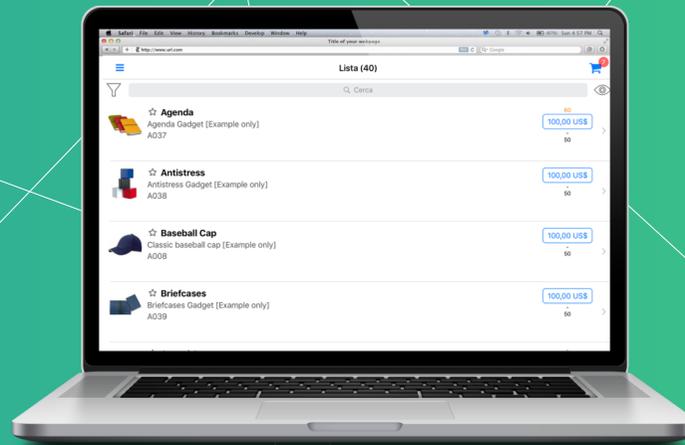




B2B E-Commerce on the Blockchain



White Paper

Author Enrico Talin, CEO and Founder

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INTRODUCTION

There is no better way to make a point than to tell a story. We shall begin with Matteo's story. Matteo runs an electronics company in Northeast Italy. He thought he was sending money to an established supply partner in China, but what would happen in reality was that fraudsters intercepted both Matteo and the Chinese partner's e-mail addresses, later using e-mail spoofing to mislead the recipient about the origin of the message. Such fraudulent e-mails would direct the purchasing companies to send payments to a new bank account because of a purported audit. However, such bank accounts belong to the fraudsters, not the supply companies. Matteo nearly lost all his money and business funds simply because he found it easy to use and trust plain e-mails and PDF orders. Following disastrous chain of events, a brief analysis of the spoofed e-mails metadata indicated that they actually originated in Nigeria, not in China. Matteo was left speechless.

Under this scam, companies in a legitimate business relationship can be victimized, unwittingly becoming victims of email hacking fraudsters. The supplier may first ship out the legitimately-ordered products and then never receive payment (because the purchasing company was scammed into transferring money to the fraudster's bank account). Or the purchasing company may first make a payment and then never receive the ordered goods (because the supply company never receives that payment).

Internet threats are a constantly growing issue being carried out with increasingly sophisticated and complex tools and techniques. The e-

mail scam of the fake IBAN (Man in the Email) is quite old enough and is mostly based on social engineering, e.g. the ability to make people believe that things are not true. Unfortunately this is just one of many threats that can be avoided using a **Secure B2B e-commerce platform**.

When most people think about e-commerce, they usually think about Amazon, the online bookseller that, to everyone's surprise, took on the world's major retailers. However, e-commerce is not limited to Amazon, there is much more! Actually, there are two kinds of e-commerce:



B2C e-commerce

The business-to-customer kind of e-commerce refers to a company selling its products or services to the customers using the Internet as the communication medium. This is what most people think e-commerce is about



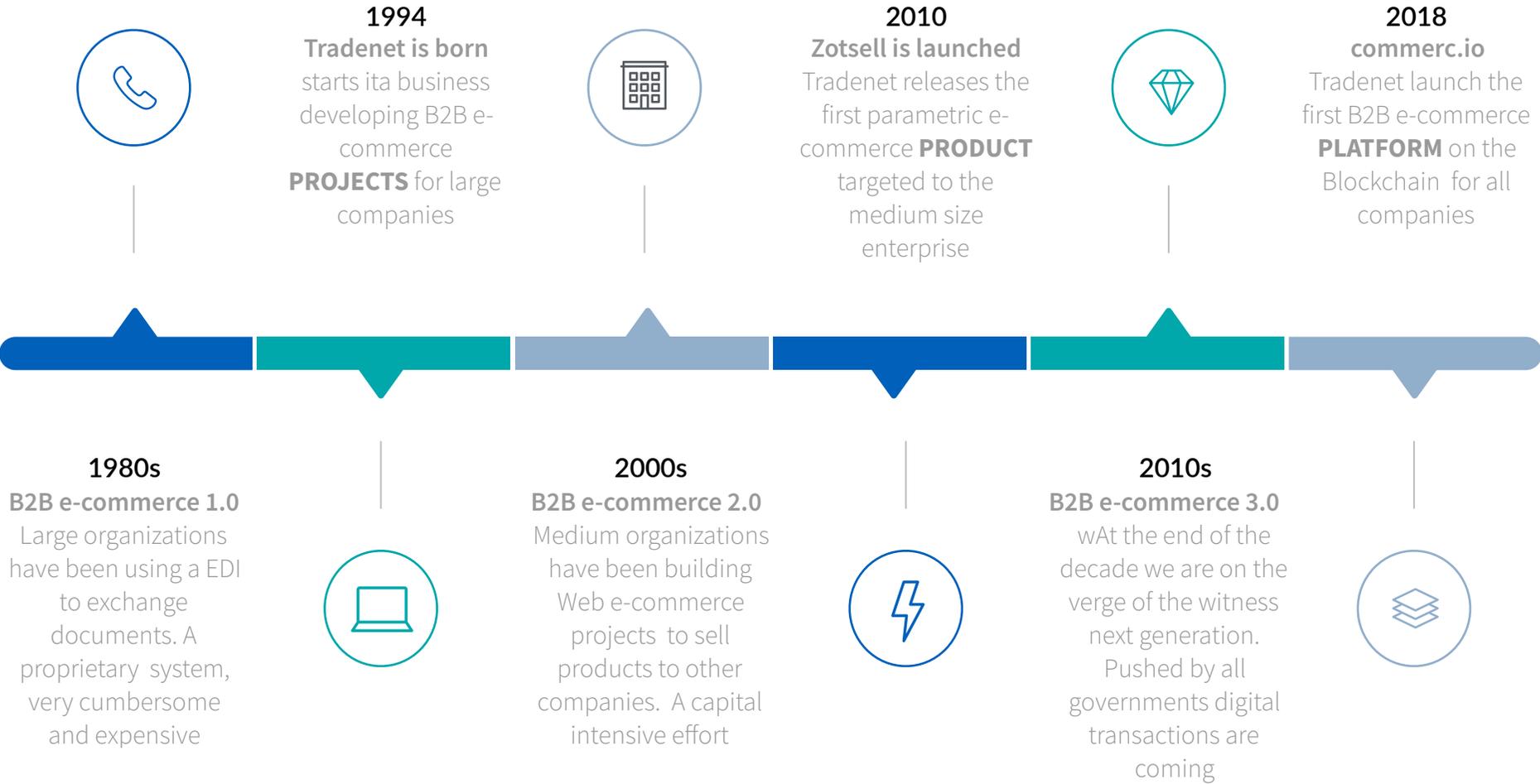
B2B e-commerce

The business-to-business kind of e-commerce refers to a company selling or buying from other companies. In our context here, the company communicates with the other companies electronically.

This White Paper focuses on the second kind of e-commerce: B2B E-Commerce.

We shall briefly go through its past, its present and future:

B2B E-COMMERCE TIMELINE



B2B e-commerce 1.0 EDI (The Past)

A classic since the 1980s, organizations have been using EDI to conduct business transactions electronically. Some of these transactions include sending/receiving of orders, invoices and shipping notices. EDI is a method of extending the organization's computing power beyond its boundaries. But the high cost and maintenance of the networks made this method completely out-of-reach for small and medium-sized businesses. In addition, the system is somewhat inflexible, as connecting a new vendor to the network would involve huge costs and restructuring.

B2B e-commerce 2.0 The web (The Present)

With the introduction of the Internet, companies, regardless of size, could communicate with each other electronically and cheaply. Companies could choose from several ways of doing so, depending on whether they were a manufacturer or supplier. While this approach solved a lot of first generation problems, it added a lot of fragmentation and complexity that inevitably led to cost increase and the absolute lack of a common standard, ironically the only great thing the first generation of e-commerce had produced.

B2B e-commerce 3.0 The Blockchain (the future)

We want to create the next B2B e-commerce generation technology where most of the complexity and all the needed things to perform e-commerce in a simple, secure and cheap way can be performed on the blockchain in a decentralized matter without the need to trust anyone. We want to create a new distributed decentralized affordable and trust-less next generation "EDI" using the Blockchain.

The B2B Global Market size

It is expected that in the USA alone B2B e-commerce market will grow from \$780B in 2015 to \$1.1T in 2020¹, and therefore has potential to grow globally into a multi-trillion market, endorsed by all companies of all sizes. This could happen on the condition that we will be able to slash entry barriers and foster wider adoption worldwide. This will take time and commitment.

there is a substantial difference between B2B and B2C in size:



250 million Companies

D&B estimates that worldwide there are about 250 million companies producing annual income and 99% of them are SMEs.



A multi trillion \$ Market

Forrester estimates that in 2020 in the United States alone B2B e-commerce transactions will reach \$1.1 trillion in 2020.



1 B2C transaction

When a consumer buys for example an iPhone, for example, it executes 1 transaction: an order



10,000 B2B transactions

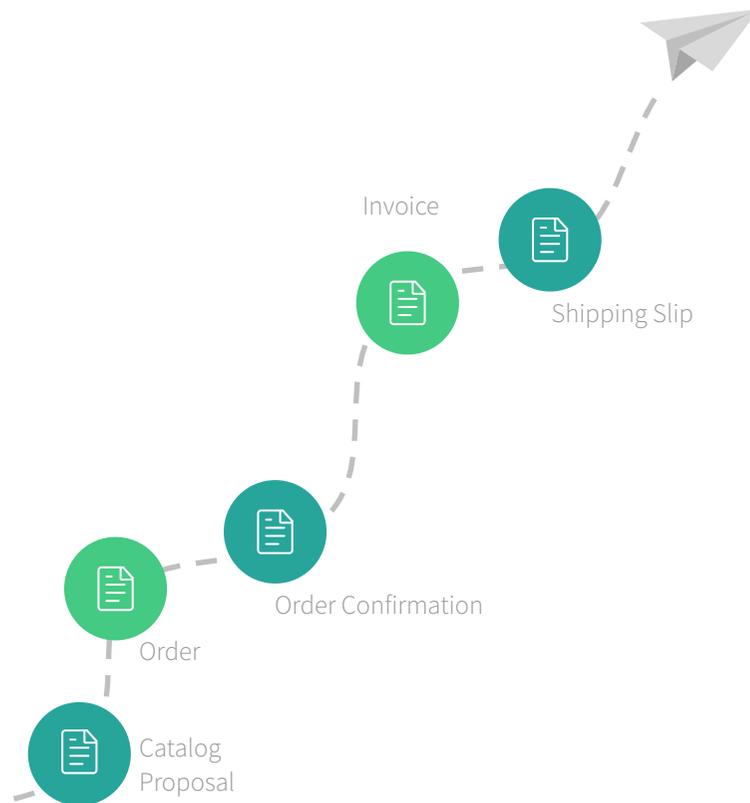
For a product like an iPhone, it is estimated that there are 10.000 transactions from the mine that mined the minerals to delivery slip from the Foxconn factory in Shenzhen.

¹ https://go.forrester.com/blogs/15-04-02-us_b2b_ecommerce_to_reach_11_trillion_by_2020/

Why a B2B E-commerce ?

Simply put B2B e-commerce provides a way for companies to allow their customers to **purchase** their products online and **increase revenues**, but also provides a host of other indirect benefits.

If you are a company executive imagine your customers, dealers, or distributors seeing their proposals, managing their orders, paying their invoices, signing shipping slips all in one place.



There are 8 main advantages B2B e-commerce provides:



Reduce Costs and Errors

The whole order process is error prone, thousands of written paper slips are miswritten misread and misinterpreted



Speed up Payments

By providing a clear sharing of all accounts receivable items and a way to settle outstanding payments by credit card



Reduce delivery time

If a digital order is taken a company can deliver possibly the same day since no manual input is needed.



Eliminate data entry

When everything is exchanged digitally all manual entry is simply not longer necessary reducing a lot of time and costs



Reducing inventory stocks

By Providing real time availability of an item a customer might decide to order an alternative one rather than backlogging it.



Eliminate Double Checking

When things are done in paper there's a lot of double checking overheard since the possibility of having errors is very high



Reduce litigation

When all documents are digitally signed little can be left to interpretation and therefore the chance of litigation is lower



Improving traceability

If everything is done digitally, all transactions are accounted for and any error can be back-traced to its point of origin.

The B2B Problems

Given all the advantages of implementing a B2B e-commerce platform one shall think all the companies already have one, right?

Wrong.

B2B e-commerce is considered the thorn in the side of the digital economy, even if the advantages to adopt it are substantial, the percentage of companies that will implement it in 2018 unfortunately stops at 11 %

The roots behind this huge adoption gap can be summarized in 3 main issues: economical , security fears , cultural and trust issues.

Economical Issues

Honestly as today B2B e-commerce is intended almost only for medium-large enterprise because of large capital costs (CAPEX) associated to its implementation:

- High License Purchasing costs
- Long time and high costs for Customization
- Long time and high costs for Integration

Security fears

Companies are exposed to a multitude of cyber attacks that makes them cringe about using any technology for their business:

- Theft identity (Mail in the middle-CCC)
- Data Breach (Intrusion and theft hacker data)
- Crypto-lockers (Data block for redemption)

Trust and Cultural issues

Companies must trust third parties to run their online business . Among Small Medium Enterprises there is a huge cultural gap on the B2B E-commerce advantages. Finally there is a generalized mistrust for anything remotely technological or just anything that is not paper.

- IT companies (for running their apps and signature certificates)
- EDI (to certify transactions without revealing customers names)
- Banks (For escrow on transactions and to transfer money)

The commerc.io Solution

Our plan is to create a **B2B e-commerce on the Blockchain** solution that will eventually solve all the economic problems, reduce security fears, and soften trust and cultural issues.

The Roadmap

We will divide our journey in three parts:

1. SIMPLIFY the adoption of B2B E-commerce by reducing its costs
2. SECURE documents with a digital signature app on the blockchain
3. TOKENIZE sales transactions on the blockchain (EDI 3.0)

Why using a Blockchain?

TL;DR *We thought that if the blockchain is safe enough to exchange digital money then companies may as well trust it to send each other some commercial documents...*

The blockchain simply put is trust, a decentralized trust system where no single entity or person is in charge and can change the rules in mid game.

We as a society had always needed, at one point in life, to trust other individuals or institutions (like banks, notaries, CAs, EDI provider etc.) to perform our some important activities. The advent of the Blockchain has digitalized and commoditized trust.

The Blockchain

The blockchain is an amazing invention kickstarted by a person (or group of people) known under the pseudonym of Satoshi Nakamoto in 2008 to manage a cryptocurrency you might have heard called Bitcoin.

Blockchain is a social contract coded in Software. It demonstrates that millions of people can TRUST a technology (not people, banks or governments) that eliminates the DOUBLE SPENDING PROBLEM, that is, the duplication of money transactions.

The Blockchain has three unique features in the IT universe:



Decentralized

The blockchain is a **Decentralized** Database (not in the hands of a single entity) that contains all transactions of all participants.



Immutable

all these transactions are **Encrypted** so that none of the participants can alter or know their content without having to spend more resources than the value of the transaction itself. It costs less to be honest



Distributed

It is an **unstoppable** technology, and no one can stop it anymore because it is managed in a DISTRIBUTED way by thousands of servers physically located in different countries. As long as an active server exists in the world, blockchain is active.

Why Ethereum ?

The blockchain has since then evolved into something greater than its original e-currency purpose. Vitalik Buterin in 2013 proposed Ethereum an open-source, public, blockchain-based distributed computing platform featuring smart contracts functionality. Vitalik's intuition, a decentralized Turing-complete Ethereum Virtual Machine (EVM), can execute code using an international network of public nodes. This technology created the backbone of internet 3.0 and de-facto has commoditized Trust.



B2B E-Commerce FOR EVERY COMPANY

Lowering the entry barriers

Custom projects are today's B2B e-commerce market fuel, a luxury most SMEs and individual businesses cannot afford because of high cost of entry and proprietary platforms, some heavily demotivating factors in the adoption of e-commerce. Medium to large organizations are known to be B2B e-commerce's main customers, as a direct consequence of costly entry barriers for prospective customers. This is why the B2B e-commerce ecosystem has been primarily project driven, with very few large software and system-integrator companies being its main stakeholders. The latter in particular are using specialized platforms to integrate their customers' ERPs for which they create highly customized one-off solutions.

In more recent years however, remarkable efforts have been made to educate companies and help them achieve greater efficiencies developing a parametric B2B e-commerce platform without the need for any customization. Tradenet Services Srl (the Commerc.io initiative initiator) alone has invested an estimated €2.5M over the past 10 years to stimulate market readiness for B2B e-commerce adoption.

Also, now the access economy and blockchain technology promoting the use of shared resources has the potential to lead to the creation and access of new universal B2B e-commerce platforms with much lower entry cost, thus more accessible to lower-budget initiatives.



Disrupting the current ecosystem

The current B2B e-commerce implementation by few specialized system-integrators is anything but cheap. Only few companies can afford to purchase the B2B Software licenses and implement the ERP data integration project complexity. Highly trained consultants are required during the adoption process, to persuade the end customers to embark on an significant upfront investments, since most B2B software licenses need to be acquired with perpetual license. This significantly limits the number of companies that are willing to invest into the B2B e-commerce paradigm, and therefore most companies consider manually written proposals as their fallback, order acceptance become scanned .pdfs that are often sent over via un-encrypted emails and their final data entry into the ERP is not automated.

commerc.io will disrupt the existing market by applying Software as a Service pricing models in the B2B e-commerce market, wherein B2B customers can “Rent” a B2B e-commerce parametric platform and its Data Integration API to access their ERP data with a simple-to-use ETL Open Source Software.

The parametric aspect of this platform means that no code development is necessary to adapt to current vertical sector business and ultimately allows to break up the current monolithic customized one-off solutions paradigm. As a result, entry barriers are significantly lowered, and developing and offering a B2B e-commerce service becomes economically feasible. Furthermore with the SaaS business model, every company can contribute either with their knowledge or by subscribing to a monthly fee to quickly produce a number of

improvements within a platform that can be accessed online by anyone without exceptions. Each company putting their effort into the Commerc.io platform accelerates and contributes to the rapid growth of the platform itself.

However, although our first issue of lowering e-commerce entry barriers can be solved with current technology, there are still few major problems that can only be addressed with the next technology: the blockchain. First, decentralized PKI digital signatures (without CAs) are needed to sign and encrypt B2B transactions. This remains as a barrier precluding potential small-volume or less-savvy customers from leveraging the benefits derived from B2B e-commerce.

Currently, there is no decentralized B2B transaction signing and notarization Infrastructure.

As opposed to this, Commerc.io will introduce a standardized means of transacting among companies using its B2B E-Commerce Platform, E-wallets, Mobile App, Blockchain APIs and eventually a smart contracts marketplace. Commerc.io aims to become the peer-to-peer EDI, and reduce over time its initial centralized management and Federated Blockchain. In the future, Commerc.io shall run on computers exclusively provided by caretakers all over the world without a single central database, preventing any potential hack or switching off of the Commerc.io federated blockchain.

Participants may access and secure any form of digitized value (from transaction certification and encryption to digital notarization on the public Ethereum blockchain) directly and securely between participants without the need for a bank, credit card company, notary or other intermediary.

Furthermore, the Commerc.io notarization over the Ethereum blockchain will provide valuable opportunities for innovative companies who wish to join our ecosystem and develop Commerc.io Dapps that could streamline Commerc.io's customer B2B processes:

- Credit letters
- Credit insurance
- Warranties
- Escrow
- Micro instant credit
- Loans against invoices
- Leasing
- Factoring
- Risk
- Payments
- Credit rating
- Long term data archival
- Digital instant alternative dispute resolution
- And many more.

Introducing a simple way to promote smart contract Dapps into our Commerc.io platform will increase their customer base, facilitate access to new markets, and create additional value for themselves and the global ecosystem as a whole.



Simplifying B2B E-Commerce

Current B2B e-commerce software is expensive to **acquire, customize and integrate**. Until now, there has been no viable way by which a small company could generate new business with this new B2B e-commerce sale channel as the knowledge required to adopt a solution was typically available only to large companies.

Acquire: No purchase necessary...

We want to further disrupt the already disrupting SaaS pricing model transitioning from a monthly per user based model to an unlimited usage FLAT monthly pricing models.

A single company can “Rent” the Commerc.io B2B e-commerce platform at a FLAT FEE and use it for:

- Unlimited Customers
- Unlimited Products
- Unlimited Transactions

Any company paying 250€ monthly fee can gain usage of the B2B E-Commerce without any limitation on number of clients or products sold. This lowers the Industry average €25K/€250K CAPEX project price to a micro OPEX monthly fee.

Customize: No coding necessary...

We are different. Every company is different. This is what every company think about themselves. This is also what any IT company wants to hear, rubbing their hands because customization brings in

more coding and, as we all know, more coding means more profit... also, what it does mean is extra costs on the customer end.

Since 1994, and for over 16 years, our company has developed hundreds of custom B2B e-commerces. But unlike other companies, we were not happy in reinventing the wheel every single time. We honestly considered it a major waste of time and resources. After developing many different B2B projects, we spotted some common patterns. So in 2007 we decided to develop a new bold, costly idea: a parametric B2B e-commerce platform.

Such parametric settings feature means that no code development is required to adapt any vertical sector business needs. If you are a fashion apparel company you need to sell in a size/color grid. Whether you sell jewelry or welding rods, you will find yourself oddly on the same boat. In both cases you are faced with addressing the precious metal pricing component in your product that varies with daily silver metal rate. If you sell food products, each individual item sold must be traceable and have a unique identifier, which sometimes goes back to the entire supply chain.

Yes, every company might be different, but still you do not need to write code to address such a difference. All you need is a parametric software.

When customers come to us with new and unique needs, we listen carefully, ask lots of questions, and do our best to understand and meet their needs. When we do this, we put the resulting feature as a generally

available parameter. We no longer build one-offs or “snowflakes” for individual customers. That model was the necessary evil that allowed us to get where we are now, but this is no longer the way we want to operate. Instead, every customer gets access to whatever it is that we build, and everyone benefits from it. Our B2B Pricing Engine is a good example of this strategy in action. A company once told us they needed to give special customers of a special purchasing group a special discount for a given special period based on the number of precuts ordered. This was indeed a very special request. Our seven-year effort to move to parametric B2B pricing engine had us able to accommodate that special request without writing a single line of code. Full parametrization is über-hard and costly to achieve but, on the other hand, it is the perfect start point for any possible solution. And yes, it took us “only” seven years to achieve such a goal.

Finally, parametrization makes it possible to break the current monolithic paradigm of one-off customized solutions. As a result, entry barriers are significantly lowered and the implementation of B2B e-commerce becomes economically feasible for anyone.

Integration: little custom work necessary...

Although there is no perfect and immediate fit, since we always have to deal with a square peg in a round hole, we can optimize this process in two ways: the first is to create an **ERP data connector**, while the second is to create a **data integration implementation** process that minimizes pain and suffering.

After 24 long years in the data integration inferno, dealing with just about any single ERP/CRM/DB on the face of the earth, and with the

most “heterogeneous” set of data, software and hardware, we generated two solutions:

1. ERP data connector

An open source software that can extract, transform, load (ETL) any data from any source to any destination.

- *Data extraction (E)* is where data is extracted from homogeneous or heterogeneous data sources;
- *Data transformation (T)* is where the data is transformed for storing in a proper format or structure for the purposes of querying and analysis;
- *Data loading (L)* is where the data is loaded into the final target database, more specifically, an operational data store, data mart, or data warehouse.

Since data extraction takes time, we need to parallelize the execution of these the three phases. While the data is being extracted, another transformation process executes while processing the data already received, and prepares it for loading while the data loading begins without waiting for the completion of the previous phases. Over the years, the ETL connector has developed a set of 130 “ready-to-eat” integration recipes for the most common ERP/CRM/DB such as:

Dynamics AX™ • Dynamics NAV™ • IBM ACG™ • INFOR BAAN™ • PASSEPARTOUT Mexal™ • SAGE™ • SAP Business One™ • SAP R/3™ • Zucchetti Revolution™ • Zucchetti Enterprise™ • Edisoftware Onda™ • WKI Artel™ • Amazon DynamoDB • Amazon Redshift • Axis ERP • BatchMaster • Cassandra • Catalyst • Cimnet ERP • Compiere ERP • Couchbase • Danea • DataFlo • DB2 • dBASE • DEACOM • Deltek First • Drupal • DTR ERP • Eagle • Eclipse • Elasticsearch • Empower ERP • Encompix ERP • EnterpriseIQ • Envision X ERP • Epicor ERP • Exact

Synergy • FileMaker • Firebird • Glovia G2 • GovWin Solutions Suite • Greenplum • HarrisData • Hazelcast • HBase • Hive • HubSpot CRM • IBS Enterprise • IBS Media • Impala • Infor LN • infor Saleslogix • Infor Syteline • Informix • Ingres • Interbase • Intuitive ERP • iScala • Jackrabbit • JD Edwards • Made2Manage ERP • Magento • ManFact • MariaDB • MarkLogic • Memcached • Microsoft Access • InvoiceX • Microsoft Dynamics CRM • ReadyPro • Microsoft SQL Server • MongoDB • MySQL • Neo4j • Netezza • NetSuite • NetSuite CRM • Nimble • NS-BOS • Odoo • OpenCart • Oracle Apps • Oracle DB • Oracle Siebel • osCommerce • PeopleSoft • Plex Online • PostgreSQL • Prelude • PrestaShop • RavenDB • Redis • Relevant • Riak • Ross ERP • Sage CRM • Sage ERP X3 • Sage One • Salesforce.com • Salesnet • NTS • SAP HANA • Gamma Enterprise • Solr • Splunk • Spree-commerce • SQLite • SugarCRM • Teradata • Vertica • Zoho CRM • VirtueMart • VisionVantage • Vista • vTiger • WooCommerce • WordPress • X-Cart • Zen Cart

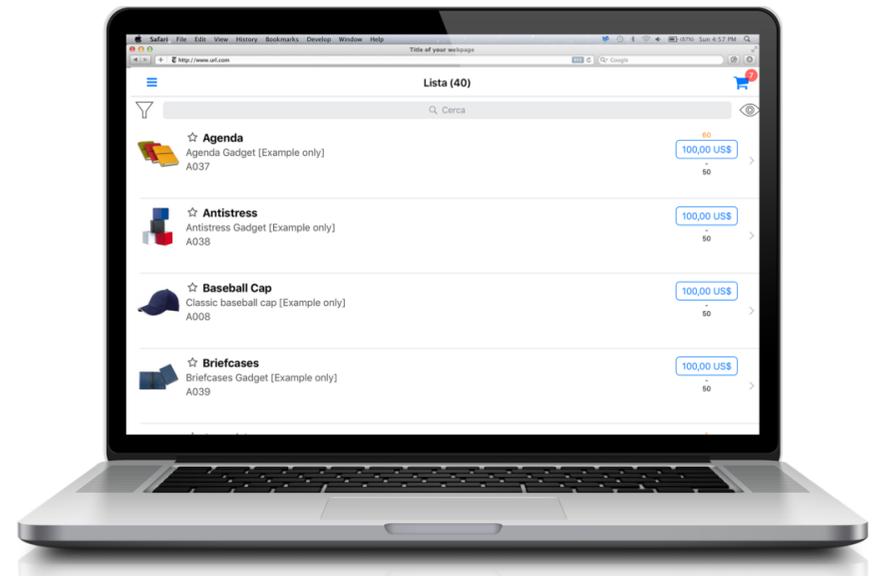
2. Data integration implementation process

After analyzing hundreds of data integration projects, we realized that the data connector is only a small part of the process, the easy one. The hard one is people. In any data integration project there are 3 to 4 different roles:

- *Internal Sponsor (IS)* is responsible for meeting company's needs
- *ERP Person (EP)* is responsible for providing ERP access and information
- *E-Commerce Person (IT)* is the person responsible for providing ERP access
- *Project Manager (PM)* is the person responsible for coordinating all of them.

We have created a standard implementation workflow rollout plan where all the information exchange needed amongst all these people are addressed. This makes any integration project 5X faster and cheaper than the industry average.

Over the last seven years we have worked hard to solve the three major problems that put the B2B e-commerce in jeopardy, making it expensive to **acquire, customize and integrate**. We are now ready for the next part of our journey.





Securing B2B E-Commerce

Securing Identity and Signing

Do you still remember Matteo's story? We realized that we could solve Matteo's problem with a secure B2B e-commerce platform. But we had a bigger underlying problem. Today we, as citizens of the Internet society, place the control of our online identities into the hands of "trusted third parties". Email addresses, usernames, and website domains are borrowed or "rented" through DNS, X.509, and social networks. This is certainly not an ideal scenario and, on the contrary, it raises a huge security challenge. There are many great papers circulating on the web about a possible alternative approach called decentralized public key infrastructure (DPKI). This is something extraordinary as it could allow the control over online identities to be returned to the legitimate owners: people and companies. DPKI has the potential to solve many usability and security problems that traditional certification authorities are facing. A PKI infrastructure within the blockchain has some advantages at each stage of its life cycle.

1. It makes it easy for Matteo to create a permission-less online **identity**
2. It provides for the simple creation of stronger **signing** certificates
3. It helps Matteo **encrypt** documents thanks to its public key management
4. Matteo's key is **stored** not by a CA but on a secure decentralized blockchain
5. Finally, it includes a mechanisms that enables Matteo to **recover** lost or compromised IDs.

We need to create a simple-to-use **free mobile app** enabling anyone to create an Ethereum key store. We can then use this key for securing a few other things. A glimpse of how secure this is?

2^{160} or 1 in 1,461,501,637,330,902,918,203,684,832,716,283,019,655,932,542,976 of two private keys colliding. Pretty secure. Brute-force attacks against 256-bit keys are likely to be unfeasible until the day quantum computers are built.

Scalability on Securing all B2B e-commerce Transactions and Files

While we can use the public Ethereum Blockchain for securing the people and company identities and digital signing keys, we still have one big problem to solve: transactions. Companies literally produce petabytes of e-commerce transaction data every year and the Ethereum Blockchain is not the place to be when you have massive load of data.

Our current client base daily transaction is way bigger that all CryptoKitties transactions... and we know how that ended right?

Until the Ethereum Foundation will solve the scalability issue with Ethereum 2.0 plan to increase privacy and boost scalability through "validator manager contract" driven sharding, we are stuck. In fact, we are temporary (probably 2-to-5-year timeframe) stuck into a provisional solution: the Commerc.io Federated Blockchain (CFB).

Commerc.io FEDERATED BLOCKCHAIN is a permissioned (private) blockchain that will enable us to manage all the transactions and data our customers need. While we wait for the proposed Vitalik's sharding to scale up, we take a different path, starting with our own private federated blockchain. This is a solution based on a distributed database with the addition of the three basic blockchain features we need: decentralized control, immutability and the transfer of digital assets. For the next few years Commerc.io will work hard to reduce its initial centralized management as well as fully distributed Federated Blockchain nodes. In the near future it is expected that Commerc.io will run on nodes supplied only by partners around the world without a single central database, preventing any potential hack or shut down of the Commerc.io federated blockchain.

Our ultimate goal is to eventually migrate to the Vitalik's Ethereum 2.0 Layer 2 sharding as soon as it will be possible.

DECENTRALIZED DOCUMENT STORAGE

Developing world connections. Offline. Natural disasters. We need a decentralized technology that will make it possible to distribute high volumes of documents with high efficiency. Something that can provide us with historic versioning (like git) and makes it simple to set up resilient networks for mirroring of data. We think the answer is IPFS. This is how it works:

1. Each Commerc.io encrypted file and all of the blocks within it are given a unique fingerprint called cryptographic hash
2. IPFS removes duplications across the network and tracks version history for every file

3. Each network node stores only content it is interested in, and some indexing information that helps figure out who is storing what
4. When looking up files, you are asking the network to find nodes storing the content behind a unique hash.

IPFS and the Commerc.io Federated Private Blockchain are a good match. We can address large amounts of data with IPFS and place the immutable, permanent IPFS links into a Commerc.io Federated Private Blockchain transaction. This allows to timestamps and secure your content, without having to put the data on the chain itself.

Securing the Commerc.io Federated Private Blockchain Governance

Building a decentralized organization from scratch is not easy. We have learned some important lessons from the past: just remember the DAO.

The Commerc.io platform will be coordinated by the Commerc.io Foundation, which is comprised of its Blockchain Federate members and its counsel board. The Commerc.io Foundation will advance the research of the B2B e-commerce blockchain technology and decentralized governance for the sake of all companies worldwide.

The Commerc.io Foundation is comprised of member organizations we call Founders. Our Founding members run the nodes that store and validate blocks containing the transactions sent to commerc.io blockchain. By the constitution act of the foundation, less than half the nodes can be based on any legal jurisdiction, therefore a single legal attack cannot shut down the network. Also, by the constitution act of the foundation our federate nodes must be based around the world to

limit disruption from regional events such as power outages or natural disasters. Federate members elect the counsel board, which is responsible for the day-to-day operations of Commerc.io.

The ultimate goal of the Commerc.io Foundation is to become when the time is right, a full DAO (decentralized autonomous organization).

Over the next few years we will focus on solving the two major security and governance problems that will **secure all B2B e-commerce Transactions and Files.**

We are now ready for the next part of our journey.



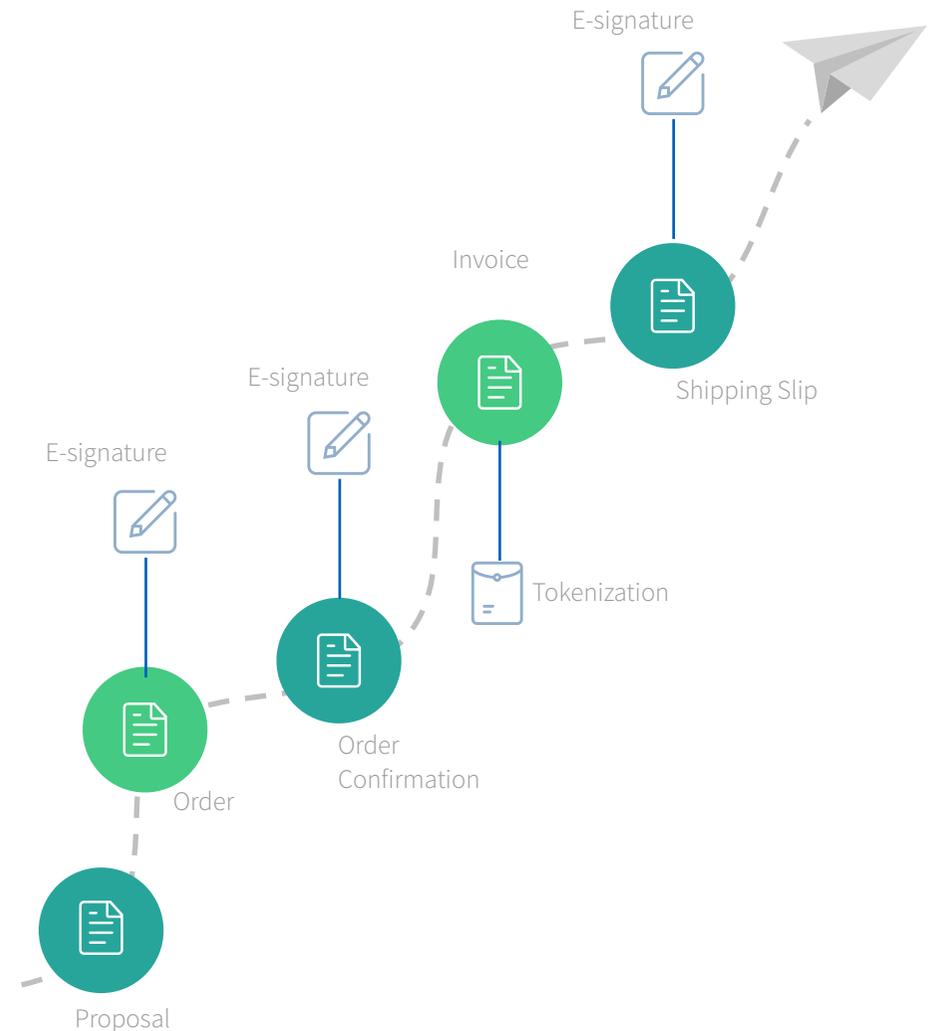


Decentralizing B2B E-Commerce

As we written before, it is expected that in the USA alone B2B e-commerce market will grow from \$780B in 2015 to \$1.1T in 2020², and therefore has potential to grow globally into a multi-trillion market, endorsed by all companies of all sizes. This could happen on the condition that we will be able to slash entry barriers and foster wider adoption worldwide. This will take time and commitment. A fully decentralized and distributed B2B e-commerce on the blockchain does not currently exist and we are not going to implement it right away, but the Commerc.io B2B e-commerce Federated Private Blockchain (CFB) will be the closest thing to a truly democratized B2B transaction network.

The Commerc.io B2B e-commerce Federated Private Blockchain (CFB) acts as the central interface to all the customers. Each customer has its own Commerc.io B2B e-commerce web server (CES), where all catalogues, price lists, inventories of available products and services are available to their specific customers list to order. Each customer has an interface through which parameters may be set and options selected on their CES; The CFB gives each paying customer access to a list of services. CFB also hosts the central registration interface and provides a dashboard where customer manage their account and acquired services.

The Commerc.io B2B e-commerce web server (CES) will produce and share a series of documents in the whole sales cycle among different stakeholders:



² https://go.forrester.com/blogs/15-04-02-us_b2b_ecommerce_to_reach_11_trillion_by_2020/

We produce an order file (json) for each order made by the customer, which includes technical and encrypted commercial parameters of the product purchased. This file is provided to the Commerc.io B2B e-commerce Federated Private Blockchain (CFB) API where it starts the execution of the digital signing workflow to produce and deliver the order document to be read and digitally signed by the customer on the free Commerc.io e-signing app (CEA).

The steps required from the end customer are:

1. Select the product you want to purchase on the company B2B e-store
2. Add products to the shopping cart
3. Review order and choose custom payment method (bank transfer, credit card etc)
4. Confirm order
5. Digitally sign it on the free Commerc.io e-signing app

Commerc.io B2B e-commerce Federated Private Blockchain handles the production of all commercial documents and adds an immutable transaction on the block. While the actual transaction is public (within the realm of the federated blockchain) its content is not. All order informations and IPFS documents can be decrypted only by the e-signing parties.

Decentralized Digital Tokenization via Ethereum Smart Contracts

In the last section of this white paper, we will also try to explain why building a bridge to the Ethereum public blockchain and its disruptive

smart contracts technology will advance our ability to unprecedentedly disrupt and revolutionize the market and promote extraordinary high levels of growth.

The next step will be to integrate our private blockchain to the Ethereum public blockchain by creating the Commerc.io Tokenization API (CTA). We are still in the process of assessing different solutions, nonetheless the interledger protocol seems like a good candidate. Interledger is an open protocol suited for sending value across different ledgers. Like routers on the Internet, connectors route packets of value across independent networks. Its open architecture and minimal protocol enable interoperability for any value transfer system.

The purpose of the Commerc.io Tokenization API (CTA) is simple, It is similar to the act to go to a Public Notary Office to stamp a document, but in this case a digital stamp. The Tokenization API is a 24/7 digital notary available for any kind sale transaction at a fraction of the cost and therefore it could be used to certify anything that has value.

Imagine being able to buy 1 kilo of coffee and have a notary to put a :

- Proof of existence stamp
- Proof of Date and time stamp
- Proof of Authenticity stamp
- Proof of Integrity stamp

While the main purpose of Tokenization API is evidently to notarize any transaction document, proof of existence, date, authenticity and integrity, without ever exposing its contents on the Ethereum public blockchain. Tokenization will also bring one less evident effect we will discuss in the next paragraph.

The creation of a Digital Asset token from an order transaction

Any sale order transaction in the “real world” has value for both parties. For the seller it represents the promise to receive money and for the buyer the promise to receive goods and services.

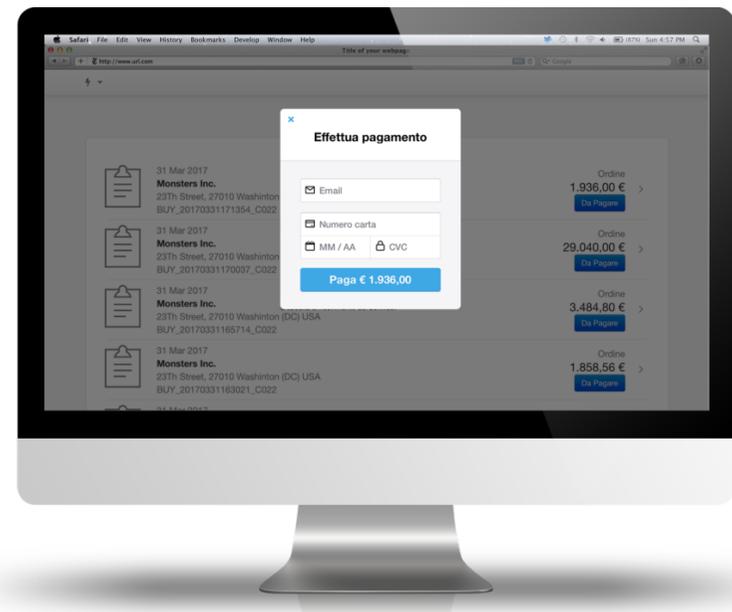
Tokenization is the simple act of digital notarization of value on the blockchain that we will de-facto giving birth to non-fungible token smart contract.

Dapp Developers could join our ecosystem and release Ethereum smart contracts’ that could further enhance Commerc.io’s customers B2B processes to an in-imaginable new world of possibilities. Here are just a few ideas:

- Credit Letters Dapp
- Credit Insurance Dapp
- Warranties Dapp
- Escrow Dapp
- Micro instant credit Dapp
- Loans Against Invoices Dapp
- Leasing Dapp
- Factoring Dapp
- Risk management Dapp
- Payments Dapp
- Credit Rating Dapp
- Long Term Data Archival Dapp
- Digital Instant Alternative Dispute Resolution Dapp
- and much more that we can not yet think

Commerc.io Ethereum DAPPs Marketplace

Creating a Marketplace to promote Dapps into our Commerc.io ecosystem will enable developers to increase their B2B customer base and create additional value for themselves and the global ecosystem as a whole.



BUILDING THE Commerc.io FEDERATED BLOCKCHAIN

Within the Commerc.io ecosystem, there are many moving parts due to separation of commercial, technical, security and legal handling of an order. The Commerc.io B2B e-commerce Federated Private Blockchain (CFB) will redefine the ecosystem by integrating the security and legal contexts into the commercial and technical, by introducing digital signature strong encryption, distributed storage and eventually smart contracts using the Ethereum blockchain technology. We strongly believe that this, in combination with a community building strategy, will simplify the handling effort and will enable a disruptive growth of the B2B e-commerce space.

When the Ethereum ecosystem (sharding, smart contract language and development tools) is mature, smart contracts will replace the need for our private federated blockchain. This will generate significant savings at all levels in the B2B e-commerce process. Unfortunately, for a certain period of time some form of centralization will be required to handle heavy transaction loads, and the ecosystem will operate through a list of federated nodes.

This commerc.io platform will be integrated to the Ethereum blockchain and give access to smart contracts technology. Over time, smart contracts may lead the more complex on chain business process services.

The Foundation's main goal is to build the Commerc.io B2B e-commerce Federated Private Blockchain (CFB), considering that

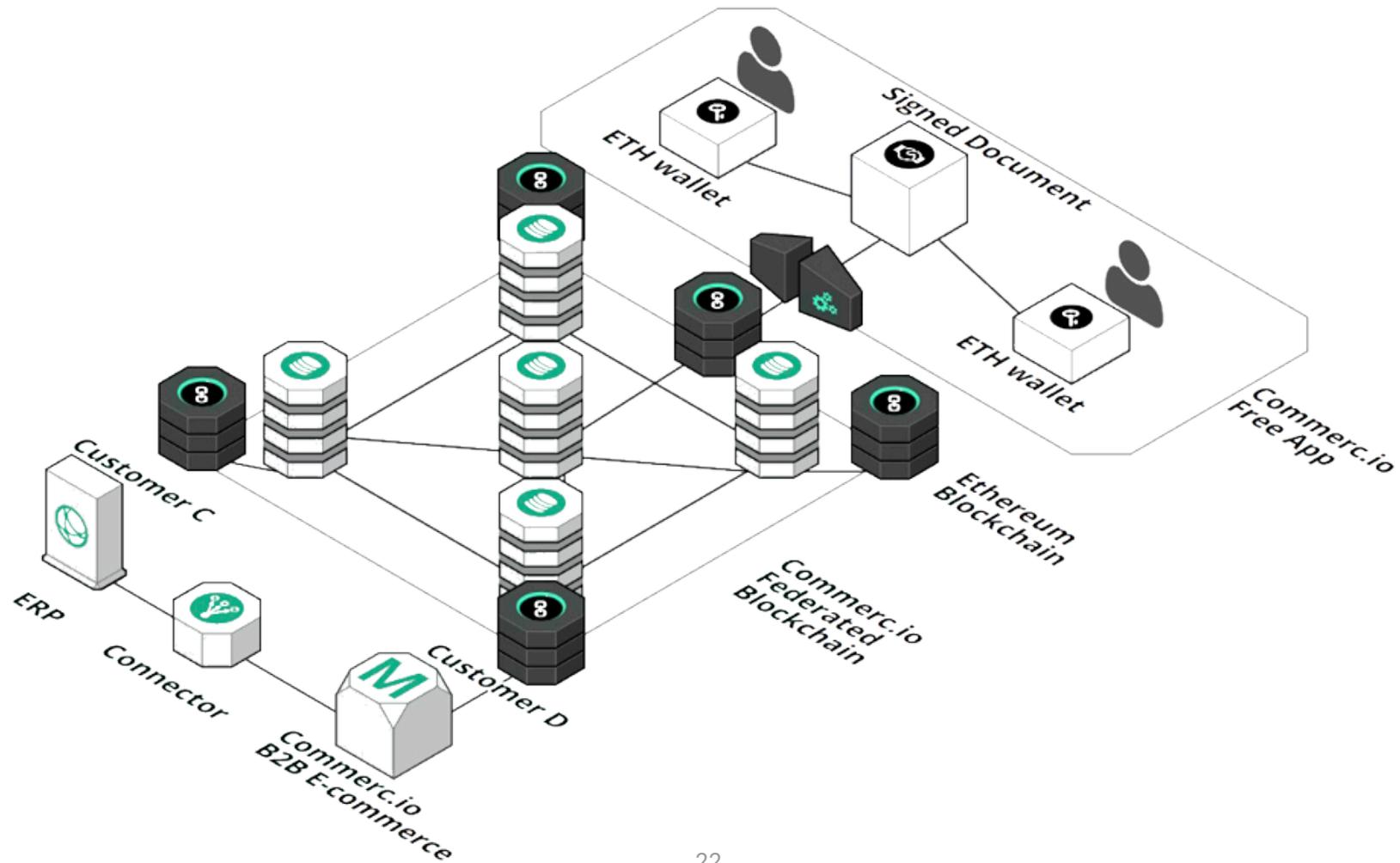
Tradenet Services srl, as one of its early founders, will act as a responsible and impartial administrator, also providing for the licensing or transfer of some of its assets, know-how, market access, and personnel to the Commerc.io initiative.

The CFB Architecture

The construction of the CFB must take into account three main aspects: technical, commercial and legal. If one of these three access modes is not clearly defined, effective scalability of the CFB will be prevented from happening. The CFB ecosystem clearly requires a decentralized network.

1. The Foundation is the most appropriate entity through which to consolidate the development of the B2B e-commerce and guide efforts to build the full CFB
2. During the first five years, the Foundation shall be served by a group of members who will run federated nodes and will be responsible for legal and commercial transparency of the network and the provision of services to the Foundation
3. All representatives of different industries and sectors shall give life to a broad, diverse and vibrant community
4. Developers working to unlock the enormous potential will be the initial contributors to the CFB.

In the CFB, transactions between participants shall be executed directly and governed by rules and regulations established through “smart contracts”. All tokens created by the Commerc.io Foundation (distributed through an initial Coin Offering event ICO) shall represent their holders’ rights to participate in the creation of the CFB and generate value for all CFB participants through further development and promotion of the network and the solutions within it.



THE ECOM TOKEN

The two Tokens Mint-and-Burn mechanism

We think many firms will want to use the Commerc.io platform given all the benefits HOWEVER there are few problems to solve:

1. Most companies will not want to hold cryptocurrencies for security, regulatory or internal policy reasons.
2. Cryptocurrencies are highly volatile by nature and companies want to be able to budget expenses to use a platform like the commerc.io.
We find difficult to tell a company that the token you use to buy our service one day is €1 after a week €50 after a month €25... We will think about it, will be the polite answer.
3. Given the recent Cryptocurrencies price rise , it makes less and less appeal in purchase ERC20 utility Tokens. So we need to provide a deflationary mechanism to boost our token value over the next years.

We analyzed at many different crypto business models and realized that the Factom approach is a brilliant one and we could adapt it to our business model.

commerc.io will generate two tokens:

- Commerc.io Tokens (ECOM) on Ethereum as ERC20
- Commerc.io Credits (EDI) on our private Blockchain

Let's try to explain how the commerc.io two-token system will work.

As we explained before Commerc.io will have its own private Blockchain. This private blockchain is composed by multiple Federated Nodes. These Federated Nodes will provide a service to the platform and in return, they will be compensated in Commerc.io Tokens (ECOM) which will be a publicly traded ERC20 token with the price determined by the market.

The Commerc.io platform will compensate these independent Federated Nodes a certain amount of ECOM Tokens.

On the other side.

The EDI CREDITS will allow companies to secure, send and sign sales transactions on the commerc.io platform

One EDI CREDIT allows a company to securely send and sign any sale document to its customer for let's say for example at €0.01

Very Important: As a firm you are not using 0.01 ECOM TOKENS, but €0.001 in EDI CREDITS.

You can obtain EDI CREDITS by burning ECOM TOKENS and that ECOM TOKEN (and all fees) are removed completely thus reducing future inflation.

To reinforce the fact that EDI CREDITS are priced in EUROS, not ECOM, note that:

If one ECOM is worth €1.00 when you burn it, you get 100 EDI CREDITS

If one ECOM is worth €10.00 and you burn it, you get 1000 EDI CREDITS

EDI CREDITS are not transferable and you can't turn them back into ECOM TOKENS.

HOWEVER, you CAN purchase EDI CREDITS using EUROS from the commerc.io store or from any commerc.io partner and they will burn the ECOM on your behalf. You might pay a premium to them for that service, but you don't have to hold or deal with any cryptocurrency.

EDI CREDITS, once purchased, cannot be transferred to another public key. They can only be used to pay for commerc.io services. This greatly reduces their value to malicious actors, since they cannot be resold.

This mechanism solves the first two problems:

1. Companies don't have to hold cryptocurrency if they don't want to or can't.
2. Companies can effectively budget for the cost of using the protocol because the cost for EDI CREDITS will effectively be €0.001 each.

Companies will burn tokens to use the Commercio platform

Independently, the Commercio platform mints a specific amount new tokens each month and distributes them to the Commerc.io Federated Node validators (not an ERC20 token).

If Companies don't burn a specific amount of tokens in a month, supply increases, which should exert downwards price pressure.

Vice Versa , if Companies burn more than specific amount tokens per month, supply decreases, exerting upward price pressure.

In the long run, there should be linear relationship between the usage of the commerc.io platform and the ECOM TOKEN price.

The more the commerc.io platform will be used, the more ECOM TOKEN should go up in value.

It is possible that on the next few years there will be some speculation about the potential of the platform that determines the value of ECOM more than EDI CREDITS usage.

commerc.io wants to be the universal B2B E-commerce standard . If this vision will materialize the platform will see EXPONENTIAL usage increase.

In time EDI CREDITS usage should drive the value of ECOM TOKEN and therefore we think we will solve the deflation problem.

ECOM: The Ultimate Utility Token

Commerc.io will generate a **utility token** for:

- Selling products and services using our B2B E-commerce platform .
- Securing and signing business documents on our private blockchain
- Create digital Assets on the Ethereum public blockchain
- Creating new business on the Commerc.io DAPP marketplace.
- Engaging the community into advancing the B2B e-commerce adoption

Using the Commerc.io B2B e-commerce Platform will require a monthly or yearly payment of EDI Credits available on our online store for € or ECOM TOKENS

Using the Commerc.io B2B Secure BlockChain Platform will require a purchase of EDI Credits available on our online store with € or ECOM TOKENS

Using the Commerc.io Tokenization API to create a digital assets (Non-Fungible ERC721 Token) for an Invoice will require EDI Credits

The linking of a B2B e-commerce transaction taking place within the Commerc.io Private Blockchain using the tokenization API (powered by a smart contract on the Ethereum blockchain), will instantly generate a digital asset perfectly able to fully interact with future Commerc.io Dapps. For instance, payment of the order invoice can be made through tokens, representing value, which guarantees that the seller is paid. Whenever a operation is initiated in the Blockchain, e.g. buying or selling of an item, the specifics could be included in a digital asset exchanging it with a specific fungible or non-fungible token standard.

The token is located on a public Ethereum blockchain, storing the entire history of ownership. The development of specific Dapps could bring additional benefits to the parties in the transaction:

- The ability to make installed payments
- Payments in escrow
- Conditional payments based on delivery

In more complex cases, a Dapp could invoke an 'oracle' service outside the blockchain to provide input to the smart contract and promptly solve any problem. The token-based model affects all users, from buyers to vendors, to Dapp developers and service providers, in new ways compared to traditional business options. This is achieved through the full ownership of the tokens, without the actual involvement of third parties or escrows.

Any user owning a ECOM token is free to use, sell or transfer the token at their convenience. Since users control their tokens, and tokens have a real value that is strongly related to the value generated by anyone else on the platform, it is imperative that every token holder gets involved in and contributes to the Commerc.io ecosystem by enhancing, delivering, promoting or otherwise facilitating the delivery of the services and processing of content provided therein. For instance, despite not all token holders have a company with a B2B e-commerce solution, any user can store IPFS data, or may otherwise help as system integrators in the ERP integration process. All these actions together, and many others, will contribute to increasing the global value of the ecosystem.

Thanks to the inclusion of the enterprise community in the construction and active participation in the platform, the ecosystem will become a place of ever-increasing value for all its participants. Not only will we assist to the creation of indirect value, but the use of tokens will also

lead to the creation of new business models, allowing freelancing system integrators, data scientists, industrial photographers, and many others to receive instant compensation for their work.

Why Commerc.io Will Not Use Bitcoin, Ether, or Other Cryptocurrencies?

The Commerc.io Foundation will be using a private Blockchain since the number of transactions and the data requirements is far greater than what you could get on a public chain like Bitcoin or Ethereum.

Commerc.io will not use Ether, Bitcoin or any other virtual currency on its platform, A new ECOM utility Token (ERC20 standard) will be released on the public Ethereum Blockchain. Burning ECOM utility Tokens will activate different actions on the Commerc.io private Blockchain.

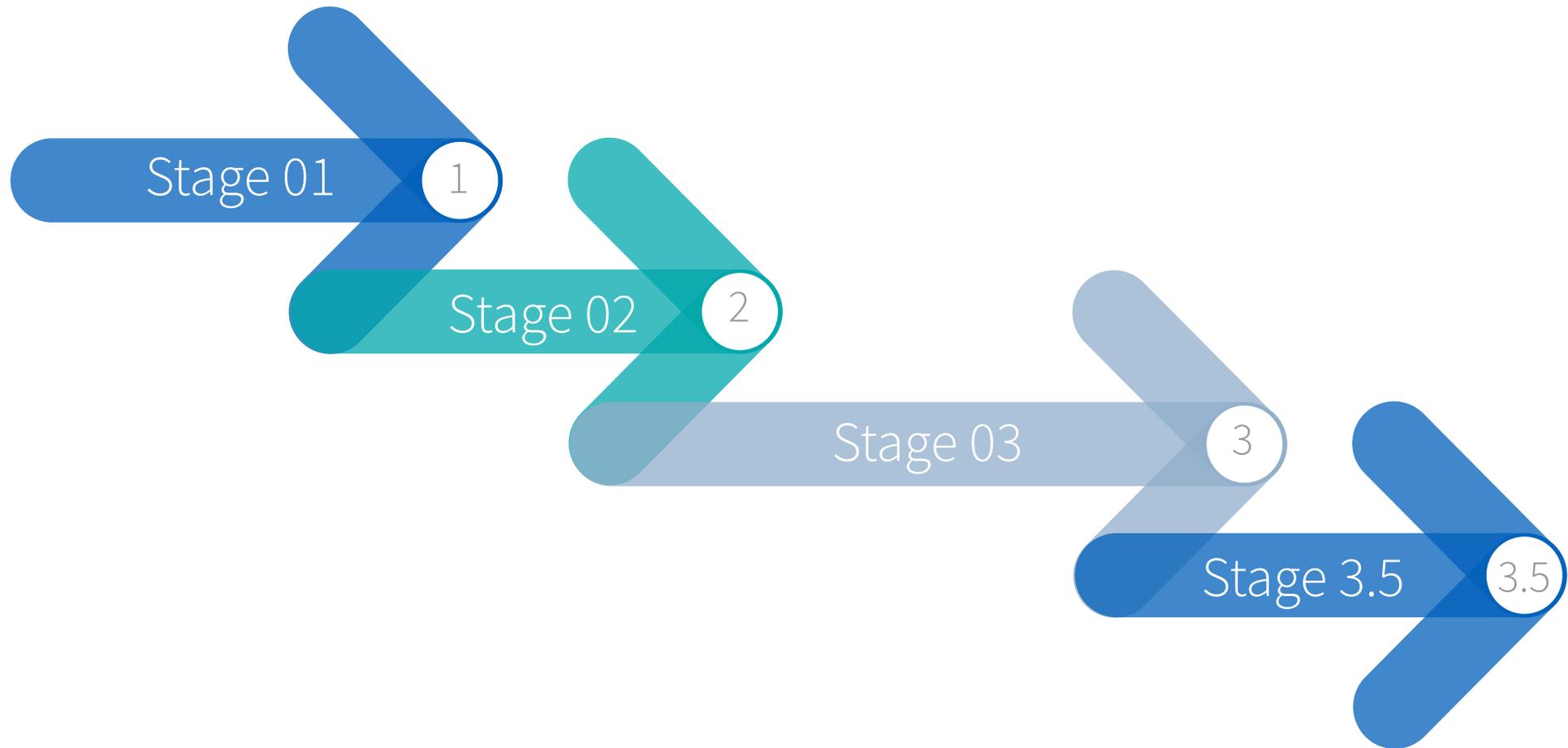
The ECOM Token Distribution Event (ICO)

The token will be generated and distributed to a limited number of Customers, Partners and Advisors on a private pre-sale and to the public sale at a token distribution event.

The ECOM token will adhere the ERC20 standard and all the EDI credits pricing will announced prior to the ICO.

For timing details please register the <https://commerc.io> page.

PROJECT TIMELINE



Stage 1 SIMPLIFY (2018)

SIMPLIFY the adoption of B2B E-commerce by reducing its costs

Stage 2 SECURE (2018)

SECURE documents with a digital signature app on the blockchain

Stage 3 DECENTRALIZE (2019)

TOKENIZE sales transactions on the blockchain (EDI 3.0)

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Stage 3.5 SCALE (2020)

Move all Commer.io to Ethereum 2.0

Stage 1 Simplify

Developing the Foundation, Extending the adoption of the Commerc.io B2B e-commerce web server (CES), where all catalogues, price lists, inventories of available products and services are available to their specific customers list to order. No later than a month from the ICO, the Foundation shall approve its detailed business plan. Obtaining a perpetual unlimited license from the steward for the usage of all related IP and technical pre-developments and the commitment to bring its e-commerce software into the commerc.io eco-system. The Foundation starts to employ staff for administrative, promotional and for technical development work. Contributing partners (recruitment, consulting, legal, marketing and any other professional services) and the steward will be compensated for their effort by cash and by tokens.

Stage 2 Secure

Development and release of the Commerc.io FEDERATED BLOCKCHAIN and its free mobile app for enabling anyone to receive and sign sales Documents. Starting marketing and promotional efforts to increase industry consensus and engage new community members. The Foundation shall continue to recruit staff for administrative, promotional, and technical development work. Contributing partners (recruitment, counseling, legal, marketing and any other professional services) together with the steward will be compensated for their efforts with cash in accordance with arm-length principles, and with tokens.

Stage 3 Decentralize

Development and launch of the tokenization API smart contract structure and protocols for interfacing the commerc.io private federated

blockchain with the Ethereum public blockchain and the Dapp marketplace. Intensifying marketing and promotional efforts to increase industry consensus and engage new community members.

The Foundation shall continue to recruit staff for administrative, promotional, and technical development work.

Contributing partners (recruitment, counseling, legal, marketing and any other professional services) together with the steward will be compensated for their efforts with cash in accordance with arm-length principles, and with tokens.

Stage 3.5 Scale

Migration of the platform to Ethereum 2.0, which will eventually replace the private federated blockchain. Further intensifying marketing and promotional activities to populate the eco-system. Increasing the number and scope of activities to support startups and SME. The foundation shall further continue to recruit staff for administrative and technical development. Contributing partners (counseling, legal, marketing and any other professional services) and the steward will be compensated for their efforts by cash and by tokens.

All token functionalities, including those listed in this and previous sections, are intrinsic to the token and shall occur programmatically. Anyone wishing to purchase tokens is aware that there is no expressed nor implied warranty associated with Commerc.io tokens, and that all tokens are acquired according to an “as is” logic. They also acknowledge that the Foundation will not grant refunds under any circumstances and that the token holder is required to contribute to the development and operations of the Commerc.io Foundation and ecosystem. For further disclaimers, please refer to the RISK AND DISCLAIMERS section.

RISKS AND DISCLAIMERS

This White Paper has been prepared by Tradenet for the Commerc.io Foundation solely to help potential participants decide whether to participate in the Commerc.io initiative. We would like to stress that this is an open-source initiative where everyone is free to make their own independent decisions.

We would also like to emphasize that the financial information contained in this White Paper and accompanying materials has not been audited. All projections herein are based on a number of assumptions. No assurance can be given as to the accuracy and reliability of these assumptions and, consequently, no assurance can be given that the actual results will be in line with the projected, expected results.

The Commerc.io Foundation, the management and development teams of the Tradenet Services srl project, expressly disclaim any responsibility for the accuracy or completeness of the information contained in this White Paper and accompanying materials. Accordingly, neither we, nor any other person or entity, nor any of our affiliates, representatives or consultants shall be liable for any inaccuracies or omissions in any of the materials contained in this document or in accompanying materials or any other oral or written information provided in connection with the ECOM token or the Commerc.io Foundation. No representations or warranties, express or implied, shall be deemed to have been made in connection with this White Paper or any other matters.

None of the participants including the project management and the development teams, Tradenet Services srl, the affiliates, the representatives and the consultants, are required to update, supplement or correct this White Paper or accompanying materials, nor to provide recipients or auditors of such material with access to further information. In addition, the project management and core development teams, Tradenet Services srl and the development teams reserve the right, without prior notice to any reviewer or recipient of this White Paper or any accompanying materials, to terminate their participation in the Commerc.io Foundation or Commerc.io at any time and, until tokens are generated, we retain the right to modify the applicable procedures without prior notice and without providing any motivation.

We strongly urge that an ECOM token is not a property or warranty interest in the Commerc.io Foundation or any other entity. In addition, an ECOM token is in no way related to other assets or property. The token does not constitute a debt owed by the Foundation or any other entity, and shall not be considered a debenture loan. To acquire ECOM tokens, it is essential to prove a real interest in contributing to the project by becoming a member of the Commerc.io volunteer community. If it becomes apparent that ECOM tokens may be a regulated security in any country, we strongly discourage you from purchasing them and suggest you immediately notify us about any possible risks. We feel compelled to inform you of the following risks, and indicate that these and other risks must be taken into account in your decisions.

Technological & Organizational Risks

The Foundation will make use of the B2B e-commerce technology developed by Tradenet Services srl over the last 10 years. The system has been tested and is considered reliable and stable. The token system is based on the Ethereum technology that presents certain technical risks, some of which are outlined here.

Token Value Risks

Due to the very short history of crypto tokens and crypto-economic systems, token holders are faced with several challenges when they try to value and enhance these projects, tokens included.

Firstly, among the organizational risks, one must remember that the B2B e-commerce industry has historically been fragmented. Although Tradenet Services srl has been able to attract a significant number of partners to its platform, ensuring that everyone joins the Commerc.io platform will require renewed negotiations. It must also be said that crowdsourcing is a relatively new concept in the enterprise sector, and the expectation that the entire community will grow and participate in Commerc.io using the tools of the general ecosystem is based exclusively on the experience gained so far by Tradenet Services srl.

Secondly, the short history of crypto tokens has generally revealed an even shorter lifespan of many of the projects. This is particularly true because projects have a major principal-agent problem. This is different from a startup that usually raises money in a series of rounds over several years

A major technical challenge will be to enable the automatic generation of more complex smart contracts, which involves complicated work of several parties.

Thirdly, there is a certain level of systemic risk associated with crypto markets that cannot really be diversified. As a result, token holders assume both project-specific risk and market risk when purchasing tokens in a specific sector.

It is extremely difficult to predict systemic risk, both because of the short timespan and because it is unique to the industry. Everything from hard forks to new crypto attacks are a source of systemic risk that, instead, does not affect traditional investments.

Also, many projects are interdependent, which entails risks of dependency risk for the projects themselves. For instance, a crypto project built on Ethereum will be influenced by things happening on Ethereum, such as a bug found in a compiler or an attack on the Ethereum network.

Moreover, as layers of the ecosystem build up, the risk of dependency increases.

Regulatory Risks

While developing a B2B e-commerce software and making it available for commercial purposes is not regulated, some future services like Invoice Factoring are considered in some countries to be a regulated financial industry and, consequently, the ability to provide services is limited.

In general, as the development of blockchain tokens encourages new business models, new legal issues arise. On the developer front, legal and regulatory uncertainty can be one of the main obstacles to building new blockchain protocols and applications, including Commerc.io.

Legal risks need to be further examined in the legal framework for blockchain tokens. This Framework has been prepared in collaboration with Coin Center, Union Square Ventures and Consensys.

Those who wish to join the Commerc.io ICO should consider the likelihood that this particular blockchain token is subject to security laws. There is a series of best practices for token crowdsales, that the Commerc.io Foundation has been trying to follow with rigor and diligence. **We emphasize in the most absolute way possible that ECOM tokens do not represent ownership or a security interest in relation to the Foundation or any other entity or any assets or property. They do not represent a debt owed by the Foundation or any other entity and are not considered to be obligations under applicable law.** It is for these reasons that we believe that our tokens are not securities and may be purchased by anyone who is genuinely interested in contributing to the Commerc.io initiative by becoming a member of the Commerc.io volunteer community.

We recognize that there has recently been growing a interest in whether, and under what circumstances, crypto-tokens may represent “investment contracts” under the U.S. Supreme Court’s Howey test, or similar regulations around the world, which makes them securities subject to regulation in the United States and other countries. The following resources go into the matter, exploring structural, marketing and other key considerations that may increase or decrease the likelihood that crypto tokens are securities under Howey. As these resources demonstrate, the Howey test is highly fact conditioned, showing that certain crypto-tokens may be securities under Howey whereas others, if properly designed, may not.

If it becomes apparent that ECOM tokens may constitute securities subject to regulations in any country, we strongly discourage you from purchasing them and suggest you immediately notify us about any possible risks.

