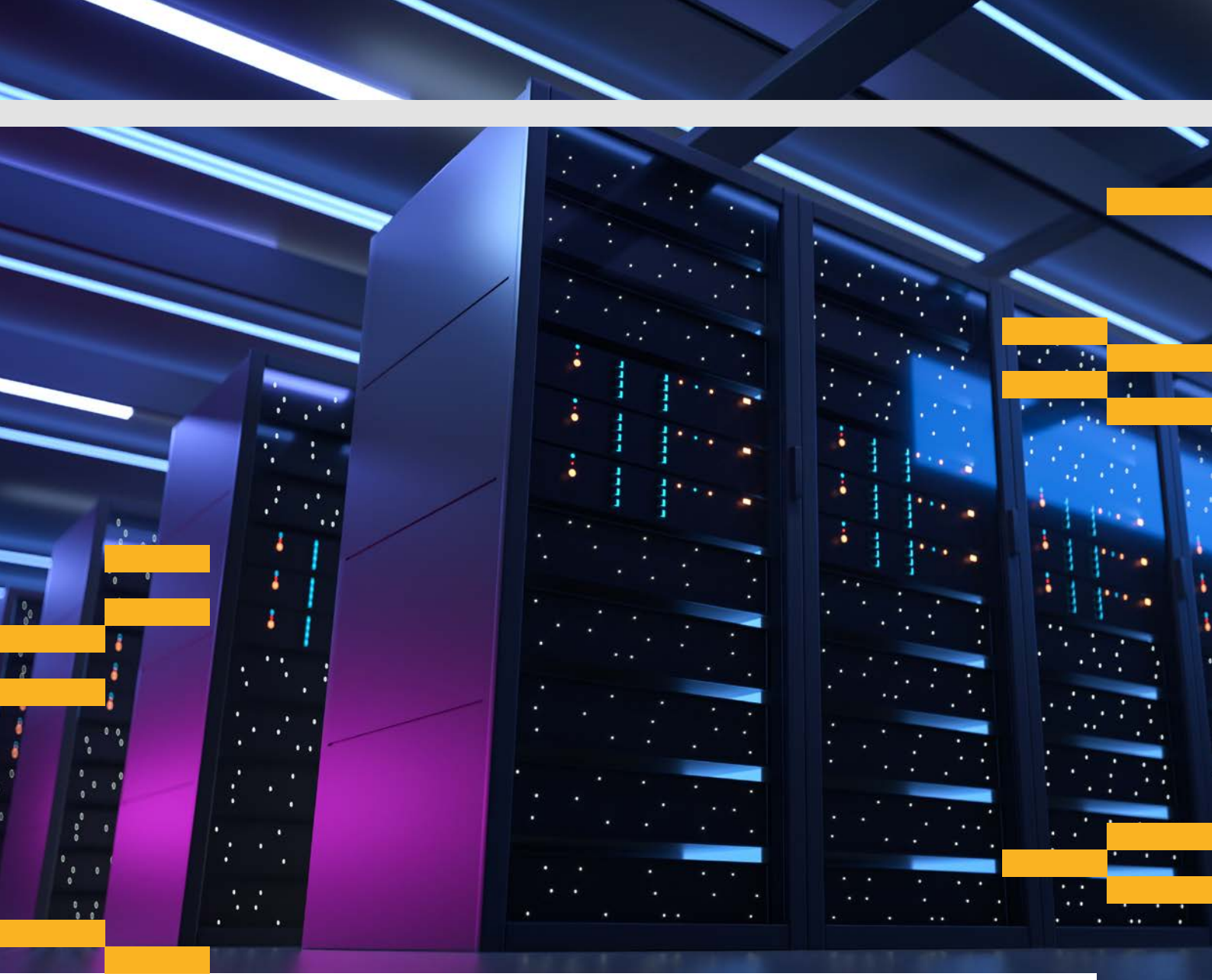
NFT collectibles, Gaming & Metaverse

Companies considered in this cluster are related to the creation of **business solutions** for **gaming**, **metaverse** and **collectibles**. These startups provide their services through the creation of new experiences where users can interact with each other, holding NFTs and playing in an immersive way.

Over

Over The Reality is an augmented reality metaverse merging the physical and virtual world. In the platform, the world map is divided in hexagons which users can map and add to the metaverse. The smartphone application is the gateway to access the geo-localized experience, and has already reached 600'000 downloads, with an average of 35'000 monthly active users. The over 1 million registered users are mostly located in USA, Turkey, Spain and France. The company has already sold more than 857'000 lands, minted as NFTs. The team effort is now directed towards the completion of the mapping feature and the execution of a proof-of-concept project dedicated to study the introduction of smart glasses to the augmented reality experience of the platform.

Scheda di dettaglio	Over
Foundation Year	2018
Headquarters: Province, Region, Country	Udine, Friuli Venezia Giulia, Italy
Website link	www.overthereality.ai
Sector	Media, Arts & Entertainment
Process	Software development
Funding	
Total funding amount (€)	€ 500.000
Funding type	Traditional
Investors (Name)	–
Investors (Typology)	Family & Friends
Generating Profit	Yes
Founder(s)	Davide Cuttini, Diego Di Tommaso, Mattia Crespi
Partners & Clients	
Active Partnerships	Events (Sandbox)
B2B/B2C	B2C
Client Target description	Augmented reality metaverse end users
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	NFT collectibles, Gaming & Metaverse
Competitive environment	Over addressed Superworld, Arcona, Spheroid, Universe as its main competitors in the AR metaverse landscape. Two dimensional metaverse experiences such as Sandbox and Decentraland are addressed as "coo-petitors" as they could enable interoperability dynamics such as assets portability, for example allowing users to use the same avatar in both platforms.
Development stage description	**Pilot**
Technical description	Ownership layer: NFTs grant the owner publishing rights on the corresponding land. Mapping layer: GPS and a proprietary tracking system are used to geo-localize users and lands, while pictures and 3D mapping of the physical world allows the platform to add new environments to its phygital ecosystem. Building layer: the Web builder, Software development kits, and a publishing DApp allow users to upload and create new contents and experiences.
Blockchain protocol	Ethereum, Polygon, BNB Chain
Permissioned/ Permissionless	Permissionless
Private/Public	Public
Token type(s)	Fungible, NFT



Blockchain Solutions

This cluster includes startups that offer a **Blockchain service** in the market to ensure **traceability** within the system. Blockchain solutions have a great impact where there is a need for trust between different actors to increase transparency and reduce inefficiencies. Usually, these companies go to the market selling their **B2B solutions** in order to improve business processes. Startups within this cluster will be presented by dividing them into the financial and logistical domains

Blockchain Solutions for Finance

Blockinvest

Blockinvest' software-as-a-service offer involves the tokenization of typically illiquid assets such as real estate, corporate bonds, and non performing exposures. Their platform therefore increases the liquidity of such assets, enabling an easier issuance, management, and exchange among actors, offering a sensitive reduction of administrative costs. Within the platform indeed it is possible to handle both the issuance on the primary market, and the exchange of assets in an intraplatform secondary market, accessible only to qualified investors. Furthermore, the company plans to expand the range of tokenized assets including private companies' equity, carbon credits, and warehouse stocks.

Scheda di dettaglio	Blockinvest
Foundation Year	2019
Headquarters: Province, Region, Country	Milano, Lombardia, Italy
Website link	www.blockinvest.it
Sector	Finance
Process	Capital Markets
Funding	
Total funding amount (€)	€ 600.000
Funding type	Traditional
Investors (Name)	Crédit Agricole
Investors (Typology)	Private Company, Business Angels
Generating Profit	–
Founder(s)	Lorenzo Rigatti, Fabio Pacchioni, Petrucci Rossano, Massimo Calogiuri, Alfredo Malgrati, Fabrizio Ciciani, Davide Baldi
Partners & Clients	
Active Partnerships	Consulting (Deloitte, K2Real), Legal (Studio Elled)
B2B/B2C	B2B
Client Target description	Banks, Financial Institutions
Relevant Clients (Name)	Credit Agricole, Borgosesia Spa
Value Proposition	
Solution cluster	Blockchain solutions
Competitive environment	The tokenization of illiquid markets is a populated environment, with many sub-categorizations, some companies belonging to this sector are Fleap (Italy), Fyblo (Italy), Wizkey (Italy), Seed Set (Italy), NPlus (Italy), LoanXChain (Italy), Equisafe (France), Brickken (Spain), Stokr (Luxembourg), Tokeny (Luxembourg), Taurus (Switzerland), DigiShares (Denmark).
Development stage description	**Market fit**
Technical description	Blockinvest's platform is an off-chain software participated by many types of actors which exploits on-chain tokens. Real world assets are tokenized on the Ethereum and Polygon Blockchain and sold to investors. Furthermore, the KYC procedure grants the investors the ownership of the assets also in case of the loss of the corresponding tokens. As of today, Blockinvest solutions allows to overcome the lack of regulation for security tokens, but it is also planning ahead to change its infrastructure in order to exploit the release new frameworks regulating this typology of assets.
Blockchain protocol	Ethereum, Polygon
Permissioned/ Permissionless	Permissionless
Private/Public	Public
Token type(s)	Fungible, NFT

Cryptobooks

Cryptobooks is a startup that offers an innovative service in order to simplify the management of tax reporting of Digital Asset investments. By connecting their wallets and accounts at exchanges to the platform, clients can instantly generate reporting that complies with their country's laws and regulations containing information such as capital gains profits, positions held and fees.

Scheda di dettaglio	Cryptobooks
Foundation Year	2022
Headquarters: Province, Region, Country	London, England
Website link	www.cryptobooks.tax
Sector	Finance
Process	Data & Document management
Funding	
Total funding amount (€)	–
Funding type	–
Investors (Name)	–
Investors (Typology)	–
Generating Profit	Yes
Founder(s)	Federico Pacilli (Founder e CEO)
Partners & Clients	
Active Partnerships	Legal, consulting
B2B/B2C	Both
Client Target description	At this early stage of development, the focus of attention is on retail customers. However, the strategy includes expansion to corporate customers at a later stage.
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	Blockchain solutions
Competitive environment	There are some competitors abroad in this area such as Koinly, TaxBit, CoinTracking, CoinLedger.
Development stage description	Adding supported integrations on its site: **In development**
Technical description	Cryptobooks allows the client to connect its wallets, the exchanges it uses, the Nfts it holds, and the Defi and CeFi protocols it uses through public and exposed APIs. Through the aggregation of data, derived from the connections to the Blockchain world that the user provides it is possible to instantly calculate the carrying prices, any capital losses and gains generated, and other useful and necessary information for proper fiscal management.
Blockchain protocol	–
Permissioned/ Permissionless	–
Private/Public	–
L2	–
Token type(s)	Fungible, NFT

Fyblo

Fyblo offers two tokenization solutions for the digitalization of equity assets. The first one is meant for SMEs in a pre-IPO stage, while the second product facilitates the management of the many shareholdings and equity investments of Startup accelerators and Venture capitalists. Both products exploit Blockchain tokens to efficiently record and manage the participations of different types of investors in both SMEs and startups.

Scheda di dettaglio	Fyblo
Foundation Year	2021
Headquarters: Province, Region, Country	Milano, Lombardia, Italy
Website link	www.fyblo.com
Sector	Finance
Process	Capital Markets
Funding	
Total funding amount (€)	€ 98.500
Funding type	Traditional
Investors (Name)	Impact Hub, Fin+tech
Investors (Typology)	Accelerator
Generating Profit	No
Founder(s)	Sonia Balduzzi, Roberta Monasterolo, Mario Moschetta, Massimiliano Paci, Ennio Visconti
Partners & Clients	
Active Partnerships	Legal (N1 consulenza)
B2B/B2C	B2B
Client Target description	Innovative SMEs, Business accelerators and Venture Capitalists
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	Blockchain solutions
Competitive environment	The tokenization of illiquid markets is a populated environment, with many sub-categorizations, some companies belonging to this sector are Fleap (Italy), Wizkey (Italy), BlockInvest (Italy), Seed Set (Italy), NPlus (Italy), LoanXChain (Italy), Equisafe (France), Brickken (Spain), Stokr (Luxembourg), Tokeny (Luxembourg), Taurus (Switzerland), DigiShares (Denmark).
Development stage description	- SMEs equity digitalization platform: **Market fit** - Club deal (Accelerator and VCs) platform: **In development**
Technical description	As of today, Fyblo offers the tokenization of participative financial instruments. These financial instruments are created as fungible tokens on the Ethereum and Polygon Blockchains. Their platform offers a sensitive reduction of administrative costs, programmability features and a simple solution to store and manage data related to the shareholdings of a company.
Blockchain protocol	Ethereum, Polygon
Permissioned/ Permissionless	Permissionless
Private/Public	Public
Token type(s)	Fungible

Wizkey

Wizkey offers tokenization services on permissionless Blockchain platforms such as Ethereum, Polygon and Algorand. Their solution allows financial institutions to perform the securitization of assets such as loans and receivables. The digitalization of such assets allows for better liquidity, traceability, and transparency, substituting a process that is often performed on paper. The company offer guidance throughout the whole process, from the ideation to the commercialization. The Bellerofonte project aims to create a money market in which companies will be able to borrow capital, using tokenized invoices as collateral. Wizkey's future goals also include the completion of the Eco-Genius project. This initiative would allow investors to participate in the funding of ESG positively impacting projects and to receive tokens which will testify the positive impact of the investment on the environment.

Scheda di dettaglio	Wizkey
Foundation Year	2018
Headquarters: Province, Region, Country	Milano, Lombardia, Italy
Website link	www.wizkey.io
Sector	Finance
Process	Capital Markets
Funding	
Total funding amount (€)	€ 1.200.000
Funding type	Traditional
Investors (Name)	–
Investors (Typology)	Business Angels
Generating Profit	No
Founder(s)	Marco Pagani, Roberto Ghio
Partners & Clients	
Active Partnerships	Technological (Neosperience, EWK2, Algorand)
B2B/B2C	B2B
Client Target description	Financial institutions, companies interested in the tokenization of carbon credits
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	Blockchain solutions
Competitive environment	The tokenization of illiquid markets is a populated environment, with many sub-categorizations, some companies belonging to this sector are Fleap (Italy), Fyblo (Italy), BlockInvest (Italy), Seed Set (Italy), NPlus (Italy), LoanXChain (Italy), Equisafe (France), Brickken (Spain), Stokr (Luxembourg), Tokeny (Luxembourg), Taurus (Swit-zerland), DigiShares (Denmark).
Development stage description	- Asset tokenization platform: **Market fit** - Bellerofonte project: **In development** - Eco-genius project: **In development**
Technical description	Wizkey tokenization solution allows to pair invoices, as well as loans documentation to a nonfungible token (Standard ERC-1155 on Ethereum). All information exchanges among actors and all relevant documents are immutably notarized on the Blockchain. These tokens can be issued and exchanged on their fully compliant white-labelled platform which integrates SPID verification for KYC procedures.
Blockchain protocol	Ethereum, Polygon, Algorand
Permissioned/ Permissionless	Permissionless
Private/Public	Public
Token type(s)	NFT

Blockchain Solutions for Logistics and Supply Chain

Deply

Deply is a startup providing Blockchain-based solutions for Circular Supply Chain Management. Deply platform allows companies to transparently communicate production data to their customers, detect inefficiencies in their production process and promote sustainability by tracking production waste and energy consumption, in a complete application of the circular economy logic.

Scheda di dettaglio	Deply
Foundation Year	2021
Headquarters: Province, Region, Country	Rome, Lazio, Italy
Website link	www.deply.it
Sector	Logistic
Process	Tracking and supply chain
Funding	
Total funding amount (€)	€ 265.000
Funding type	Traditional
Investors (Name)	Knobs, Business Angels
Investors (Typology)	Business Angels
Generating Profit	No
Founder(s)	Luisa Gaburova
Partners & Clients	
Active Partnerships	Legal, consulting
B2B/B2C	B2B
Client Target description	Consumer goods companies that want to trace their production chain in an end-to-end logic
Relevant Clients (Name)	Cantina Varvaglione (wine)
Value Proposition	
Solution cluster	Blockchain solutions
Competitive environment	The market competition is growing fast. In Italy there is the presence of Genuine Way that is a Blockchain company focusing on environmental sustainability and Trusty that is vertical on food traceability chain, while abroad a successful case is represented by TrustTrace, focused on the fashion Supply Chain. Deply's competitive advantage is its cross-sectorial approach as besides bringing transparency and trust within the Supply Chain industry, the main mission is to create a digital environment where companies from different industries collaborate towards scaling circular economy and reducing resource waste.
Development stage description	Recently launched the solution in the Italian market targeting wine, food and fashion companies interested in product traceability: **Go-to-market stage**
Technical description	Deply has a collaborative nature as it aggregates data of all production phases uploaded by Supply Chain members. Data may be collected also via IoT sensors and securely recorded on Polygon Blockchain. Deply provides end-to-end tracking and monitoring of the Supply Chain, ensuring greater data transparency and integrity, automating data collection, promoting circular economy and sustainability.
Blockchain protocol	Polygon
Permissioned/ Permissionless	Permissionless
Private/Public	Public
L2	Yes
Token type(s)	Fungible, NFT

Eonpass

Eonpass facilitates the identification of authentic goods and shipments in order to prevent the proliferation of illicit trade. Eonpass establishes unambiguous evidence of a document exchange by adding a signed message to the shipment bills, the signature guarantees that a genuine brand owner requested the shipment for those goods. It is part of the official EU project creating digital identities for brand owners in the new EU anti-counterfeiting architecture.

Scheda di dettaglio	Eonpass
Foundation Year	2019
Headquarters: Province, Region, Country	Milano, Lombardia, Italy
Website link	www.eonpass.com
Sector	Logistic
Process	Data and Document management
Funding	
Total funding amount (€)	–
Funding type	–
Investors (Name)	–
Investors (Typology)	–
Generating Profit	No
Founder(s)	Thomas Rossi, Luca Vaccaro, Valerio Vaccaro, Fabian Niederkofler, Riccardo von Pozel
Partners & Clients	
Active Partnerships	Consulting, Technology provider, Legal
B2B/B2C	B2B
Client Target description	The type of customers are companies that have an interest in tracking goods relat-ed to their shipments.
Relevant Clients (Name)	Tecnoalimenti, GS1 Netherlands, KLM AirFrance Cargo
Value Proposition	
Solution cluster	Blockchain solutions
Competitive environment	As an open source protocol there are few other examples in Europe like 2Tokens, IBM Tradelens, T-Mining, but, differently from Eonpass, they force participants to adopt their specific Blockchain choice.
Development stage description	Eonpass is working with the European Union Intellectual Property Office to promote a common open standard for EU: **Pilot**
Technical description	Eonpass is an opensource, Blockchain-agnostic platform whose peer-to-peer net-work can be used by the different actors in the system in order to notarize data, allowing each client to use the Blockchain they prefer.
Blockchain protocol	Eonpass
Permissioned/ Permissionless	Permissionless
Private/Public	Public
L2	Yes
Token type(s)	Fungible

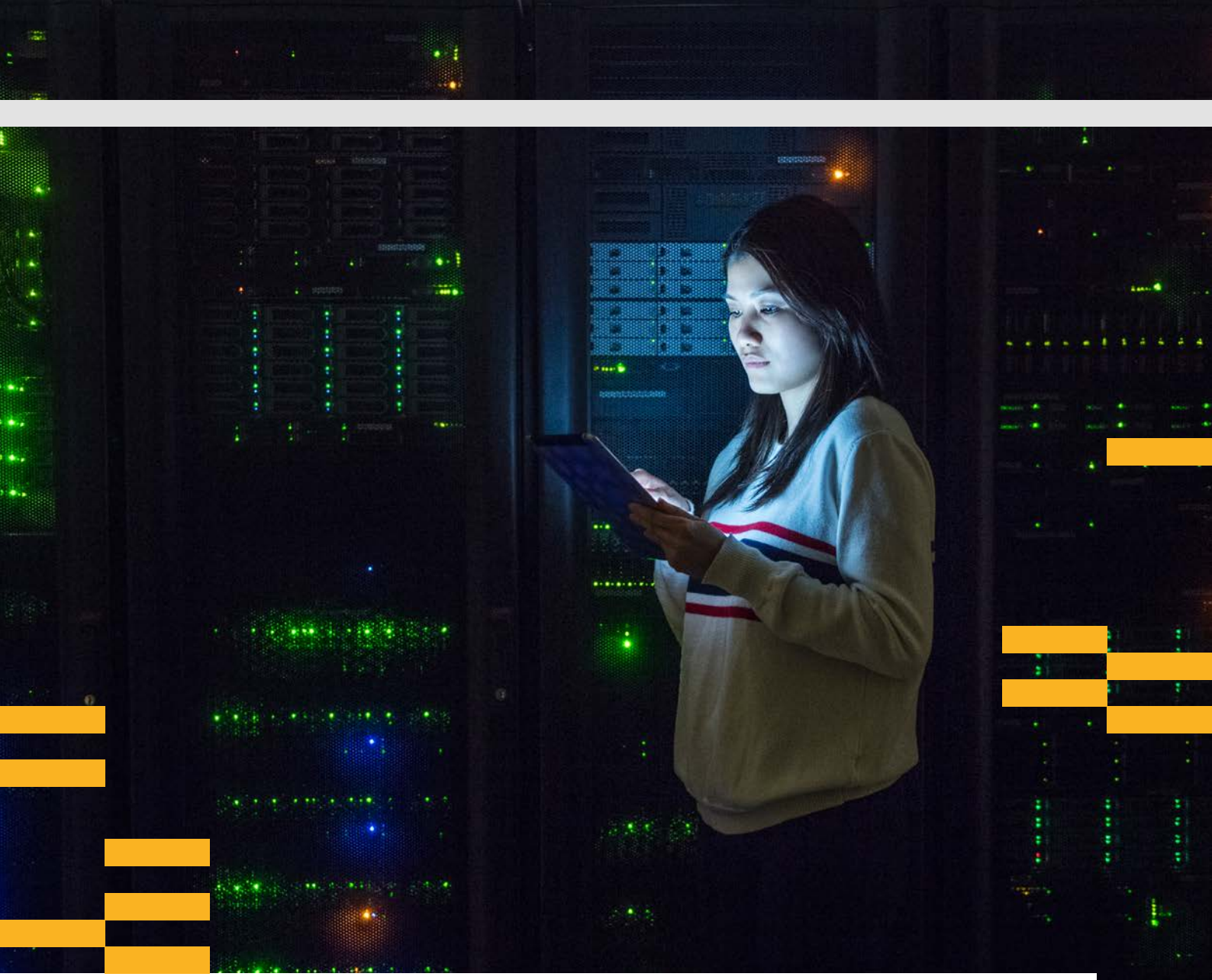
Development tools

This cluster includes startups which are creating tools that can be exploited to the creation of **Blockchain-based platforms**, services, or more in general any application which exploits the Blockchain. These can be any type of tool, from Blockchain analysis which can be integrated in a money laundering detection software, to Blockchain explorers which can be used as oracles, or to track transactions, to software development tools which guide companies and programmers in the creation of new solutions.

Astrakode

Astrakode offers a no-code platform for enterprise Blockchain development. Its software-as-a-service solution potentially targets any user or enterprise wishing to design Blockchain based tools and services. Its freemium business model allows anyone to freely test the platform functionalities as the premium program merely unlocks the possibility to create more complex solutions. Paired to its Saas service Astrakode is also offering consulting services to companies willing to create Blockchain based solutions. Astrakode aims to become not only a useful tool for companies and developers, but also to be used as a learning tool by students and universities.

Scheda di dettaglio	Astrakode
Foundation Year	2021
Headquarters: Province, Region, Country	Pescara, Abruzzo, Italy
Website link	www.astrakode.tech
Sector	Utility
Process	Software development
Funding	
Total funding amount (€)	€ 155.000
Funding type	Traditional
Investors (Name)	Faber/PL, Hatcher+
Investors (Typology)	Accelerator, Venture capitalist
Generating Profit	No
Founder(s)	Fabiano Izzo, Lucio Menna, Damiano D'Amici
Partners & Clients	
Active Partnerships	R&D – Education (Università dell'Aquila, Università d'Annunzio, Jheronimus Aca-demy of Data Science)
B2B/B2C	B2B
Client Target description	SMEs, Software development companies, Universities, Researchers, Logistic sector, Fintech companies, Agri-Food sector, Entertainment sector, Smart contract developers, Analysts, Blockchain Enthusiasts.
Relevant Clients (Name)	No
Value Proposition	
Solution cluster	Development tools
Competitive environment	Operating in a serviceable available market of 3.5 bln€ their main competitors are Set-tlemint (Belgium), Simba (USA), KrypC (USA), kaleido (UK).
Development stage description	- Free development tools: **Market fit** - Premium development tools: **In development**
Technical description	Astrakode's no-code platform helps programmers to design, build, test and deploy applications based on Blockchain technology. As of today, it can be used to create solutions compatibles with Hyperledger Fabric and Ethereum, but the company is also planning to integrate also Algorand and R3 Corda. Some features included in the software are: productivity tools, educational and guidance contents, automated deploy, testing and auditing tools.
Blockchain protocol	Ethereum, Hyperledger Fabric
Permissioned/ Permissionless	Permissionless, Permissioned
Private/Public	Public, Private
Token type(s)	–



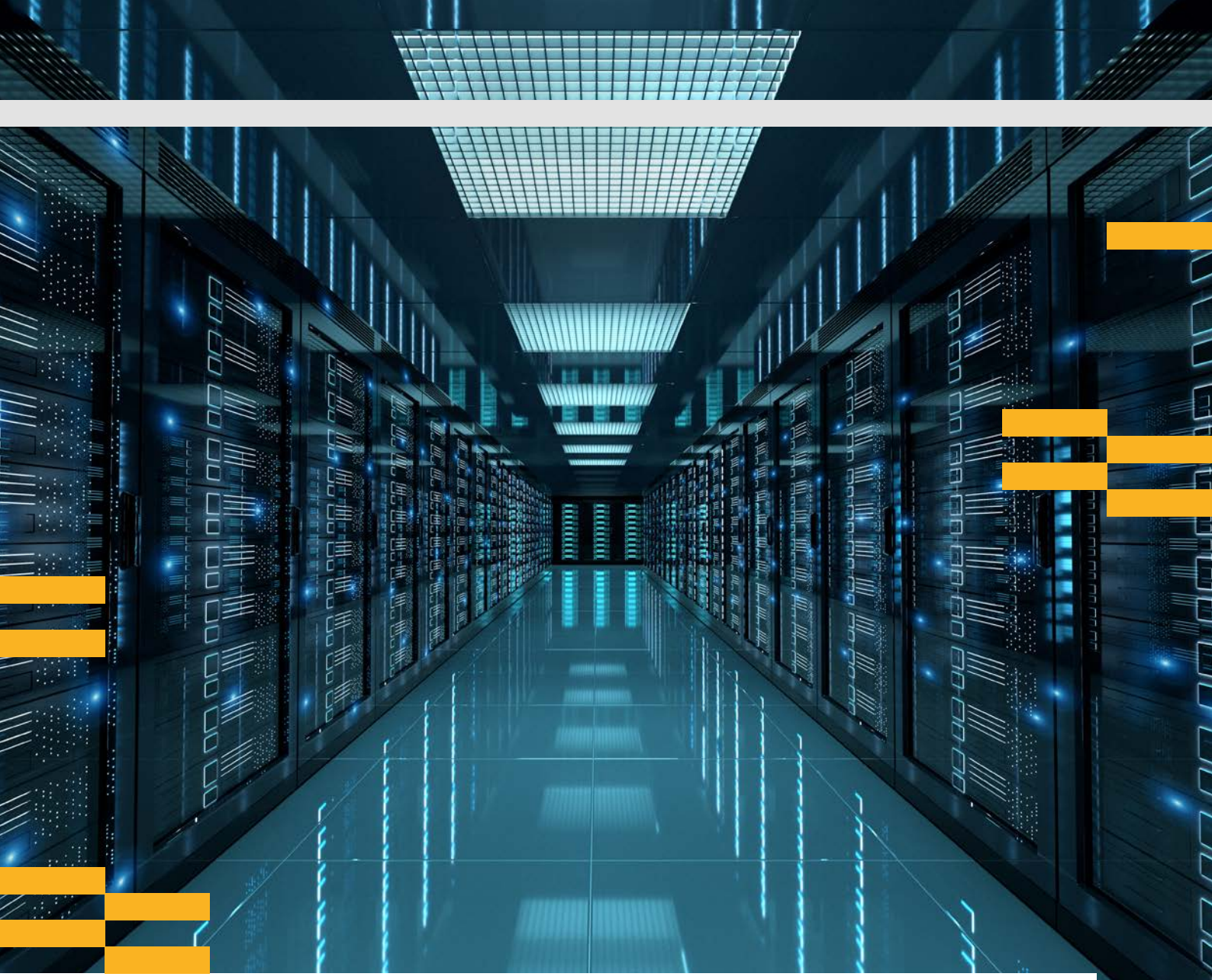
Platforms and Protocols

Companies included in this category are those which are developing new **Blockchain protocols**. The cluster definition does not impose any limitation on the characteristics of the network. Indeed, it potentially incorporates both permissioned and permissioned platforms, and both private and public ones. Furthermore, no discrimination is made on the Blockchain consensus mechanism, or whether it is a Layer 1 protocol, or a scaling solution such as Sidechains and Layers 2s.

Scrypta ecosystem

Scrypta ecosystem is composed by the Scrypta foundation and Scrypta consortium. The foundation is focused on the implementation and improvement of the Scryptachain permissionless Blockchain protocol which currently has about 600 nodes. Scrypta consortium instead is composed by small medium enterprises which actively build applications and participate to the growth of the protocol adoption. Scryptachain use cases range from asset tokenization, to documents notarization, to applications in the logistic sector. More Care for example implemented a solution which exploits Scryptachain for the digitalization of health records. Future goals for the development of the protocol include modifications to the consensus mechanism, the introduction of a new wallet, and the issuance of a token.

Scheda di dettaglio	Scrypta ecosystem
Foundation Year	2020
Headquarters: Province, Region, Country	Firenze, Toscana, Italy
Website link	www.scryptachain.org
Sector	General Purpose
Process	Data & Document management
Funding	
Total funding amount (€)	–
Funding type	–
Investors (Name)	–
Investors (Typology)	–
Generating Profit	No
Founder(s)	Andrea Nicastro, Alessandro Miccini, Nino Cortese
Partners & Clients	
Active Partnerships	Scrypta Consortium (open innovation hub as a business network legal entity under Italian law)
B2B/B2C	B2B
Client Target description	SMEs, Healthcare sector, Fintech sector, Public institutions
Relevant Clients (Name)	MIUR, Plan A, More Care
Value Proposition	
Solution cluster	Platforms and Protocols
Competitive environment	As a layer 1 platform, its competitors are other Blockchain protocols which have to-kenization and smart contracts features.
Development stage description	**Market fit**
Technical description	Scryptachain is an open-source layer 1 permissionless Blockchain protocol that offer both tokenization and smart contract features. The freemium model developed by the foundation allows users to purchase the access to additional tools and features. Its proof-of-stake algorithm is powered by the native Lyra token and allows for cheap and fast transactions.
Blockchain protocol	Scrypta blockchain
Permissioned/ Permissionless	Permissionless
Private/Public	Public
Token type(s)	Fungible



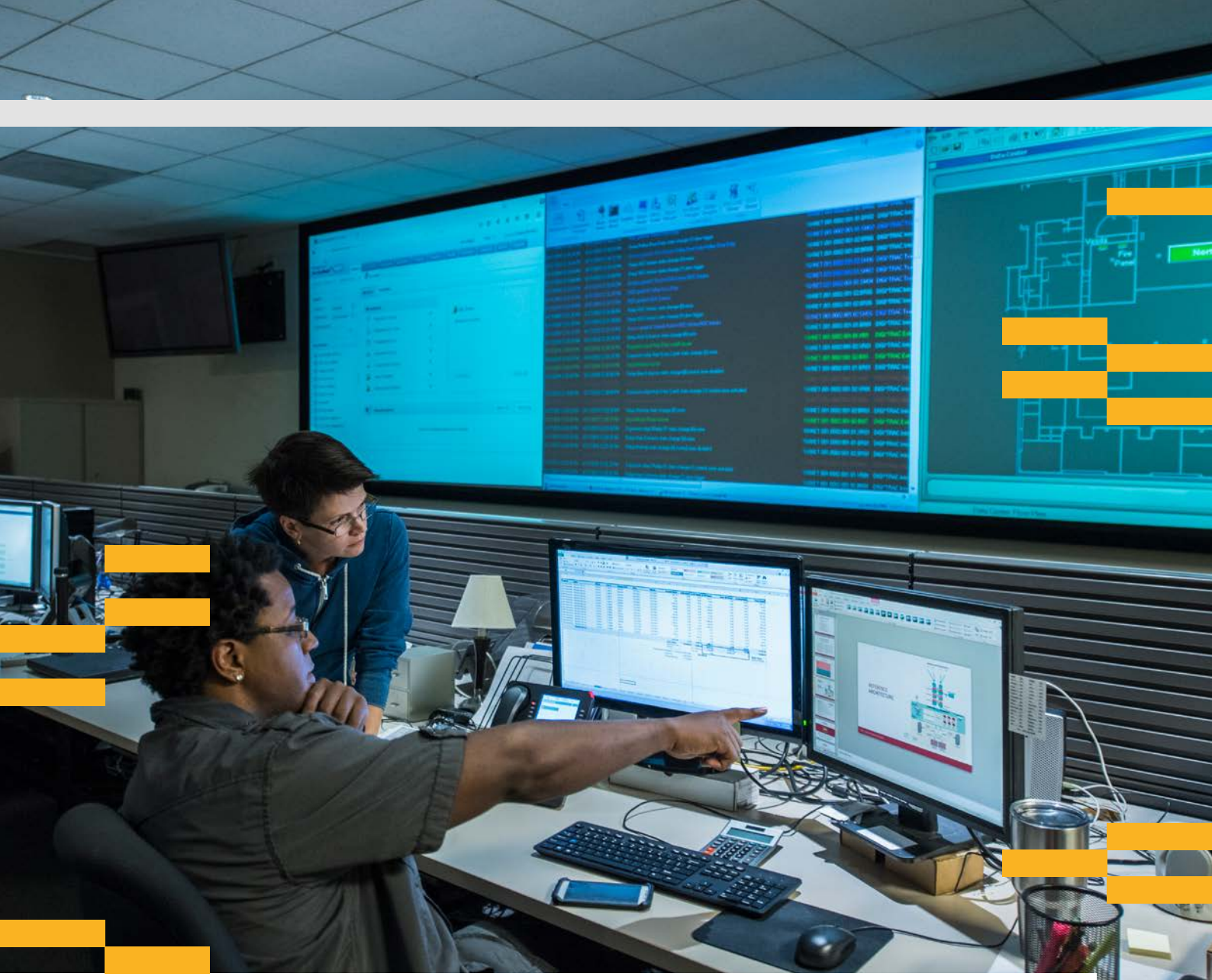
Mining and staking

Startups belonging to this cluster mainly focus are the **validation processes** of **Blockchain platforms**. For Proof-of-Stake Blockchains, these companies might offer staking «as a service» to other players, run validation nodes, or manage a staking pool. As regards Proof-of-Work Blockchain protocols, startups included in this cluster may directly own mining factories, offer mining «as a service» solutions, or offer products and consulting services related to mining activities.

Alps Blockchain

Alps Blockchain mission is to develop sustainable solutions for the mining industry supporting the world of renewable sources. Specifically, the company aims to help to build and restore renewable power plants, providing them a new revenue streamthrough mining activity. Their solution provides the installation of mining farms, special computing power centers used to operate the Blockchain system. Mining farms are built in the power plants and are powered by the the exceeding energy production. Once the installation is complete, Alps Blockchain takes care of the management of the system and the resale of the computing power produced, which is then used to mine bitcoins. As of today, they are active in hydroelectric power plants in central and northern Italy, but their plan is to expand into Europe and America as well. Other future developments range from the implementation of new cooling techniques to the release of sustainability certifications, to the implementation of new solutions focused at making mining more accessible to anyone.

Scheda di dettaglio	Alps Blockchain
Foundation Year	2018
Headquarters: Province, Region, Country	Trento, Trentino Alto Adige, Italy
Website link	www.alpsblockchain.com
Sector	Mining
Process	Other
Funding	
Total funding amount (€)	–
Funding type	–
Investors (Name)	–
Investors (Typology)	–
Generating Profit	Yes
Founder(s)	Francesco Buffa, Francesca Failoni
Partners & Clients	
Active Partnerships	Energy (Tecnoenergia), Technology provider (Bitmain)
B2B/B2C	B2B
Client Target description	Hydroelectric power plants
Relevant Clients (Name)	–
Value Proposition	
Solution cluster	Mining and staking
Competitive environment	Alps Blockchain is a unique case in the Italian Blockchain startup landscape, as other actors in the mining sectors such as Biomine, Mining Farm Italia, and Compass Mining have drastically different approaches and business models.
Development stage description	**Market fit**
Technical description	Alps Blockchain handles all phases of the project, from the ideation, to the design, to the installation. Their solution often involves the re-design of the electrical system, overall power plant management, software optimization, cooling systems and sound-absorbing solutions.
Blockchain protocol	Bitcoin
Permissioned/ Permissionless	Permissionless
Private/Public	Public
Token type(s)	Fungible



Blockchain consulting

This cluster includes startups offering **consulting services** related to the **Blockchain industry**. These companies are typically not specialized on a single topic and their business focus on consulting services rather than the development and distribution of a proprietary business solution. A peculiar characteristic of Blockchain consulting startups is that they have strong in-house development capabilities to help companies and institutions with the design and creation of new products and solutions.

Mangrovia Blockchain Solutions

Mangrovia Blockchain Solutions offers consulting and software development services, guiding companies from various sectors towards the introduction of Blockchain technology in their processes. Their solutions focus on safely and efficiently handle processes information, integrating with the companies IT softwares. Furthermore, the platform Brandzledger, one of their products, offers back-end services that exploits smart contracts and Blockchain's notarization capabilities to efficiently manage the dataflow, and trace all information lifecycle. For the energy sector instead, together with a spin-off of their organization name "Prosume", they are also working on the creation of small energy communities capable of managing excess energy production from renewable sources. Looking at the future, Mangrovia's next goal is the launch and distribution of the 2.0 version of their platform.

Scheda di dettaglio	Mangrovia Blockchain Solutions
Foundation Year	2017
Headquarters: Province, Region, Country	Milano, Lombardia, Italy
Website link	www.mangrovia.solutions
Sector	General purpose
Process	Software development
Funding	
Total funding amount (€)	€ 7.000.000
Funding type	Traditional
Investors (Name)	–
Investors (Typology)	Business Angel
Generating Profit	No
Founder(s)	Giovanni Quaglino, Massimo Ferronato, Lara Dittfeld
Partners & Clients	
Active Partnerships	Energy (Prosume), Insurance (IVASS, SIA)
B2B/B2C	B2B
Client Target description	Energy sector, Insurance sector, Financial sector, Logistic sector, Industrial sector.
Relevant Clients (Name)	EY, REVO, Elior
Value Proposition	
Solution cluster	Blockchain consulting
Competitive environment	The consulting market is populated by many actors operating both in Italy and in USA, the startup has identified as their main competitors Alchemy, Reply, PwC, EY, and Deloitte.
Development stage description	**Market fit**
Technical description	Their solution integrates IoT devices, API, cloud services, smart contract, timestamping and digital identity to enable a state-of-the-art data management. Smart contracts are used to execute ex ante controls on data flows, while Blockchain-based digital identity and timestamping are used to immutably store information, and to verify its origin.
Blockchain protocol	Hyperledger Fabric
Permissioned/ Permissionless	Permissionless
Private/Public	Private
Token type(s)	–

About PwC Italy

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 152 countries with over 327,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com/it.

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About Osservatori Digital Innovation

Our purpose is to generate and spread knowledge about opportunities and the impact of digital technology in companies, public authorities and the citizens. Our approach consists of interpretive models based upon sound empirical evidence together with centres for independent ongoing and pre-competitive discussion to bring together the demand-and offer-side for digital innovation.

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