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# seedsbit

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## Document & Traceability

**Agri-food and document  
traceability with blockchain  
and smart contract**



**For companies**

# SEEDS s.r.l. and SeedsBit

## SEEDS S.R.L.

IS AN INNOVATIVE STARTUP  
AND AN ACADEMIC SPINOFF  
OF THE ENGINEERING  
DEPARTMENT OF THE  
UNIVERSITY OF PALERMO.

SEEDS s.r.l. offers **SeedsBit, a traceability and information management platform** that meets consumers' and companies' needs for products and processes, origin, quality, authenticity and compliance with standards and regulations to ensure high-quality levels throughout the entire supply chain. **SEEDSbit is a secure and distributed platform that manages data in a transparent and unchangeable way.**



SeedsBit offers an agri-food traceability service in a multi-chain environment, in which the various products are followed in their path up to the final customer even when they become ingredients of complex preparations and dishes. The traceability service includes the extra-domestic consumption typical of the HORECA (Hotellerie-Restaurant-Café) sector: canteens, catering, delivery food and collective catering. The blockchain introduces clear improvements to existing infrastructures and systems, in the cloud and on-premise. When you need to validate data, certify information or trace processes in a transparent and immutable way, the blockchain is the best solution, which is easy to integrate thanks to SeedsBit.

# The blockchain technology

SeedsBit is a modular blockchain-based information traceability platform. It is a distributed and secure technology based on a network made up of several nodes. The nodes of the blockchain communicate with each other and store inside the list of exchanged transactions, the ledger; the equivalent of a business ledger that takes into account income and expenses. The income and expenses are precisely the transactions that record the exchange of resources between the participants and are stored in blocks. The blocks are linked together by cryptographic mechanisms to form an immutable chain. Any attempt to modify the data is detected and placed in a minority within the chain. The transactions undergo a preliminary validation and are inserted within one single block; the validation returns a positive result from the network participants. Nodes can execute a distributed logic, called a smart contract. These allow to process the data which enters into the blockchain; each node will run the program and the consensus result on the entire network will determine whether the data should be written or not.

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# Tracking and Tracing

## 04. Transport

Transport participates at various stages of the supply chain. It always plays a key role because the movement of ingredients and finished products is linked to the transportation storage conditions and the various actors' interests. The carrier is the point of contact between suppliers and customers.

## 03. Conservation

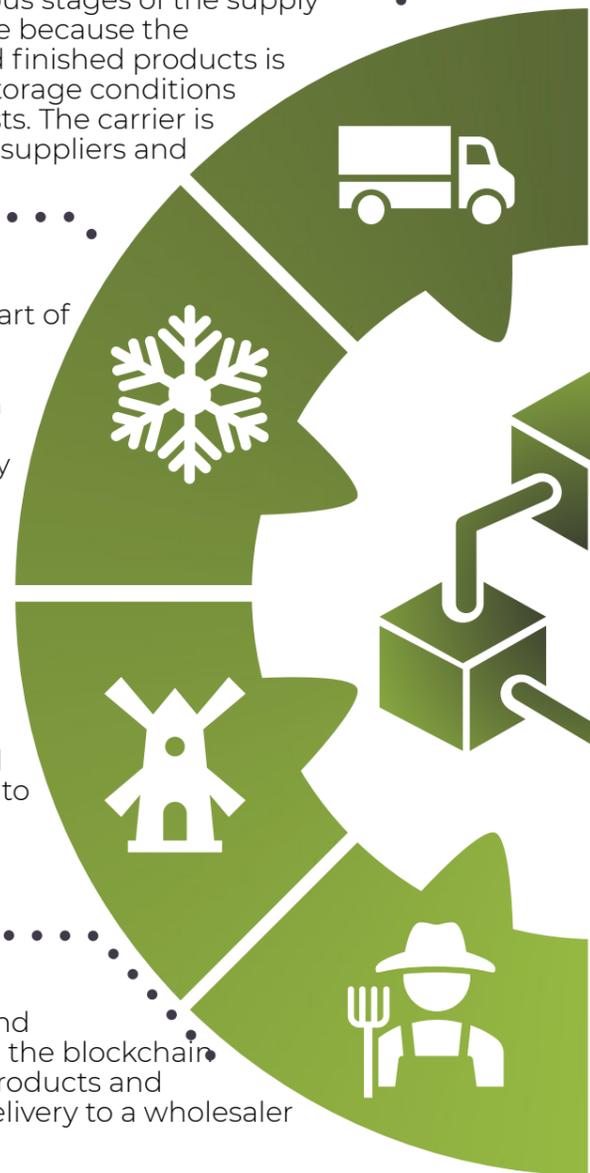
Conservation is an essential part of the production chains. For example, consumers and producer companies are both interested in the continuity of the cold chain. The traceability of the conservation process guarantees that the product arrives in optimal conditions.

## 02. Transformation

Processing companies write data relating to the raw materials taken in charge and the transformation processes to the blockchain.

## 01. Production

Farmers, sellers of fertilizers and agricultural products write on the blockchain the information about their products and cultivation processes, up to delivery to a wholesaler or processing companies.



# to navigate supply chains

## 05. Distribution

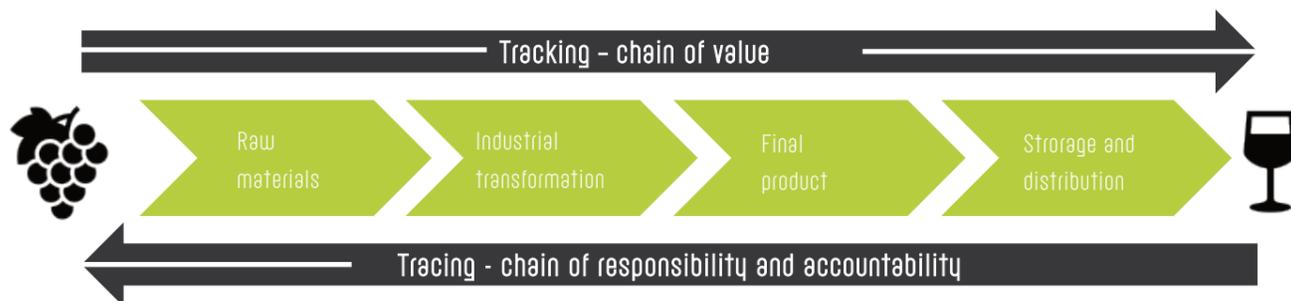
Distribution makes products available to consumers. The product is packaged and uniquely identified, for example, by QR code. Traceability generally stops at this stage, until the consumer is shopping. Distribution plays a crucial role in traceability because the consumer makes his purchasing choices at this stage.

## 06. Restaurant business

Catering, and the Ho.Re.Ca in general, represents the meeting point of various supply chains. At this stage, simple and complex ingredients are composed and processed to become succulent dishes. This last link in the supply chain is among the most complex as there is no packaging that uniquely identifies the food. Traceability in Ho.Re.Ca and in the field of delivery food are peculiarities of SeedsBit protected by a patent application.

## 07. Review

The final point of any supply chain is the consumer. On the SeedsBit platform, consumers provide their feedback, which is validated through automatic checkin logic and verification of actual consumption. Only after this validation, these opinions are written on the blockchain. No more disappearing reviews subsequent modifications. Reviews will be more truthful as a guarantee for all parties involved.



The figure summarizes in a simplified way the depth of the supply chains. Each supply chain has its own peculiarities and blockchain data management changes profoundly depending on the type of production (e.g. wheat, milk, grapes, fish) and processing (mills, dairies, cellars, fish-canning industries) companies. Each of these products is associated with one or more processes, with different disciplinary, regulations and control bodies. In many cases, the supply chains are intertwined, especially when they include complex ingredients. For this reason, it is sometimes even difficult to know the exact composition of the ingredients and allergens.

To know the history of a product, you must follow all the steps, behind each of them there is a story made up of people, relationships, love, passion for your work



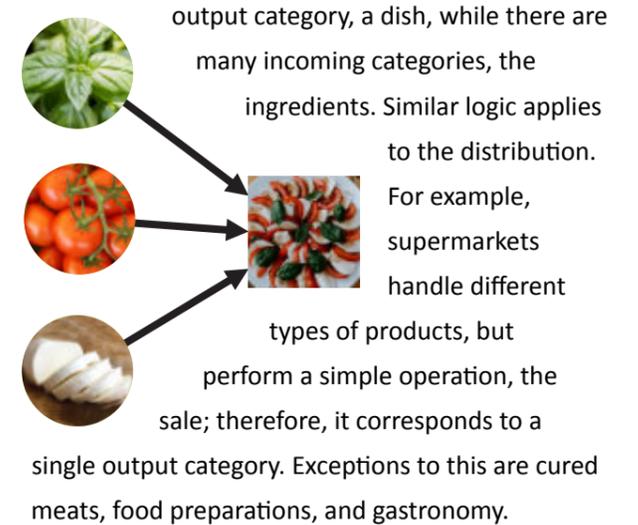
SeedsBit offers an agri-food traceability service in a multi-chain environment, in which the various products are followed on their path to the end customer even when they become complex ingredients and dishes. The SeedsBit traceability service includes the extra-domestic consumption typical of the HORECA (Hotellerie-Restaurant-Café) sector, canteens, catering, delivery food and collective catering.

## SeedsBit Traceability Service

The SeedsBit Traceability module offers traceability for a product category. It includes a certain number of monthly transactions which depend on the chosen package. The product category, for example, olive oil, includes various steps of the entire supply chain (olive harvesting, pressing, bottling, etc.). The offer does not cover other types of products unless you purchase extra options for additional categories. The model adopted by SeedsBit charges for writing in the blockchain, but it is free for reading. This logic is advantageous for the end consumers, who can read the information for free. This approach allows companies to plan their costs: they know exactly how much they will spend in advance. If the costs were linked to the number of scans, they would be unpredictable, because the end consumers can scan each code several times. SeedsBit services refer to a single operating unit of a company; in fact, each operating unit corresponds to a different identity, and companies should expressly register any transfer between their operating units. The operating unit is linked to an establishment where the product (e.g. olive oil) is made with movements that do not concern public land. Even if the operating units refer to a single VAT number, they must be considered separately for the traceability purposes. The offer takes into account both the number of transactions and their speed of arrival since these factors influence the size and scalability of the blockchain. Finally, the offer depends on the number of product categories since each category corresponds to a

different data model and validation logic and, consequently, a set of dedicated smart contracts.

In this way, it is necessary to implement a different validation logic for each category. For example, tracing fish is different from tracing wine or oil. At various stages from one incoming product, for example, wheat, it is possible to obtain several products of different categories, bread, pizza or pasta. On the contrary, from several different categories, such as basil, tomato and mozzarella, emerges a single category: the Caprese salad. SeedsBit logic refers to the number of output categories. It is the number of outgoing categories that influences the types of validation carried out in writing. For example, in Ho.Re.Ca there is a single



# Delivery food

We are treating the product with seriousness and attention at all the phases from field to table. Home delivery of your products is not an exception. Whether it is a delivery of ready-made meals from a restaurant or a home shopping, there are essential steps to perform in compliance with the standards like in other processes in the supply chain. Many factors can compromise the quality and safety of your purchase. It can be a temperature during transportation, journey duration, packaging integrity or even the courier's health conditions. The SeedsBit platform provides the user with information related to all the steps of the supply chain using data of various companies signed up for our services. Supermarkets and restaurants that adhere to the SeedsBit Traceability service can open the doors of their companies to the buyers who will receive reliable and truthful information, as if they were present at the operations, sometimes even more. Thanks to SeedsBit your clients can monitor the temperature during transportation for fresh and frozen products, the journey duration and the cooking time of ready dishes.

# Know your customers **KYC**



## Allergies, eating habits and reviews

SeedsBit Traceability gives consumers the possibility to view a complete list of ingredients of each dish or product and avoid any possible risk of taking an allergenic substance. The customer can configure the SeedsBit Traceability app in

such a way that it will automatically signal the presence of any allergens present in the product or dish, taking into account

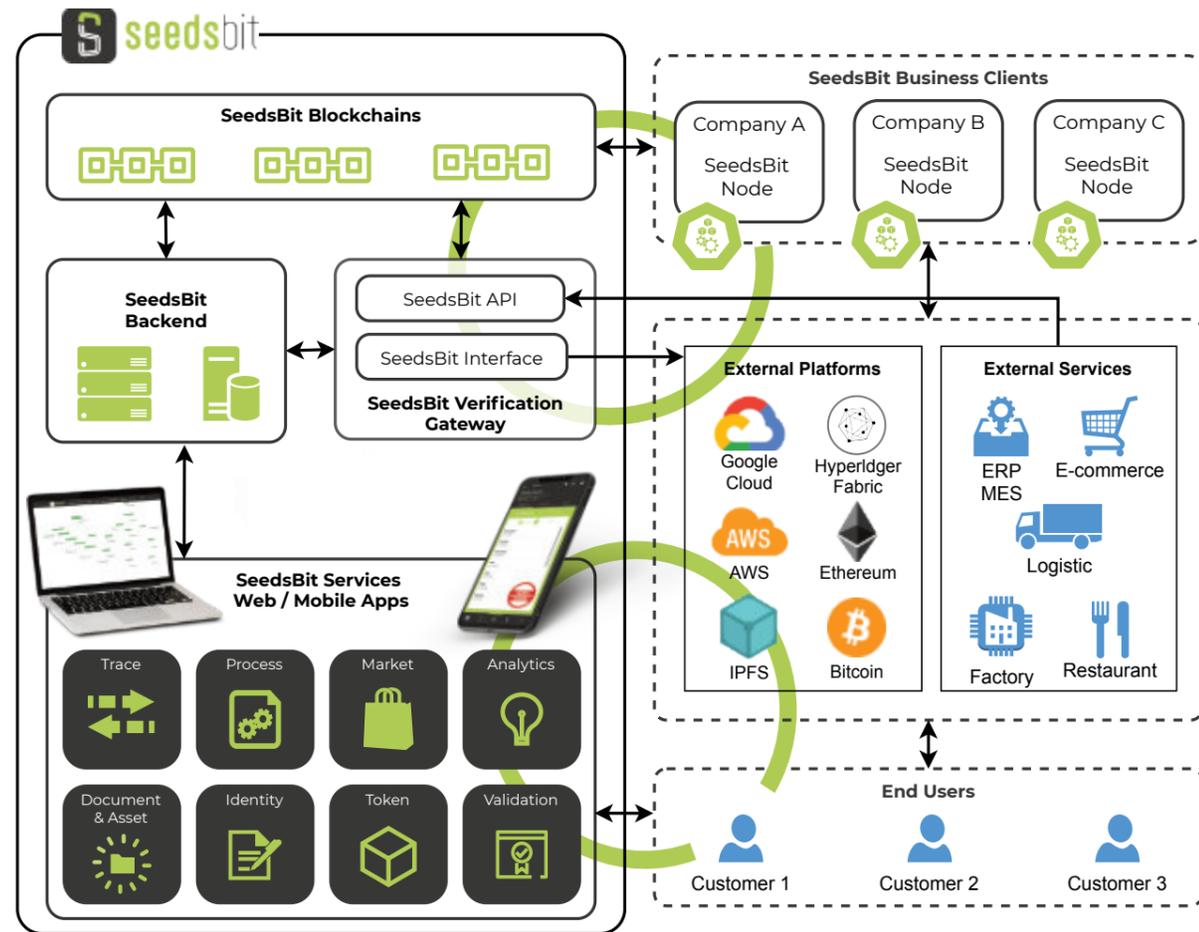
the process history. This function saves time and radically reduces the probability of error due to the lack of attention. This option can be useful for people with allergies and intolerances, as well as for all those who have chosen not to eat certain products for ethical or religious reasons. Besides, the SeedsBit Traceability application allows users to exchange their reviews and share opinions on a particular product, dish, restaurant or bar.



# Browsing supply chains, from dish to field



# SeedsBit platform

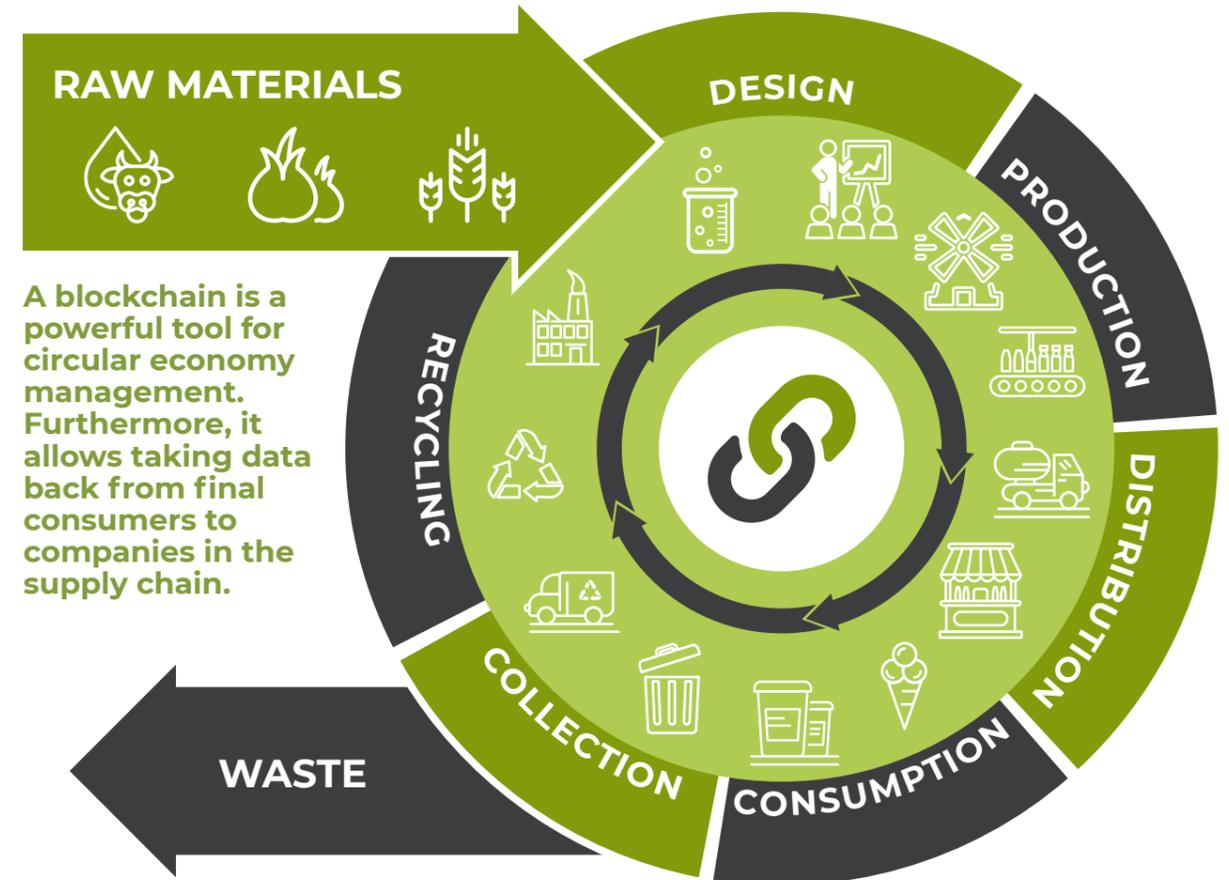


**THE SEEDSBIT TRACEABILITY PLATFORM HAS VARIOUS DEGREES OF INTEROPERABILITY WITH THE SOFTWARE ALREADY IN USE IN YOUR COMPANY AND CAN RECEIVE DATA FROM YOUR ERP, MES. WE PROVIDE DEVELOPERS WITH APIS TO USE OUR SERVICES AND OFFER INTEGRATION TO SOFTWARE THAT EXPOSES APIS. THE ONLY LIMIT TO INTEGRATION IS YOUR IMAGINATION!**

**The Seeds Bit architecture allows the company's platform (on the left) to interact with external software and actors (on the right).** As a developer, you can use our APIs to access the data; you can create your traceability app using the SeedsBit platform. Just choose one of our plans and create a token, enter it into your client and... Voila! In a short time you will have a fully functional application that communicates with our platform. Corporate customers manage data through a web application, end consumers through a mobile app. If you need to develop an app for your customers, we will provide you with a quote for the use of our APIs and a sample quote.



# SeedsBit for circular economy



**A blockchain is a powerful tool for circular economy management. Furthermore, it allows taking data back from final consumers to companies in the supply chain.**

The use of the blockchain in agri-food chains has a positive impact on the circular economy development, an eco-sustainable economic model in which materials are recycled and enhanced, reused in production processes, reintroduced into the environment or treated as residual waste. The main objective is to try to extend the life of products, producing long-lasting goods, and reconditioning activities that allow the reduction of waste production. The traceability carried out through the blockchain will enable you to unequivocally follow the production processes and take into account the origin of the products. The circular economy is closely connected to

purchasing choices, with preferences for local products and organic food, reducing the path from field to table. The blockchain can be a solution for the interactions and production processes of multiple supply chains. It allows improving the aspects of transparency and availability of data not only to the consumers but to the actors of the supply chain themselves, giving them the possibility to control and make the production flow more efficient. A peculiar feature of SeedsBit that differentiates it from other blockchain service providers is the multi-chain traceability that is best suited to implement circular economic models.



# Document management

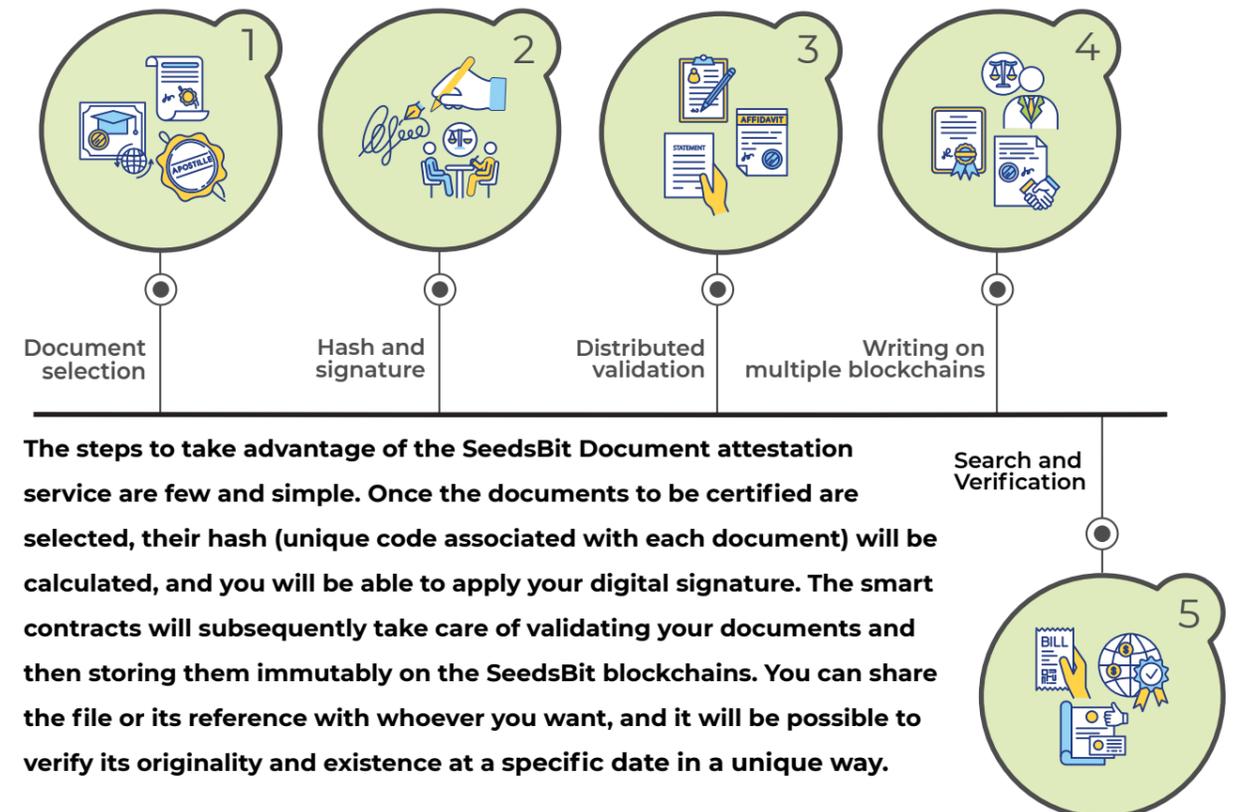
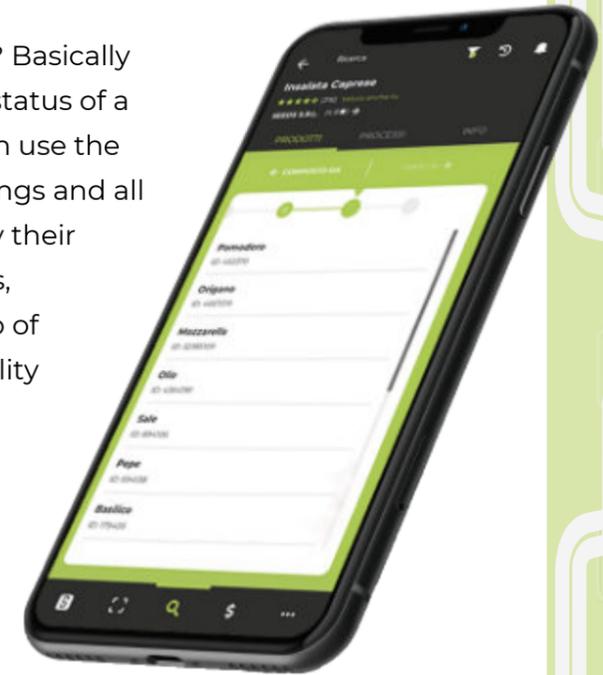


**SeedsBit® Document** is a document attestation platform always in your pocket; it is a hub that certifies the originality of paper and digital documents, determining their ownership and availability at a specific date. It works simultaneously on different blockchain platforms and provides attestation for both private and public groups. SeedsBit® Document allows users to write on the

blockchain the entire modification history of their projects. The SeedsBit® Document service integrates the traditional methods for intellectual property protection, thanks to it you can certify the ownership and originality of your documents, showing the date of the upload on the blockchain by a specific user and his identity.

# SeedsBit Document Service

Who is the SeedsBit® Document service aimed at? Basically everyone! Any person can attest the ownership or status of a document. For example, public administrations can use the service for attesting documents, city council meetings and all remote activities. Companies of all kinds can certify their commercial contracts. Artists, journalists, designers, scientists and researchers can attest the ownership of ideas, articles and works, also through interoperability with dedicated platforms (e.g. arXiv). SeedsBit® Document offers various ways to upload your documents to the blockchain. For example, a user can publish an entire document within a consortium in a public way or can upload only a hash, which is a cryptographic summary of the document uploaded to the blockchain, maintaining the ownership and confidentiality of the contents. SeedsBit® Document facilitates the spread of self-sovereignty identity, data sovereignty and e-government mechanisms.



# SeedsBit products for

## SeedsBit Traceability



### Everything you want to know about the product and the production process

It collects, validates and tracks agri-food information, providing users with product and process traceability and a multi-chain approach. You can demonstrate how sustainability and ethics animate your business choices.

## SeedsBit Document



### A document attestation platform always in your pocket

It is a hub for attesting the originality of documents, their ownership and availability at a specific date. It works on different blockchain platforms in parallel, allowing users to certify their documents in small groups and in a public way.

## Are you interested in other SeedsBit products based on the blockchain?

### SeedsBit Process - Does your company know everything about their business model?

SeedsBit analyzes and certifies business processes in a collaborative environment, through blockchain it manages all the steps and interactions between the parties.

### SeedsBit Market – It is a perfect marketing platform to raise awareness of the quality of your company

It integrates marketing platforms dedicated to the dissemination of information on products and services.

# enterprises

Discover all the possibilities that the blockchain and SeedsBit can offer you. Manage your business safely and transparently, using cutting-edge solutions that guarantee originality, validation and immutability of data.

### SeedsBit Analytics – It extracts the information you need from the myriad of collected data

It reorganizes and visualizes the data, works on statistics and analyzes parameters important for you and your customers.

### SeedsBit Asset - What if I wanted to certify the ownership of an asset?

Don't worry! Your assets will be safe and correspond reliably to their inseparable digital twins.

### SeedsBit Identity - What if who's talking to you isn't really who they say they are?

It gives you the security of contacting the right person through the right platform, integrated with SPID and digital signature

and identity management systems.

### SeedsBit Token - You will love our token system<sup>19</sup>

Based on secure mechanisms, it allows you to manage various types of tokens (assets, equity,...) to carry out your projects and pursue your goals.

### SeedsBit Validation - Take full control of contracts you sign

Smart contracts for process validation, checklist verification in a distributed way. You and your customers can sleep peacefully and you can always verify that things are going as they should.

A PLATFORM FOR MANY SERVICES. THE BLOCKCHAIN IS CRYPTOGRAPHY AND SECURITY, SEEDSBIT ADDS A SEMANTIC LEVEL THAT MAKES THE BLOCKCHAIN INTEROPERABLE AND AFFORDABLE FOR EVERYONE.

SeedsBit Traceability and Document are two services that have strong relationships. They respectively provide traceability in the agri-food and documentary traceability. Furthermore, many agri-food traceability processes can be traced back to document traceability and information traceability in general. SeedsBit aims to go beyond information traceability, as it also adds a semantic level to blockchain and smart contracts.



**Please, contact us!**

**We are available to talk about your needs and provide tailored solutions.**

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**seedsbit**

**Beyond Information Traceability**

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