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White Paper

Democratizing global trade with Blockchain technology

27.11.2017

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Abstract

There is no one place where 400 mln[1] micro, small and medium enterprises (**MSME**) can meet each other, commit trade agreements easily and trustfully and get help with trade-related services in a cost-effective way.

Blockchain technology can be used to build a user's platform which can add a **module** of trust into the B2B[2] **trade** cycle, while simplifying the execution of transactions and decreasing their costs. ModulTrade **has laid the foundations for creating a value ecosystem for global trade:** a digital blockchain networked value structure that is real-time, global, connected, digital and cost-effective, with features to support further fintech solutions developed by third parties.

ModulTrade Value Ecosystem (MVE).

This white paper describes how **MVE will democratize global trade by connecting the heart of Blockchain functionalities (i.e. trust and democracy) to real life trade transactions within the enterprises' supply chains globally.**

MVE will leverage on two innovative technological implementations**:**

- **A Smart-contract platform**: this replicates traditional trade finance instruments (such as letters of credit[3] and bank guarantees) and allows MSME to establish trust into their trade agreements
- **The MTRc (ERC-20 Ethereum-based ModulTrade token)**: will be a new **trade enabler** (every enterprise with access to a smartphone will be able to execute trade real-time, globally and in a cost-effective way) and **3rd party application enabler** (it will be used for charging usage fees for third parties' solution built on ModulTrade's smart-contract platform).

As MVE is a multi-sided platform, requiring to reach a certain number of users to achieve a network effect (please see further below for more details), this document also explains:

- the rationale of critical mass[4] which is needed to trigger the network effect in MVE
- the approach to reach this critical mass

By combining together the development of a value ecosystem and a new crypto token for B2B trade, ModulTrade is one of the few pioneers able to improve the trade finance industry by connecting millions of enterprises (underserved by today's banking system) to the global trade in an easier, trustful and more efficient way.

[1] https://www.worldbank.org/en/topic/financialsector/brief/smes-finance
[2] Business to Business
[3] http://www.investopedia.com/terms/l/letterofcredit.asp
https://en.wikipedia.org/wiki/Letter_of_credit
[4] Failure to Launch: Critical Mass in Platform Businesses, David S. Evans, and Richard Schmalensee

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Value proposition

ModulTrade is a smart-contract blockchain-based ecosystem where MSMEs can meet, commit and execute trade globally, easily, trustfully and efficiently.

ModulTrade's Value Ecosystem (**MVE**) is based on MSP (multi-sided platform)[5], which aims to create value through the network effect for the following three main constituents:

Constituent	The Value & Need
Trade counterparties (users)	❑ **model of trust in B2B trade cycle** while simplifying transactions execution and decreasing its costs ❑ **instrument for value exchange - MTRc[6]** ❑ **trade financing in MTRc** to enable transactions ❑ **reputational network** to leverage network collaboration based on reputation capital of users ❑ **global marketplace** for optimal choice of counterparty and price
3rd party trade-related service providers	❑ global **marketplace where trade services meet trade participants**
3rd party trade software developers	❑ **platform for trade solutions development** on the base of MTRc functionality

MVE is an economic catalyst[7] which also aims to create value by

- reducing transactions costs faced by multiple distinct economic agents that would benefit from coming together; and
- reduce search efforts, facilitate matching, and making it easier for the different groups of economic agents to exchange value between them..

The MTRc, the instrument for value exchange in MVE, is a prime enabler of the ecosystem growth, allowing it to capitalize on (albeit indirectly):

- the tremendous growth of global B2B e-commerce (estimated to increase over 5 times to be $6,7tn by 2020);
- the potential of 400 mln MSMEs globally which execute trade in their day to day activity and steadily increase its footprint in global trade;
- the future developments in blockchain technology for the global B2B trade activity.

The MTRc token will be issued on Ethereum and will comply with the most common and widely accepted ERC-20 token standard. This will ensure that MTRc is compatible with all the ether wallets and can be easily added into most common crypto-exchanges for trading.

[5] Multi-Sided Platforms: From Microfoundations to Design and Expansion Strategies, Andrei Hagiu
[6] MTRc - ModulTrade crypto token
[7] HOW CATALYSTS IGNITE: THE ECONOMICS OF PLATFORM-BASED START-UPS, David S. Evans

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Introduction

Trade Finance IS adopting blockchain technology

"Blockchain holds considerable promise, but all too often it fails to find sustainable use cases. Trade finance is one significant exception". — The CAPCO Institute journal of financial transformation[8]

A whole new approach, informed by blockchain logic, could bring the very transformation an established yet restricted business is crying out for. Placing the end-to-end trade finance process on a new platform would have a very clear objective: to offer all exporters and importers fast and easy access to credit issuance and advisory services. This is a radical but obtainable shift. An open, automated, and transparent trade finance platform, which replaces cumbersome trust mechanisms with automatic checks and assurances, is now a technical possibility.

MSMEs become a part of Global value chains (GVC) supported by e-commerce development

The opportunities for MSMEs in the global marketplace and value chains are enormous[9]**:** it exposes them to a large customer/buyer base, as well as opportunities to learn from large firms and from engaging and surviving in up and coming sectors of the global marketplace.

"The development of e-commerce promises to expand export opportunities for SMEs and give them a global presence that was once reserved for large multinational firms." - WORLD TRADE REPORT, 2016[10] Selling through digital channels can productivity gains that the McKinsey Global Institute (2013) has estimated at between 6 and 15 per cent.

ModulTrade will aim to help MSMEs prosper in the global marketplace by facilitating such trade as described in this White Paper.

Technology and regulations are democratizing banking industry towards Fintech

Another catalyst for this kind of disruption is the Second EEA Payment Services Directive (**PSD2**)[11] whereby Fintech providers will become Account Information Service Providers (**AISPs**) themselves which makes it easier, faster and less costly to handle customer's' payment transactions and account related data.

PSD2 will allow the MTP (ModulTrade Platform) to interact with customers' accounts within secure processes without banking intermediaries thus increasing efficiency and lowering transactions costs.

[8] Trade Finance Disrupted: A Blockchain Use Case THE CAPCO INSTITUTE JOURNAL OF FINANCIAL TRANSFORMATION JOURNAL N° 04.2017 45
[9] Integrating SMEs into Global Value Chains. Challenges and Policy Actions in Asia, ASIAN DEVELOPMENT BANK INSTITUTE , 2015
[10] WORLD TRADE REPORT, 2016 — Levelling the trading field for SMEs
[11] The PSD2 Playbook , BACKBASE, 2017

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Problem

MSMEs face many barriers and capacity constraints due to their relatively small size. Globally, it is estimated that approximately 56% of MSME trade finance proposals are rejected, compared to only 7% for multinational corporations.[12]

ModulTrade addresses the needs of MSMEs by eliminating the main barriers for entry into global trade:

- **Lack of trust.**
- **High entry costs.**
- **Complexity of trade-related operations.**

Trust

Lack of trust remains a significant problem for MSMEs and prevents them from being active players in the global trade network. The economical meaning of this trust issue could be summarized in the following question:

- **Will the Buyer pay upon the Seller sends goods to the Buyer?**

This question was answered by **existing banking** system which created **Trade finance instruments**, like **Letters of Credit and Bank Guarantees.**

High entry costs and complexity of trade related operations

Traditionally, the trade finance business has targeted exporters and importers of a certain size, with only mid-range to larger players being able to afford trade finance services.[13]

Today's trade finance business has to face the following key challenges:

- **Increasing cost pressure:** Letters of Credits (**LCs**) are associated with high costs for both the bank and clients, while dispute resolution and limited scale create additional pressures due to a relatively high fraction of manual processing and a yet untapped customer base. **Trade finance providers can gain strategic advantages if they succeed in finding fundamentally new approaches to delivering the service to their clients.**
- **Poor customer experience**: from a bank's point of view, the key customers, exporters, and importers often suffer from a poor end-to-end customer experience. Not only does the issuance of LC-backed trade finance transactions require high coordination efforts among exporters, importers, and issuing and advising banks, often represented by individual legal counsel, the settlement of the transaction follows overly complicated and manual processes, long waiting times with low transparency, and a relatively high residual settlement uncertainty. For example, importers still face the delivery risk of fraudulent shipments, even if the transaction is backed by an LC, and have to proactively and manually track all stages of the agreed delivery terms.

[12] https://www.worldbank.org/en/topic/financialsector/brief/smes-finance
[13] http://www.capco.com/insights/capco-institute/journal-45-transformation/~/media/Capco/Insights/Institute/JOURNAL45_5_Brunner.pdf

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The solution proposed by ModulTrade

ModulTrade aims to eliminate the main barriers for entry into global trade as well as:

- bringing together a comprehensive range of services for the full B2B trade cycle;
- helping MSMEs meet, commit and execute trade globally easily, in a trustful and efficiently manner; and
- Introducing the MTRc (**ModulTrade token**) as an efficient instrument of value exchange in ModulTrade ecosystem.

MVE also aspires to be an innovative global platform that will easily facilitate participants' access to 3rd parties providing some or more of the following trade related services:

- Logistics
- Trade Financing
- Tax and bookkeeping
- Insurance
- Custom brokerage

MVE aims to be the place to easily develop new digital solutions for global trade, the most obvious use cases being:

- **Supply chain tracking on ModulTrade's Platform**
- **Digital Thread for Additive Manufacturing (DTAM)**
- **IoT solutions for invoice factoring.**

ModulTrade's Value Ecosystem ("MVE") — the economic catalyst for democracy in global trade

Leveraging on smart-contract blockchain-based technology, ModulTrade will build a value ecosystem for global trade, i.e. a digital networked value structure that is real-time, global, connected, digital and cost-effective, with features to support further fintech solutions developed by third parties. This solution will enable MSMEs to increase their revenues whilst reducing the costs of global trading. It will also enable third party developers / service providers to gain access to a wider target of users / clients, while reducing development and user acquisition costs. In this framework, the MTRc will be used as a key for the users to connect to the global trade network and to transact in ModulTrade ecosystem.

MVE aims to connect participants to trade globally via **four main components:**

1. **Blockchain based Smart-contract multi-sided platform (MTP)**: to replicate banks' trade finance instruments (Letter of Credit and Guarantee) and to offer MVE participants this service in a trustful and cost-effective way while also connecting them to other services like logistic and insurance;
2. **Trade related services platform**: to simplify trade execution via 3rd party service providers (e.g. payments, logistic, financing, tax, bookkeeping);

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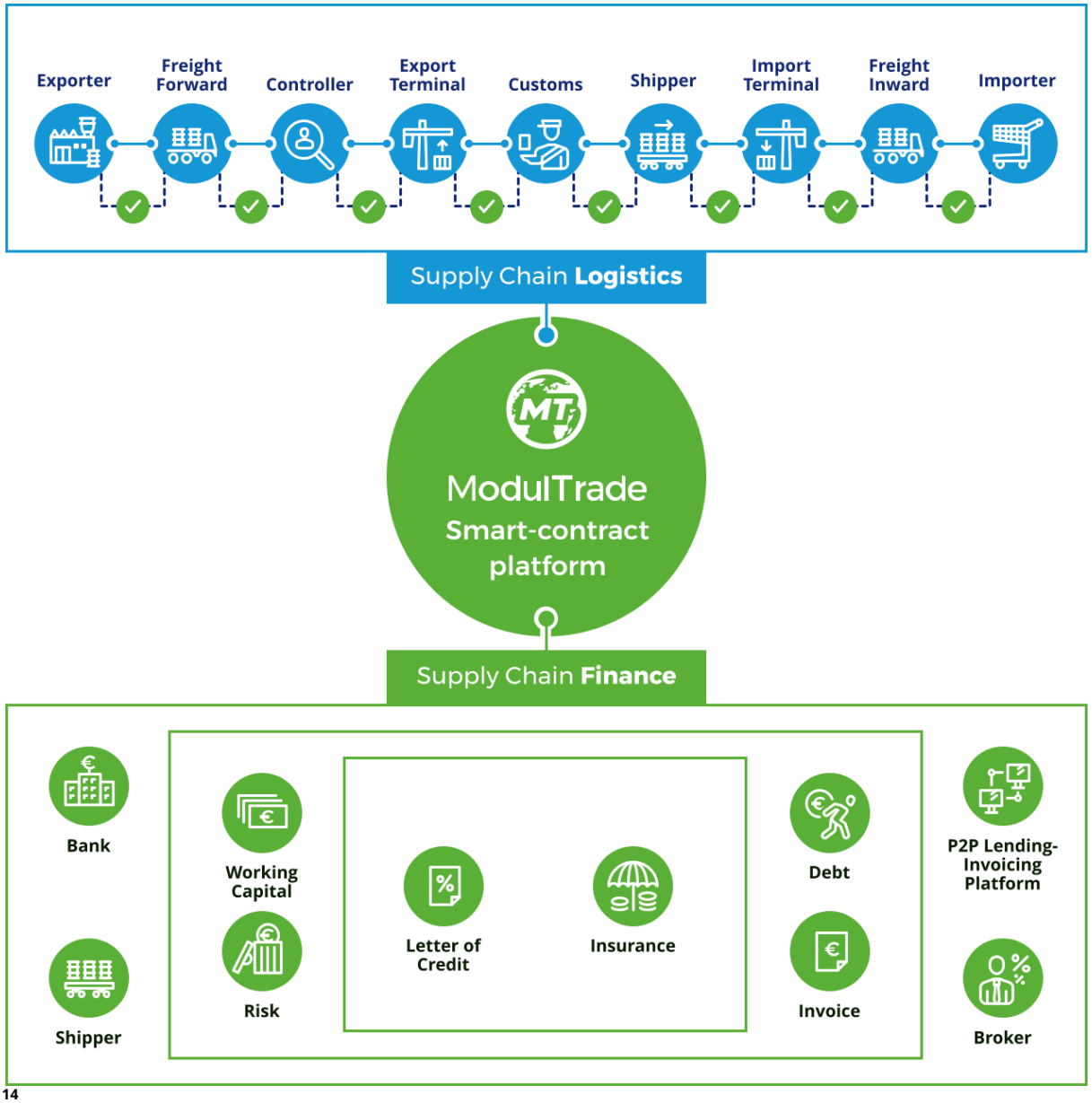
3. **Trade & Reputation network**: to facilitate monetary transactions of MVE participants within their reputation capital being a function of users reputable collaboration within the ecosystem;
4. **Marketplaces**: to find reliable counterparties globally and to make optimal choices of goods & prices.



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[14] https://www.linkedin.com/pulse/how-supply-chain-trade-finance-becomes-most-relevant-use-tabbakh

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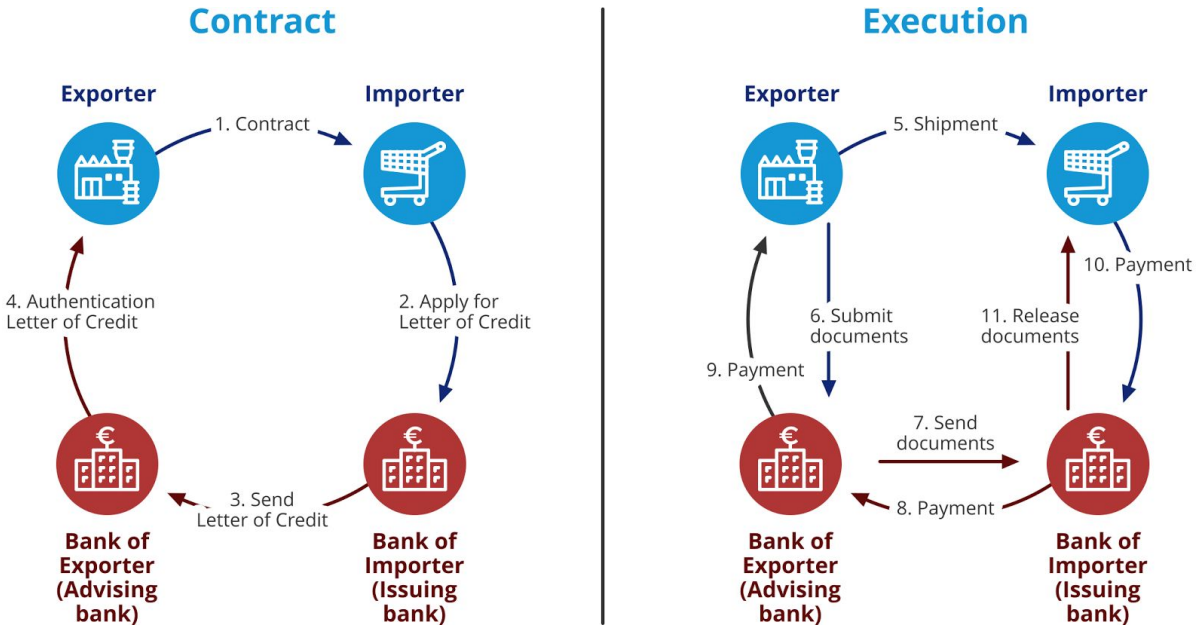
ModulTrade smart-contract platform (“MTP”) — the backbone of MVE

The main function of MTP will be to replicate banks’ trade finance instruments such as Letters of Credit (**LC**) and Bank Guarantees.

MTP will provide this functionality to MSMEs at a negligible price (cost of smart-contract execution on blockchain) if compared to 4-15% of the transaction amount charged by banks at the moment.

Current processes of B2B trade transaction based on Letter of Credit issued by banks



In this example of trade process banks provide trust into B2B trade cycle as a 3rd party with the “proven” reputation which community can trust. Banks guarantee that upon goods are delivered money will be paid to the Seller.

Banks take charge for providing Trust and for avoiding Manipulation.

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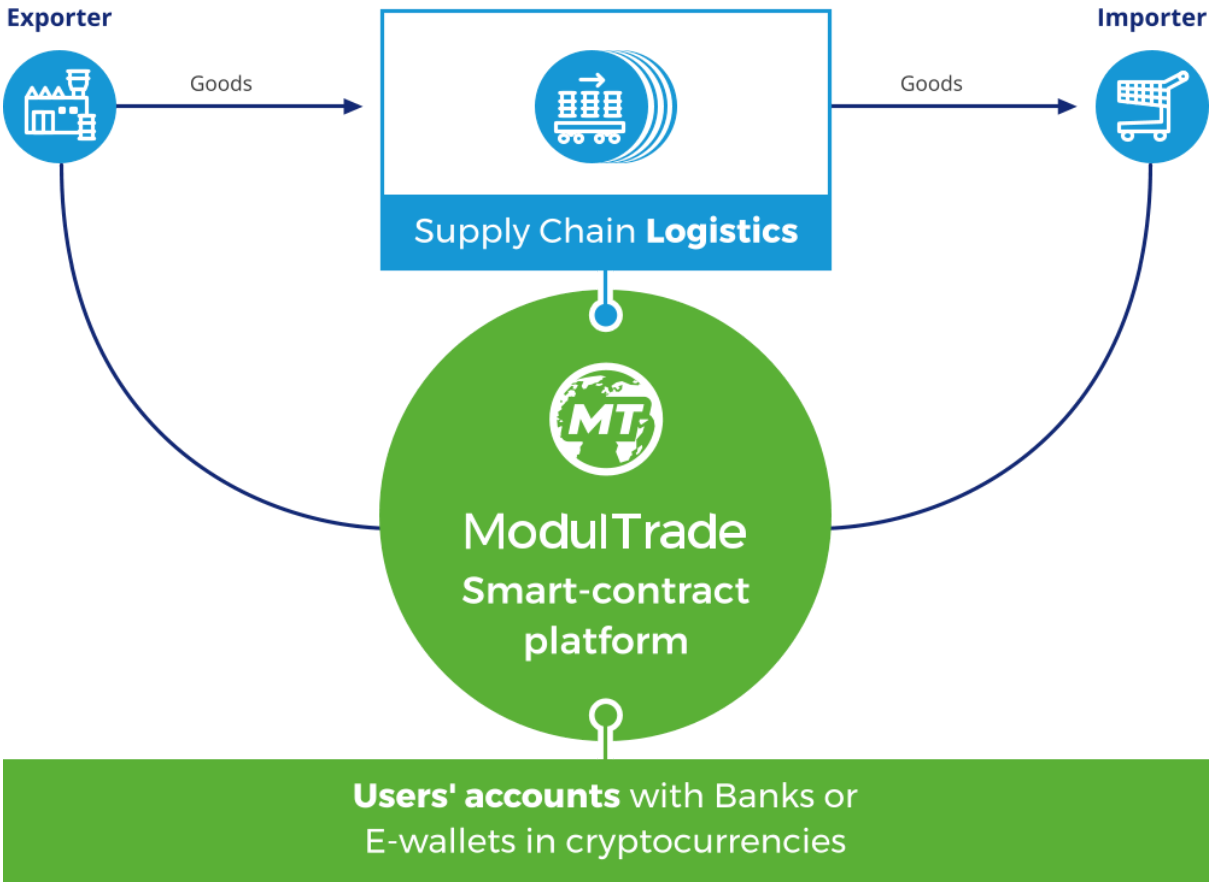
Trade process supported by MTP smart-contracts

***"Blockchain solves the problem of manipulation and trust."* — Vitalik Buterin, Moscow, 2016**



1. Buyer and Seller agrees on the trade and create a Smart-contract in the MTP
2. MTP blocks money on the Buyer's account to guarantee the payment upon delivery
   a. MTP instructs bank to reserve funds on the Buyer account/Credit card; OR
   b. MTP reserves funds in cryptocurrency within the smart-contract
3. The Seller sends goods via logistic company and submits Tracking number to MTP
4. Upon Buyer's receipt of goods, (Tracking delivery matches the address of the Buyer indicated in the Smart-contract) MTP instructs release of payment to the the Seller

Evolution of MTP

The next development stages will include integration of 3rd party service providers on **the level of active participants of the blockchain network forked by MVE**. This integration will include functional agents such as:

- Insurance providers
- Trade financing lenders
- Logistics and shipment providers

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The MTRc

The ModulTrade Crypto Token (MTRc), an ERC-20 token issued on Ethereum, is a key element of the new ModulTrade's B2B multi-sided platform, that enables its users to connect to the ModulTrade platform and its ecosystem and to effect transactions.

MTRc shall be a premined token that will be distributed only during the pre-sale and Tokens sale campaigns. Therefore, the number of MTRc tokens will be fixed starting end of November, 2017 which will be guaranteed by the token smart contract.

Demand for MTRc is expected to be driven by MVE and by ModulTrade network growth. The more trade transactions are carried out through the ModulTrade network, the more MTRc demand will increase, thus improving the trade flows served within MVE

THE MTRc WITHIN MVE		
Role	**Y/N**	**Features**
Value exchange	**Y**	❑ It enables to exchange value real-time, globally and in a cost-effective way
Currency	**Y**	❑ It is a payment and transaction unit within MVE
Function	**Y**	❑ It is the key to connect to the global trade network and to transact in MVE (all fees on trade contracts in Modultrade's platform will have to be paid in MTRc) ❑ It incentivizes MTSP usage and transacting within MVE
Toll	**Y**	❑ It will be used for charging usage fees for third parties' solution built around MTSP
Right / Earnings	**N**	❑ MTRcs give **no** rights in the company and do not represent participation (equity or otherwise)in the company.

Reputation Network & Reputation Capital

A Reputational Network will be formed within MVE on the basis of a network aggregating reputation capital of users across multiple forms of collaborative consumption within MVE.

- Reputation Capital is a quantitative measure of a user's reputational value in MVE delivered by ModulTrade's Reputation System, which represents a form of remuneration for the user's efforts, generating trust and respect within MVE.
- Users' Reputation Capital will drive the value of trade guarantee & financing line available in MTRc for each user provided by Reputational Network to the user to guarantee its obligations within trade transactions.
- Reputational Network will be initially formed and supported by ModulTrade and MTRc holders and users at a later stage.

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Trade guarantee & financing in MTRc

One of the main obstacles to participate in trade is the need for financing, both on sell and buy side. Globally, 56% of MSME trade finance proposals are rejected, compared to only 7% for multinational corporations.[15]

To facilitate trade transaction within MVE ModulTrade addresses the existing need of small enterprises' via Reputational Network. Funds and guarantees will be granted to MSMEs in MTRc on the base of their Reputational Capital for the period of up to 30 days.

Credit lines and related fees will be established on the reputation capital built by the enterprises (which in its turn is function of the network recommendations, as assessed by ModulTrade's Reputation System).

- every new user which got recommendations from 7 reputable established MVE participants.

The amount of credit lines will be a function of

- application order (according to the "first comers get more" principle)
- user's Reputation Capital

Every MTRc holder will be able to use Reputational Network infrastructure to provide MTRc for a fee to guarantee and finance the trade in MVE.

MTRc liquidity

To support MTRc liquidity and turnover within MVE ModulTrade will establish several levels infrastructure which will include

- Bancor protocol mechanism[16]
- MTRc exchange by ModulTrade
- MTRc placement with existing crypto-exchanges

Use of Bancor protocol will establish MTRc liquidity in advance to its appearance on crypto-exchanges.

[15] https://www.worldbank.org/en/topic/financialsector/brief/smes-finance
[16] https://www.bancor.network/static/bancor_protocol_whitepaper_en.pdf

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Technical description

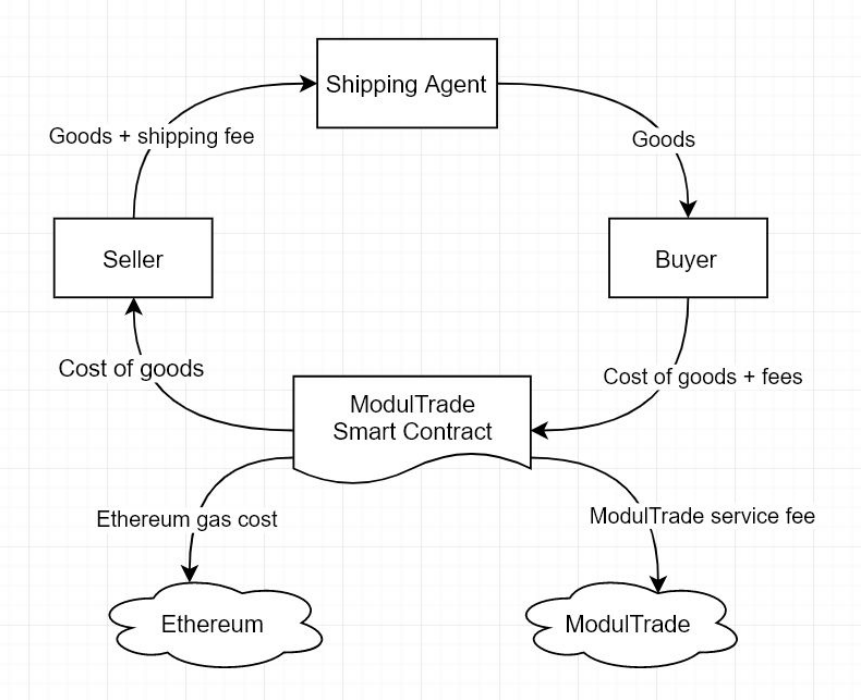
Technical concept of ModulTrade solution

A simplified Letter of Credit protocol

The purpose of a ModulTrade smart contract is to lock funds from a Buyer and release them to a Seller upon delivery of a Product to the Buyer.

The simplified workflow of the contract is as follows.

1) The Buyer deposits funds into the smart contract which acts as an escrow agent.
2) Funds are locked in the smart contract until release conditions are met.
3) Funds are released to the Seller upon successful delivery in a specified time horizon.
4) Funds are released to the Buyer if no delivery occurs in a specified time horizon.



In conditions when funds are blocked in a smart contract which acts as an escrow agent, the ultimate goal of the parties becomes to release the blocked funds from the contract to themselves as soon as they both agree that the trade has been successful. In this case, the ModulTrade smart contract plays a role of trusted middleman helping to eliminate a costly trust counterparty, traditionally, a bank or a marketplace agent. However, in the absence of a middleman, it is only the counterparties themselves who know if their interests have been respected. This brings a number of counterparty risks which should be handled accordingly. For example,

1) Deposit from the Buyer was received, the Shipping Agent received the product, but failed to deliver it to the Buyer on time or at all.
2) Deposit from the Buyer was received, but the Seller didn't send the product on time, didn't send it at all or sent a wrong product.
3) The Buyer claims that he or she received wrong/improper product while the Seller shipped the proper product.

Who should receive what if one of the above cases takes place due to an unintentional error or intentional fraud? Who decides on the fair outcome?

Initially, ModulTrade is going to mimic the logic of a letter of credit and its original trade contract will ensure that sellers are getting paid unless they continuously misbehave and their reputation slumps. Further, elaborate protocols based on mutual consensus outlined below will be added.

A family of consensus-based protocols

Generally speaking, it is only possible for the parties to withdraw funds from the contract when consensus about the fair payouts has been reached. Since only parties themselves know if their interests have been respected, it is them who should reach consensus. This process can naturally happen off-chain or on-chain, but the resolution always happens on-chain when both parties submit non-contradictory payout claims to the contract. If all parties behave honestly, they all will approve correct withdrawals to each other and the contract will terminate correctly and with zero balance. If one of the parties does not approve the fair withdrawal, applicable funds shall be locked until they reach an agreement. The parties are motivated to reach an agreement as they will lose more otherwise, because of the reputational deposits pledged as described below.

Such protocol acts both as incentive to behave honestly and as a deterrent for behaving unjustly. This protocol, however, does not resolve all potential misbehaviours and abuses. ModulTrade aims to resolve such cases by extending the protocol with reputational deposits which parties have to place depending on their reputation score. This will further incentivize fair behaviour of the parties.

With reputational deposit, the parties risk losing more if they behave dishonestly, while losing nothing otherwise. It is logical that some may regard reputational deposit as an unwanted, though temporary, burden. Specifically to mitigate this perception, on early stages, ModulTrade and its ecosystem partners are going to act as guarantors of trusted trade by offering parties an option to make reputation deposit for them for an agreed fee.

Technological scalability

ModulTrade solution is technologically scalable. Long-term platform scalability due to current technological constraints of Ethereum is an issue that can be addressed in several ways each of which is feasible, secure and realistic. In the event, the most appropriate method will be decided depending on the tests to be carried out together with pilot customers and first partners, as well as depending on the user growth rate after the first release.

One of the major current technological constraints of every Ethereum-based solution is scalability: at the moment (June 2017), Ethereum can handle from 7 to 13 transactions per second in case of relatively light smart contracts[17]. This is clearly a bottleneck for any application that aims at growing to a considerable number of transactions. There are certain approaches that ModulTrade can employ to handle this issue and we believe that scalability should not be regarded as a serious obstacle. Further we explain why.

In case of ModulTrade, two metrics matter most: a) the average number of transactions per second and b) the maximum reasonable latency between transactions of the same contract.

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[17] https://ethereum.stackexchange.com/questions/1034/how-many-transactions-can-the-network-handle
https://medium.com/@FEhrsam/scaling-ethereum-to-billions-of-users-f37d9f487db1

Transaction latency is not an issue for ModulTrade. The types of contracts that the platform is going to support typically allow up to 1 day latency. In future, when ModulTrade taps into markets and processes that require faster execution, latency requirements can potentially be raised to several hours, but unlikely to single minutes. This allows us to ease up platform requirements on the number of simultaneous transactions.

If we disregard for the moment MTRc trading on crypto-exchanges as this activity is external to the platform, we can use the following formula to estimate the average number of transaction per second.

Average TPS = users * contracts-per-user * transactions-per-contract / contract-life-time

Assuming:

- A target of 10mln users by year 10 that use ModulTrade platform on a regular basis (i.e. executing 1 contract per week on average).
- About 10 transactions (initiation, funds transfers, delivery status checks, insurance conditions check and so on) required per each contract on ModulTrade.
- Contract lifetime can be from 1 day to 2 weeks, i.e. roughly 1 week on average.
- Transactions uniformly distributed over time.

Then:

Average TPS = users * contracts-per-user * transactions-per-contract / contract-life-time
= 10mln * 1 contract per week * 10 transaction per contract / 1 week lifetime
= 10mln * 0.143 contracts per day * 10 transactions per contract / 7 days =
= ca 2mln transactions per day = ca 24 transactions per second

This TPS, estimated for a target of 10 mln active ModulTrade users in year 10, is more than what Ethereum supports today, although this current scalability bottleneck is expected to be resolved by Ethereum Community with a reasonable advance. Be it an increase in gas limit, migration to proof-of-stake or another improvement, it is vital for the mere existence of Ethereum as a smart contract platform.

Nevertheless, there are a couple of alternatives that ModulTrade is able to employ in case of exponential growth and without reliance on Ethereum. They are migration to another blockchain or, alternatively, bringing some less trust-critical parts of the smart contract execution off chain.

Migrating to another blockchain

The other blockchain could be either a more traditional private or public permissioned blockchain (e.g. Hyperledger) or blockchain-inspired technology such as Corda, or a new blockchain architecture with vertical and horizontal scaling such as EOS.

Depending on the chosen method, MTRc tokens might remain on Ethereum and a cross-chain gateway can be developed for interoperability. No hard fork of MTRc contract would be needed. However, if the chosen method would require transfer of MTRc funds from Ethereum to another blockchain (unlikely but theoretically possible event), a carefully defined, open and verifiable process will be used to transfer the funds and MTRc funds will continue belonging to their owners.

Bringing some parts of the smart contract off chain

Another alternative of addressing scalability problem is bringing certain less trust-critical parts of smart contract work flow off chain. For example, contract negotiation is the primary candidate to be off chain. Third party services such as insurance or risk hedging can be partially or completely off chain, or on another blockchain.

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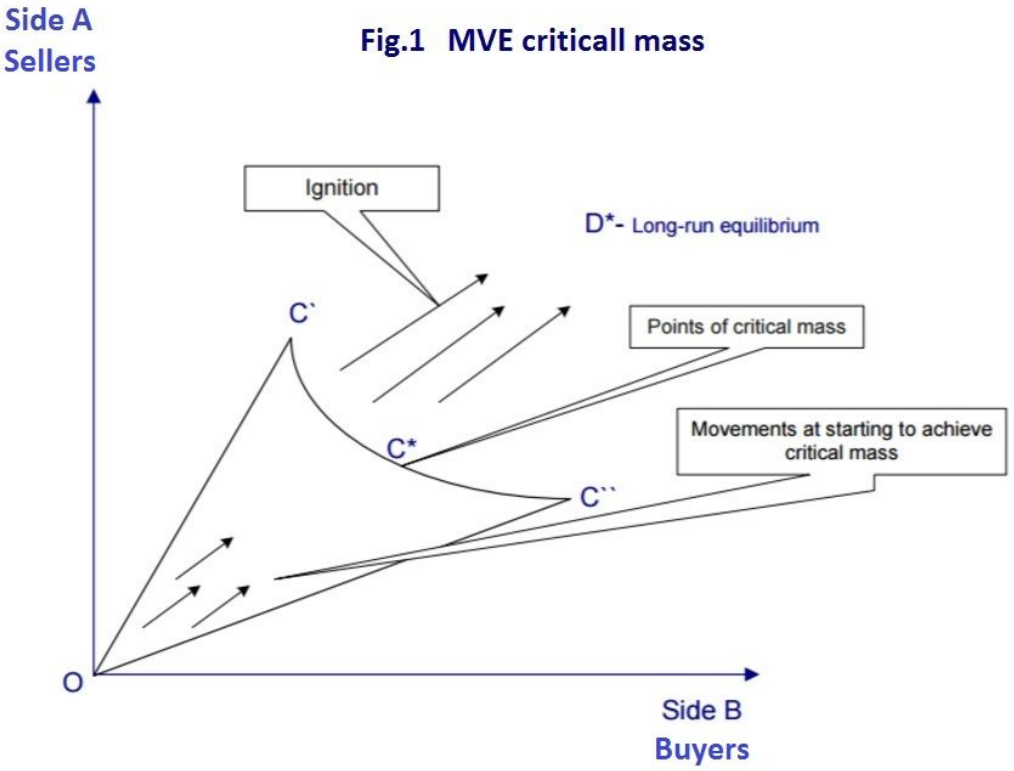
Critical mass of users will create a network effect in MVE

The priority goal of MVE network development for 2018-20 is to reach a critical mass[18] of users (figure "MVE critical mass" below) to create a network effect which will provide MVE a self-maintained growth to its profit-maximizing potential.

Fig.1 MVE criticall mass



On this way MVE evolution will pass two implementation stages

First implementation stage during Y2018-20

MT will target the most "network" connected and value adding elements (**VE** — Value elements) of MSMEs supply chains. Such element was identified in EU (initial ModulTrade market) being a **construction and related industry.**

MVE will onboard **70-100k constructors (Side B) i**n 3 geographies (total number 1-1,5m construction enterprises) from top 5 constructions countries in EU. And **2-3k suppliers (Side A)** to have an equilibrium of critical mass. That will represent 7-10% penetration in selected industry which is enough for a critical mass. These numbers are based on the **analysis detailed in ModulTrade Yellow paper** .

Two main clients approaches will be used to achieve the goals mentioned above

- **direct client onboarding in VE**
- **indirect client onboarding through partnership with 3rd party B2B marketplaces**

[18] According to the Catalytic Ignition and Critical Mass concept shown on Figure "MVE critical mass", there is a range of minimal number of customers in each group that, if achieved, provides a thick enough market or a sufficiently liquid market to permit sustainable growth. Once a catalyst achieves critical mass on C'-C", for example, it can grow to its profit-maximizing potential of D* in the long run.

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MVE will connect them to MTP functionality and MVE cross-border trade enablers such as logistic or financing. **Domestic 3rd party marketplace represents the target audience in this segment.**

	New Users acquired			- from them new Active Users		
Year	Direct onboarding	Indirect — 3rd party marketplaces	**Total (cumulative)**	Direct onboarding	Indirect — 3rd party marketplaces	**Total (cumulative)**
2018	900	216 000	**216 900**	450	10 800	**11 250**
2019	8 100	768 000	**776 100**	4 050	38 400	**42 450**
2020	20 100	1 248 000	**1 268 100**	10 050	62 400	**72 450**

This number of active clients will allow ModulTrade to generate positive cash-flow starting from the second year of its operations and to break-even during 2019-20.

Second implementation stage — Y2020+

Upon a critical mass at VE is achieved MVE will trigger expansion to other elements of Global Value Chains (GVC)

Network effect will allow to reduce CAC (Customer acquisition costs) as users will start to join MVE driven by the value they receive from the network when they join MVE. CAC at this stage will be mainly related to the technical scalability of MVE thus decreasing for each new client. While we expect ARPU (average return peruser) to be stable or increasing.

Growth scenarios

Scenario	Description
Wide acceptance (best case)	• **Exponential growth** of client base to its target of 30% MSMEs globally within 10 years
Steady growth (base case)	• **Step-by-step development,** 100-300k of new active customers per year within next 10 years
Low scale (worst case)	• **Slow growth** to 1.0M active customers within 10 years

MVE product offer for users

1. **Global presence through WEB** — every SME can become global by placing its products at ModulTrade enabled marketplaces
2. **Instrument for trade which provides trust**
    - Seller has guarantee of payment if proper goods are delivered to the Buyer
    - Buyer pays only if he receives proper goods

3. **Trade finance line in MTRc**
    - ModulTrade will open 0% credit lines in MTRc for all new users for financing trade transactions in MVE
4. **New payment option** — MTRc functionality does not require to have a bank account to start exchanging value
5. **Easy access to trade related services** — (logistics will be among the first ones) through connecting to integrated in MVE 3rd party service providers platform (DHL, UPS, ...)

MVE product value for 3rd party marketplaces

MVE will provide new value adding enablers which intensify users trade transactions thus leading to value increase of the marketplace. Customers of marketplaces will access full MTP functionalities including financing in MTRc, trade-related services and a Reputation Bank.

The proposal for partnering with B2B marketplaces is based on one of the examples of the transformation strategy of the leading european DIY chain – Kingfisher. It's proposed that largest construction supply chains undergo the same issues and face similar challenges.

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Extra use cases

A value ecosystem will be built around the MTRc and ModulTrade's blockchain-based platform, enabling third parties to connect and integrate their own fintech solutions into it, thus dramatically reducing their development and customer acquisition costs.

Examples of possible use cases include DTAM (i.e. a blockchain-based Digital Thread for Additive Manufacturing underpinning all the transactions occurring throughout the digital and physical life cycle for additive manufacturing), trade finance solutions based on IoT-generated data, supply chain digital tracking and food safety.

Digital Thread for Additive Manufacturing (DTAM) on MTP

Currently, organizations are looking to Additive Manufacturing (**AM**) in order to respond to their supply chain and manufacturing constraints. However, for AM processes to scale at the industrial level, a series of complex, connected, and data-driven events need to occur. A possible solution would be to build a digital thread of the AM process (**DTAM**), a single seamless strand of data that stretches from the initial design to the finished part, to optimize AM production capability, driving insights for continuous process and product optimization. Such a solution could be supported by ModulTrade's platform, which could easily fulfill the purposes of validating data for traceability and certification, protecting intellectual property assets and design files throughout all the phases of the AM process, which are:

- inception design & analysis of the digital model;
- building & monitoring (build simulation, part fabrication and per-part post-processing and finishing);
- test & validation (part inspection, data verification & twining); &
- delivery and management.

The DTAM service would be charged by ModulTrade as a fee in MTRc to the buyers of goods requiring the DTAM certification. The fees would then be accredited to the third party developer, minus a commission for the use of ModulTrade's platform.

An IoT solution for invoice factoring on MTP

ModulTrade's platform could enable the exchange in real time of IoT data related to the physical status of a commodity or a good between buyers, suppliers and other parties throughout the value chain. In this case, the blockchain-based platform could help infuse trust into the data exchange, ensuring the authenticity of the exchanged data, and it could also provide an audit trail, facilitating the resolution of disputes that may arise much more efficiently.

For instance, a third party could develop on ModulTrade's platform an IoT-based invoice factoring solution aimed at determining whether the funds for a transaction should be released.

In the front end, the solution could take the shape of an extension and be integrated in ModulTrade's platform. In this way, sellers on ModulTrade platform could conveniently select the most appropriate invoice financing and insurance options, simulating in advance their economic effects under several scenarios.

In the proposed example, the IoT invoice financing service would be charged by ModulTrade as a fee in MTRc to the factoring and/or insurance company upon the seller's request of such services. The fees would then be accredited to the third party developer, minus a commission for the use of ModulTrade's platform.

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Token launch

Distribution plan

There will be a limited supply of 100 million MTRc in total. Part of it will be distributed through Pre-sale and Token sale in 2017-2018.

- up to 10,000,000 tokens will be distributed during the **Pre-sale**.
- up to 20,000,000 tokens will be distributed during the **Token Sale**.

No more MTRc distribution will be done after the Token Sale ends.

The price of MTRc is set as follows:

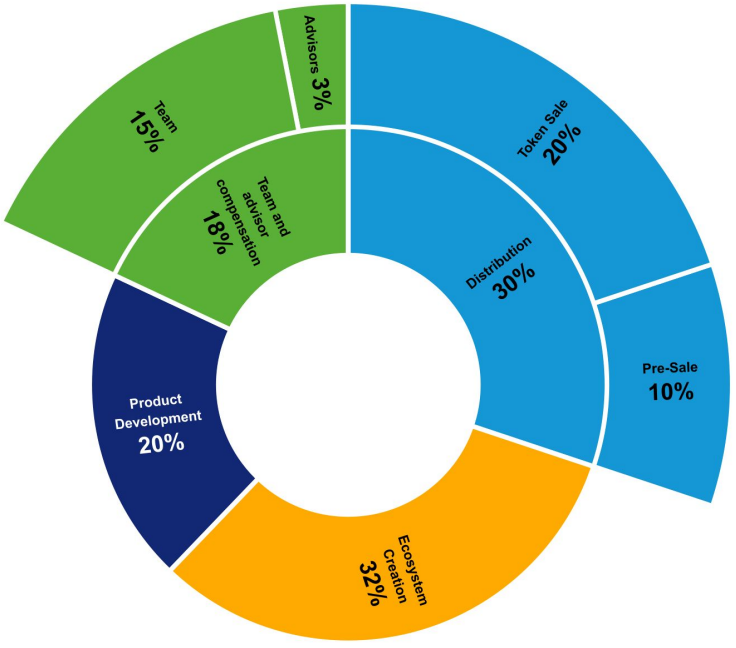
Token price: 1MTRc = 1ETH/700

During the sale period the following pricing mechanism will be applied:

Stage		Tiered Discount	# of tokens sold	# of tokens sold aggregate
Pre-sale		30%	10,000,000	10,000,000
Token sale	Phase 1	25%	1,000,000	11,000,000
	Phase 2	15%	3,000,000	14,000,000
	Phase 3	10%	5,000,000	19,000,000
	Phase 4	0%	11,000,000	30,000,000

The number of tokens allocated to each subscriber will be determined at the end of the Token sale period.

During the Token sale MTRc tokens will be distributed in the following way: Distribution 30% (Pre-sale-10%, Token sale 20%); Product development 20%; Ecosystem creation 32%; Team 15% (**5% will be distributed within 6 months after the Token sale is finished, 5% will be released after the 1st year, 5% — after the 2nd year**); Advisory 3%.



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Use of the proceeds

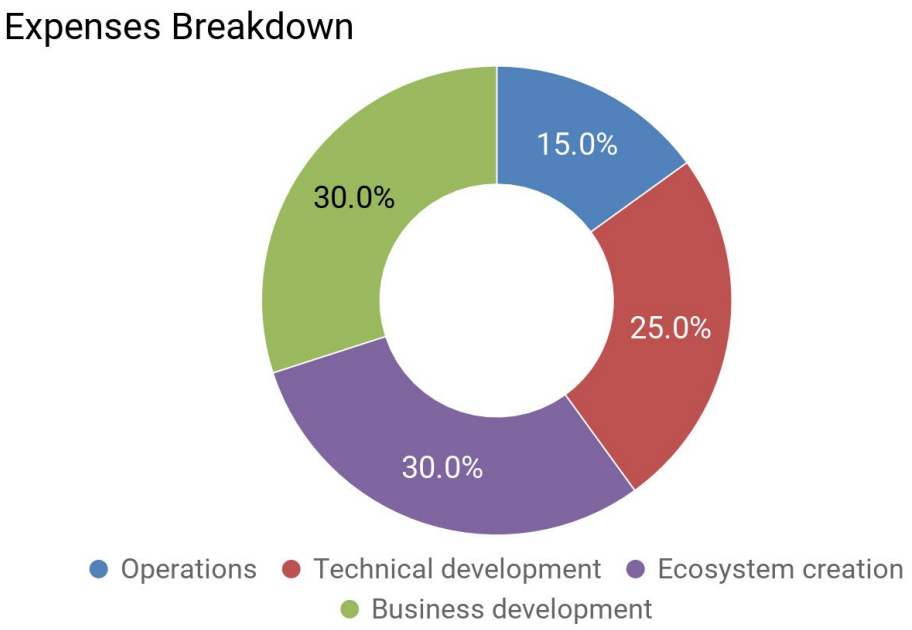
The proceeds collected during Token sale[19] will be invested in developing the Modultrade project in the following way:

Assumptions of Funding amount	Technical development	Ecosystem creation	Geographical expansion
If Token sale is made at the Floor amount : 5m MTRc	MVP development Simple bilateral smart contracts Payments in MTRc and cryptos Support for major actors in the ecosystem as passive agents	- Trade & Reputational bank in MTRc for a limited number of targeted clients - main 3 rd party integration (logistics & financing)	3 EU countries
If Token sale is 10m MTRc, +5m	All of the above + Advanced unilateral smart contracts with select counterparties Payments in fiats	+ 3rd party services: insurance, tax & accounting support	+ 3 emerging market Europe
If Token sale is 20m MTRc, +10k	All of the above + Smart contracts with advanced support of local legislations Support for major actors in the ecosystem as active agents	+ 3rd party services: payments, custom support, storage + Trade finance support in MTRc for emerging markets	+ 3 markets in Asia
If Token sale is over 30m MTRc, +10k	All of the above + Development of dedicated ModulTrade marketplace with all supportive administrative and financing features	+ Trade finance support in MTRc for all users with positive credit rating	Global cover + all EU countries + Main Asian markets including Japan + India + China + USA

The Token sale floor and cap amounts in Pre-sale and Token sale were defined based on investment needs.

- **The floor amount corresponds to the development of the Modultrade platform which will be fully operational but geographically developed in 3 countries.**
- **The Cap amount is based on different scenarios linked to MVE development timeline and corresponds to the full development of the Modultrade platform, including additional features and with a Global geographical development.**

[19] To manage FX risk Funds collected during Token sale could be allocated in different currencies to hedge future expenditures for MVE development (EUR, USD, GB, Bitcoin, Basket of pre-selected cryptocurrency).



Organization

- **Subscriptions will be made through ModulTrade's web sit - https://en.modultrade.io/**
- **Participation can be made in ETH & BTC & LA & fiat currencies**

During the subscription period, if the cap amount is reached, the Token sale will be closed and no new participation will be permitted.

Once the subscription period is over, the number of tokens allocated to each subscriber will be defined as follows :

- The total amount collected will be calculated in ETH.
- The number of tokens received by each subscriber will be defined by dividing the subscriber's participation amount by the token price with relevant discount.

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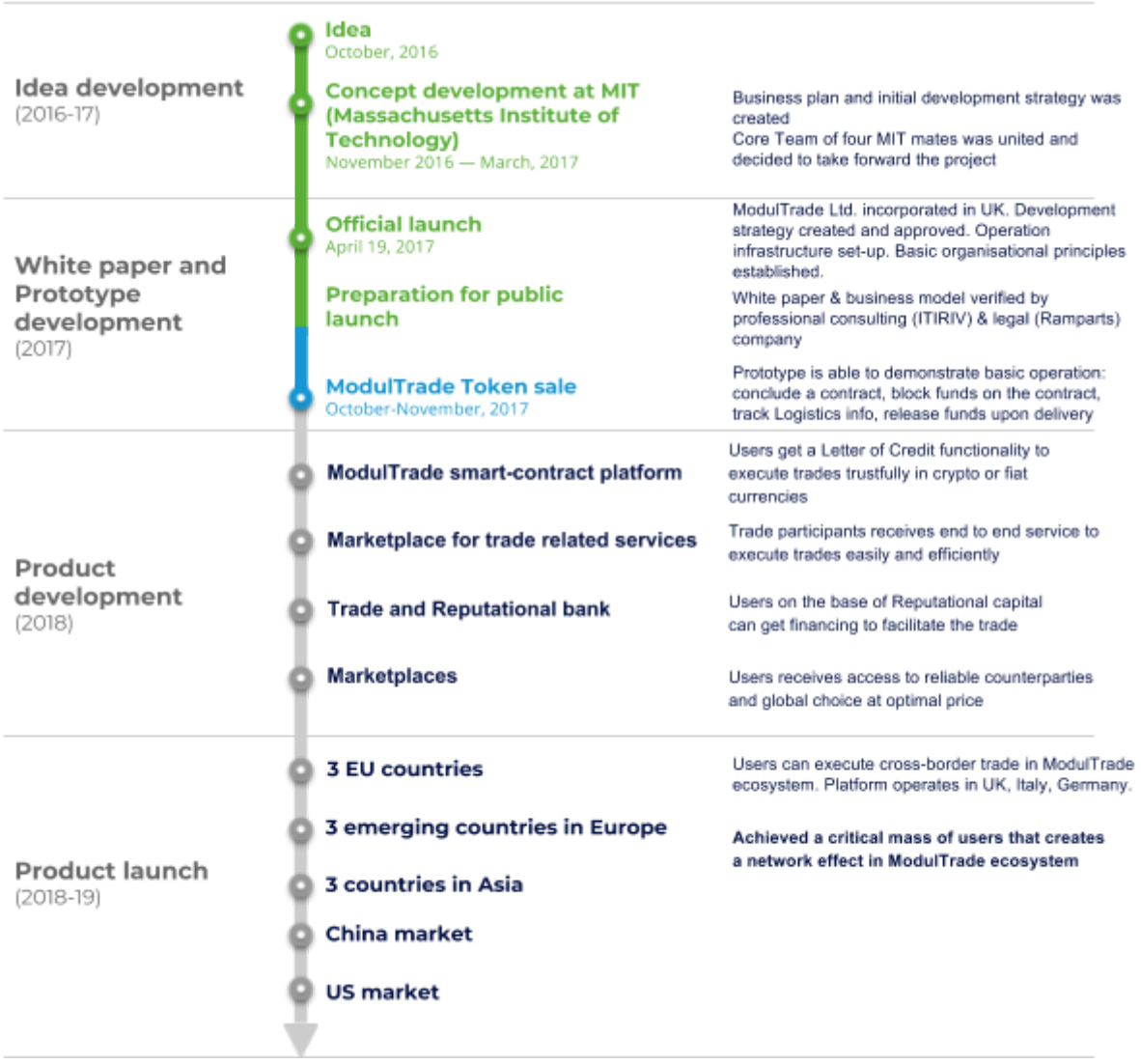
Roadmap

Modultrade is the result of a team collaboration. The 4 MIT team mate founders decided to move forward on the original idea of trade finance. This decision gave birth to Modultrade in April 2017. In the meantime, a team of talented and highly skilled professionals joined the startup and contributed, with the founders, in shaping the vision and putting together founding documents and prototype to move ahead with the idea.



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Governance & Safeguarding

The ModulTrade team takes the safeguarding of all participant contributions seriously and has taken the following steps in order to ensure the best possible governance of its Token Sale and business going forward.

Professional Consulting and Legal support of the Token sale

From the outset, ModulTrade engaged **Ramparts European Law Firm, an independent law firm based in Gibraltar and ITIRIV, consultants in The Token Sale space** in order to ensure that the concept of the Token Sale was performed under the best possible governance.

Token sale

- **An audit of the Token sale process by independent audit organization will be carried out** prior to the Token sale. This independent audit organization will also review the process during the Token sale and validate it.
- **An independent supervisor will be appointed to validate that development expenses linked to Token sale funds are in line with the plan**. The quarterly reporting issued on Modultrade.com will include a status on expenses based on Token sale funds and a status on technical and geographical Modultrade development.

MTRc

- **No more MTRc token will be created after Token sale.**
- **An MTRc committee will analyze the MTRc utilization and will provide recommendations to the community for further MTRc development**. As the MTRc is needed to trade on MT platform, its usage on the platform will be closely monitored.
- A **quarterly reporting** on MTRc rate and MTRc utilization will be published on MT website.

Project

- **Project reporting system**:periodic internal and external reports on the project status (the monthly external reports will be published on the Company's website).
- **ERM (Enterprise Risk Management) framework**: to identify, monitor and manage the key project risk factors (business and operational) and to assess the sustainability of the adopted strategies.
- **Strategic Advisory Board** to set project guidelines and controls.

ITIRIV have worked with ModulTrade Team in order to establish the following:

Suitability, Establishment and Compliance procedures for ModulTrade and the token sale • determining the suitability of ModulTrade business using blockchain• Determining the appropriate jurisdiction for the token sale.

Creating the token sale proposition• white paper (guidance and approval)• business plan with milestones and technology build program schedule• Project management of token issuance in conjunction with The ModulTrade technical team

Joint coordination of Announcement, Pre-sale and Launch of Token Sale• drawdown on token/coin value raised based on a milestone commitment in Charter of the token sale company (TSC)• Marketing advice in order to ensure that The Token Sale falls out of scope of securities regulation.

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Jurisdiction & The Gibraltar Token Sale Company (TSC)

Working with Ramparts European Law Firm ModulTrade team has determined that Gibraltar is the ideal jurisdiction for it's Token Sale. Gibraltar was selected due to its international reputation as a rock solid place in order to protect the funds of both participants and Token Sale distributors in addition to the jurisdictions' progressive stance on cryptocurrency and its regulation (Gibraltar plans to regulate Distributable Ledger Technology as of 1 January 2018)

ModulTrade has formed a special purpose vehicle for the purpose of the token sale - The Token Sale Company (TSC) which will be the holder of the funds raised in pre-sale and Token sale.

Multi Signature Wallet

Participants in The MTRc token sale will send their funds to a secure, audited multi signature wallet, which shall be controlled by a suitably qualified entity that shall ensure that funds are only drawn down in accordance with the procedure agreed prior to the Token sale.

Cyber Security

The ModulTrade Token Sale Page and all other pages owned by ModulTrade or its partner organisations have been fully audited by a top cyber security professional in order to reduce risks.

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Conclusion

The blockchain has laid the foundations for disrupting the trade finance industry, streamlining a daunting process and providing MSMEs access to global trade in an easier and trustful way. ModulTrade is seizing this opportunity by **eliminating the traditional barriers for entry in the global trade with the creation of a value ecosystem**.

Leveraging on a **smart-contract blockchain-based B2B multi-sided platform (MSP):**

- 400 mln micro, small and medium enterprises (MSME) will be able to meet, commit and execute trade globally easily, trustfully and efficiently, thus increasing their revenues and reducing the costs of global trading;
- third-party developers / service providers will be able to gain access to a wide target of users / clients, while reducing development and user acquisition costs.

One of the key elements of the new MSP is the ModulTrade Crypto Token (MTRc), a token based on Ethereum, which will be used as a key for the users to connect to the global trade network and **to transact in the ModulTrade's Value Ecosystem (MVE).** The MTRc will:

- enable its participants to exchange value real-time, globally and in a cost-effective way;
- help support third parties' applications, thus releasing the full potential of MVE and ultimately democratizing global commerce.

ModulTrade will contribute to the growth of this value ecosystem by acting as a fully integrated end-to-end B2B marketplace, by increasing the presence of third-party developers and service providers and by reaching a critical mass of users for the most relevant market segments.

ModulTrade aspires to access a huge potential market (400m MSMEs & ≈$6.7 Tn turnover by 2020) through the network and technology, which will help to reinvent the global trade.

- MSMEs will find new and easy ways to transfer goods and services, reshaping their value chains, thus increasing revenues and saving time, transaction costs, replacement costs and the cost of risk in an unprecedented way.
- When adopted the MTRc will serve the unbanked in the emerging markets.

Joining ModulTrade and the MTRc will democratize global trade!

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Disclaimers

Financial

MTRcs are tokens in ModulTrade's blockchain-based platform and value ecosystem.

They are not refundable, nor are they securities or for speculation. There is no promise of future performance. There is no suggestion or promise that MTRc has or will hold a particular value. MTRcs give no rights in the company and do not represent participation in the company. MTRcs are sold as a functional utility. Any value received by company may be spent without conditions. MTRcs are meant only for experts in cryptographic tokens and blockchain-based software systems.

Legal

The purpose of this White Paper is to present the ModulTrade's project to the potential participants in the crypto token (MTRc), in connection with the proposed Token Launch. The information set forth below may not be exhaustive and does not imply any elements of a contractual relationship. Its sole purpose is to provide relevant and reasonable information to potential token participants in order to help them determine whether to undertake a thorough analysis of the company with the intent of acquiring MTRc tokens.

Nothing in this White Paper shall be deemed to constitute a prospectus of any sort or a solicitation for investment, nor does it in any way pertain to an offering or a solicitation of an offer to buy any securities in any jurisdiction. This document is not composed in accordance with, and is not subject to, laws or regulations of any jurisdiction which are designed to protect participants.

Certain statements, estimates and financial information contained in this White Paper constitute forward-looking statements or information. Such forward-looking statements or information involve known and unknown risks and uncertainties which may cause actual events or results to differ materially from the estimates or the results implied or expressed in such forward-looking statements.

This English language White Paper is the primary official source of information about the MTRc Token Launch. The information contained herein may from time to time be translated into other languages or used in the course of written or verbal communications with existing and prospective customers, partners etc. In the course of such translation or communication some of the information contained herein may be lost, corrupted, or misrepresented. The accuracy of such alternative communications cannot be guaranteed. In the event of any conflicts or inconsistencies between such translations and communications and this official English language White Paper, the provisions of this English language original document shall prevail.

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Definitions

- **API —** Application programming interface.
- **ARPU -** average return per user
- **B2B —** Business to Business.
- **Blockchain —** originally block chain – is a distributed database that is used to maintain a continuously growing list of records, called blocks.
- **CAC —** Customer acquisition costs.
- **Critical mass —** According to the Catalytic Ignition and Critical Mass concept shown on Figure 1, there is a range of minimal number of customers in each group that, if achieved, provides a thick enough market or a sufficiently liquid market to permit sustainable growth. Once a catalyst achieves critical mass on C'-C", for example, it can grow to its profit-maximizing potential of D* in the long run.
- **DTAM —** Digital Thread for Additive Manufacturing.
- **E-commerce —** Electronic commerce.
- **Fintech —** Financial technology.
- **GVC —** Global Value Chains.
- **IoT —** Internet of things.
- **LC** — Letter of Credit.
- **MIT** — Massachusetts Institute of Technology.
- **ModulTrade's Reputation System —** program allowing users to rate each other within MVE, in order to build trust through reputation.
- **ModulTrade Project —** Project for building a value ecosystem for global trade (the MVE), based on a multi-sided, blockchain-based smart-contract platform (the MTP).
- **MVE —** ModulTrade value ecosystem.
- **MT** — ModulTrade.
- **MTP —** ModulTrade blockchain based smart-contract platform.
- **MTRc —** ModulTrade Crypto Token.
- **MSME —** micro, small and medium enterprises;
- **MSP** — Multi-sided platform.
- **PSD2** — Revised Payment Service Directive
- **Smart-contract —** are computer protocols intended to facilitate, verify, or enforce the negotiation or performance of a contract.
- **Smart-contract platform —** it replicates traditional trade finance instruments (Letter of credit and bank guarantee) and allows MSME to establish trust in their trade agreements.
- **SMEs —** Small and medium-sized enterprises.
- **Users —** means MVE participants — micro, small and medium enterprises who buy and sell goods and services in their day to day business activity.
- **VE —** Value elements.