

Moeda's Global Ecosystem for Financial Inclusion and Sustainable Development Growth

Section 1: Summary

Use Case Summary			
Use Case ID:	FIN-007	Use Case Type:	<i>Horizontal</i>
Submission Date:	March 3, 2019	Is Use Case supporting SDGs	<i>Yes</i>
Use Case Title:	Moeda's Global Ecosystem for Financial Inclusion and Sustainable Development Growth	Domain:	Cross-domains: Finance, Industries, Government and Public Sector, Identity Management, Security Management, Data Processing, Storage and Management
Status of Case	<i>Operating</i>	Sub-Domain	<i>Finance (Financial management & Accounting, International and Interbank Payments, Clearing and Settlement, Reduction of Fraud, Asset Lifecycles and History, Trade Finance, Regulatory and Compliance, AML/KYC, peer-to-peer transactions) Industries (Manufacturing, Supply chain Management, Agriculture) Government and public sector (Government and non-profit transparency, legislation, compliance and regulatory) Identity Management, Security Management, Data Processing Storage and Management</i>
Contact information of person submitting/ managing the use-case	<i>Taynaah Reis</i> <i>taynaah@moeda.in</i> <i>@taynaahreis</i> <i>President and CEO</i> <i>+1 347 8229423</i> <i>www.moedaseeds.com</i>		
Proposing Organization	Moeda Semente Brasil – Desenvolvimento de Software e Serviços Financeiros S/A CNPJ 30.669.919/0001-33		
Short Description	<i>Moeda is an ecosystem of companies (Fintech, Accelerator, Crypto Exchange, Marketplace and BLOC Impact Fund Ventures) that uses blockchain technology to revolutionize finance by connecting mission-driven investors with community-owned enterprises and providing the means for alternative financing, knowledge, resource exchange, and collective action.</i>		

<p>Long description</p>	<p><i>Moeda's ecosystem of companies (Fintech, Accelerator, Crypto Exchange, Marketplace and BLOC Impact Fund Ventures) is effectively leapfrogging some of the most common challenges such as: lack of transparency, a preponderance of middlemen, and inefficiency.</i></p> <p><i>The system's architecture design through Blockchain allows the creation of trustworthy, immutable records, as well as cost-saving tackling social problems through innovative and scalable solutions in a secure way around the globe to achieve sustainable development.</i></p> <p><i>Moeda's ecosystem removes three key barriers that have plagued effective public financing of the Sustainable Development Goals (SDGs)</i></p> <p><i>. Insufficient Transparency</i> <i>Impact lenders have little visibility into sustainable investments. This makes it risky to manage a large portfolio because there's no way to see where the money is going.</i></p> <p><i>. Insufficient Access to Capital</i> <i>Due to the lack of transparency, borrowers have limited options for investment. Moeda gives borrowers a way to establish reputation, document project status, and to collaborate with others in the community.</i></p> <p><i>. Investment Bias</i> <i>Statistics have shown that investors have a gender bias against women-led projects, despite having historically higher success ratios and repayment rates than projects run by men. Brazil has the largest gap, whereby 45 percent of women-owned SMEs identify access to finance as a major constraint in operating and growing their businesses.</i></p> <p><i>In August 2017, Moeda raised US\$ 20 million in an Initial Coin Offering (ICO) and its proprietary digital token, the MDA, has been listed on several exchanges including Binance, one of the largest in the world. Until today, Moeda has deployed over R\$ 4.7 million in impact investments that supports 7.500 direct beneficiaries.</i></p> <p><i>In March 2019, Moeda has created BLOC, alongside Bamboo Capital Partners ("Bamboo"), an impact investing platform, the Government of Togo and Smart Africa, a bold and innovative commitment from African Heads of State and Government to accelerate sustainable socioeconomic development on the continent, ushering Africa into a knowledge economy through affordable access to Broadband and usage of Information and Communications Technologies. The Smart Africa Alliance has since grown to include</i></p> <p><i>BLOC is the first impact fund in the world which uses blended finance to exclusively invest in companies that use new technologies, in particular blockchain, to benefit the low- and middle income populations in emerging markets.</i></p> <p><i>It demonstrates the joined ambition from public and private investors to tackle social and environmental challenges, leveraging innovative business models</i></p>
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	<p><i>leapfrogging emerging markets and poverty. The Fund allocation of €100 million from a combination of public and private sector investors will focus on five key sectors: energy, education, financial inclusion and healthcare. Bamboo Capital is asset manager of BLOC Fund ventures in Luxembourg and Moeda's technology expertise provides investors on Bloc Fund Ventures full traceability of their investments. It is innovative because accepts investment in both hard currencies (EUR, USD) and cryptocurrencies (MDA, MDAB), using a KYC platform to convert the latter into either EUR or USD..</i></p>		
SDG in Focus (when applicable)	<p><i>Our initial focus are 6 of the Sustainable Development Goals – 1. No Poverty, 2. Zero Hunger 5. Gender Equality, 13. Climate Action 10. Reducing Inequalities and 17. Partnerships for the Goals.</i></p>		
Value Transfer:	<p><i>Assets, Tokens (cryptocurrency public traded MDA, stable/reserves coins MDABRL, MDAUSD, MDAEURO, debenture coin MDADIB, loyalty/rewards coins MDAB, MDALOYAL, MDAX)</i></p>	Number of Users:	100.000+
Types of Users:	<p><i>Borrowers (Individuals, Entrepreneurs, SME's, Cooperatives) Investors (Individuals, Private Institutions and Impact Funds, Financial Institutions Agencies, Government and Public Sector), International Development Organizations and Research Academic Institutions</i></p>		
Stakeholders	<p><i>Borrowers (Individuals, Entrepreneurs, SME's, Cooperatives) Investors (Individuals, Private Institutions and Impact Funds, Financial Institutions Agencies, Government and Public Sector)</i></p>		
Data:	<p><i>Types of Data: Attributes to ID and Authentication, Payment Transactions (Wallet Account, Balance, Transfer, Exchange, Swype, Split) Documentation (Projects Accountability, Supply chain, Wiki)</i></p> <p><i>Moeda Impact Ecosystem Platforms Hybrid Architecture Infrastructure</i></p> <p><i>The Moeda Impact Ecosystem Platforms are a combination of software programs built on four blockchain protocols, i.e. Hyperledger, Stellar network, Ethereum and the Binance Chain protocol and Moeda's API legacy systems.</i></p> <p><i>Moeda has built a partnership with IBM and DACS (Digital Asset Custody Services) and leverages IBM's LinuxOne servers and Crypto Express6S HSMs to provide the strongest possible security environment. Crypto Express6S is the highest commercially rated HSM in the world (FIPS 140-2 Level 4). Private keys are always encrypted and cannot be extracted or imported.</i></p> <p><i>All on-chain data related to Moeda's Platforms token transactions are kept private, such as documentation related to identity and authentication, confidential contracts and other agreements with sensitive information are managed through Hyperledger Fabric. Users retain sole custody of their</i></p>		

private keys throughout the transaction process, this gives full control to investors over their own funds without having to rely on an exchange.

Stellar network performs as a gateway for Fiat-Crypto transactions on Moeda's platforms. Stellar network allows easy and fast conversions of almost any fiat currencies into MDA-Fiat cryptocurrencies. Also it supports smart contracts which will ensure the whole Moeda's platforms to run smoothly.

On the other hand, in order to bring more scalability, decentralization and security to the software and more liquidity to token holders, Crypto-Crypto transactions on Moeda's platforms happen on Binance chain.

At Moeda's platforms, interchain swap tools and protocols were developed in conjunction with other transaction performance-enhancing tools both on Binance chain and Stellar network.

Moeda cryptocurrencies (stable/reserves coins MDABRL, MDAUSD, MDAEURO, debenture coin MDADIB, loyalty/rewards coins MDAB, MDALOYAL, MDAX) are deployed on both Stellar network and Binance chain. The tokens on Stellar network function as the actual utility tokens, while those on Binance chain can be exchanged with other cryptocurrencies. The token ownerships on both Stellar network and Binance chain are synchronized on a real-time basis thanks to interchain swap technologies.

Moeda's BLOC Impact Fund Ventures Investment Platform

The Moeda's BLOC platform aims to provide high quality and standardized impact fund service where investors have the opportunity to invest in top impact funds, not only to obtain considerable returns, but also to create global social benefits. The platform is joining forces with a number of well-known fund institutions to launch multiple funds, including Bamboo Capital, UNDP, etc.

Moeda's BLOC Platform aggregates liquidity across token exchanges by treating the entire landscape as a potential reserve. Bloc reserves provide a supply and demand of various tokens that are readily available to be executed based on the reserve's quoted buy and sell prices for that token. These reserves are created by on-chain smart contracts (Moeda's Chain) that enforce the trade execution and settlement process. The trade price is also programmatically determined by a smart contract. The reserve model enables Bloc users to enter trades more easily given that the supply and demand sides have fixed terms and are readily available to trade upon those terms. This removes the potential friction involved in discovering counterparties and negotiating.

Automated order filling

With an automated order filling Bloc Reserve Managers feed dynamic exchange rates into the Moeda's smart contract and orders are filled at the current exchange rate, an algorithm will match orders automatically. Automated order

	<p><i>filling reduces the amount of user time and effort needed to identify suitable trades, thereby reducing order filling latency.</i></p> <p><i>Moeda's BLOC Transaction Settlement</i></p> <p><i>On-chain settlement helps users publicly verify on the ledger that their trades were settled according to their desired terms.</i></p> <p><i>Moeda's BLOC Consensus</i></p> <p><i>Bloc has a flexible governance model MDAB-weighted delegated voting system where voting power is directly proportional to the amount of MDAB you have. Validator will be able to choose to stake its own token into the smart contract. Any holder of the MDAB token will have the option of proxying the held MDAB token to some Validator Node for Staking.</i></p> <p><i>Moeda's API (Legacy Systems)</i></p> <p><i>MOEDA API</i></p> <p><i>The MOEDA API is hosted on Microsoft Azure and deployed using Docker containers, which give us increased confidence that our development, staging, and production environments are consistent.</i></p> <p><i>MOEDA API microservices architecture consists of a collection of autonomous services: Authentication, Wallet, Exchange and Projects. Each service module is self-contained and implements a single business capability. Microservices are a popular architectural style for building applications that are resilient, highly scalable, independently deployable, and able to evolve quickly.</i></p> <p><i>The services are deployed independently. A team can update an existing service without rebuilding and redeploying the entire application.</i></p> <p><i>The Services are responsible for persisting their own data or external state. This differs from the traditional model, where a separate data layer handles data persistence.</i></p> <p><i>The Services communicate with each other by using well-defined APIs. Internal implementation details of each service are hidden from other services.</i></p> <p><i>MOEDA's API Languages and Tools</i></p> <p><i>The MOEDA API and Frontend are both built using JavaScript. We use next-generation JavaScript through Babel to take advantage of improved language features such as async/await and modules. All tests are built using Jest. The frontend integrates with the API using Apollo's GraphQL Client. The application data is stored within a PostgreSQL database, also hosted by Azure.</i></p>
Identification:	<i>Moeda's Identity Blockchain and Legacy Systems Inter-operability</i>

	<p>Authentication API</p> <p><i>In the Authorization API all the information is secured by a token present in each requisition. All the requisitions are logged and the given token is discarded after used. A new one is generated after each requisition.</i></p> <p><i>A hash is designed to act as a one-way function: A mathematical operation that turns readable data into a scrambled cipher and cannot be reversed. In cryptography, a salt is random data that is used as an additional input to a one-way function that "hashes" the password.</i></p> <p><i>The user's login password is not saved. Instead, in the database is saved the resulting mathematical operation of the password mixed with the salt, guarantying the user's privacy.</i></p> <p><i>When a new account is created, an configurable e-mail and a SMS is sent with a random unique code to confirm the user ownership and block robots.</i></p> <p><i>The user's account balances are not stored in a local database, they are retrieved live from the blockchain real network.</i></p> <p>Moeda's Wallet API</p> <p><i>In Moeda's Wallet, the private key is automatically generated whenever a new user is created. This key is then encrypted using script algorithm and each information needed to decrypt this private is stored in separated servers. The raw private key is not stored anywhere.</i></p> <p><i>The address, as said, is generated from the public key and the public key is generated from the private key, so, indirectly, the address is generated from the private key. As the own name suggest, the public key can be publicly distributed, as it is possible to recover the private key with this information.</i></p>
<p>Predicted Outcomes:</p>	<p><i>For Investors (Individuals, Private Institutions and Impact Funds, Financial Institutions Agencies, Government and Public Sector):</i></p> <ul style="list-style-type: none"> <i>• Access to SDG-aligned investment portfolio opportunities</i> <i>• Greater transparency into SDG-aligned Impact Investments</i> <i>• Trust of cryptographically assured blockchain records and contracts</i> <i>• Increased auditability</i> <i>• Decreased Risk</i> <p><i>For Borrowers (Individuals, Entrepreneurs, SMEs, Cooperatives)</i></p> <ul style="list-style-type: none"> <i>• Provide a multi-purpose digital identity and opportunities to build credit-worthiness and reputation</i> <i>• Access to affordable capital</i> <i>• Facilitate to efficiently scale community investments</i> <i>• Facilitate payment transactions</i> <i>• Business education</i>

- Enhance access to other financial services
- Access to online marketplace

Overview of the Business Problem or Opportunity

According to the World Bank, approximately 2 billion people of the world are not included on the financial system, don't have access to a banking account, or worse, they have negative credit and are in debt.

In regards to the under banking of women, a recent Goldman Sachs research report states that the global credit gap for women is estimated at \$300B. Closing that gap could increase per capita income in emerging markets by an average of 12 percent by 2030, and could be as large as 25-28 percent for Brazil.

This moves us into impact investing where investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return. In this way, we can align the interest of sustainability with that of investing – financial returns.

Moeda's Ecosystem removes three key barriers that have plagued effective public financing of the Sustainable Development Goals (SDGs):

Insufficient Transparency

Impact lenders have little visibility into sustainable investments. This makes it risky to manage a large portfolio because there's no way to see where the money is going.

Insufficient Access to Capital

Due to the lack of transparency, borrowers have limited options for investment. Moeda gives borrowers a way to establish reputation, document project status, and to collaborate with others in the community.

Investment Bias

Statistics have shown that investors have a gender bias against women-led projects, despite having historically higher success ratios and repayment rates than projects run by men. Brazil has the largest gap, whereby 45 percent of women-owned SMEs identify access to finance as a major constraint in operating and growing their businesses.

Why Distributed Ledger Technology?

Distributed Ledger Technology is a powerful tool that is already shaping the future of the Internet with simple, safe and secure transactions, bringing a new wave of Economic Opportunity and Digital Innovation.

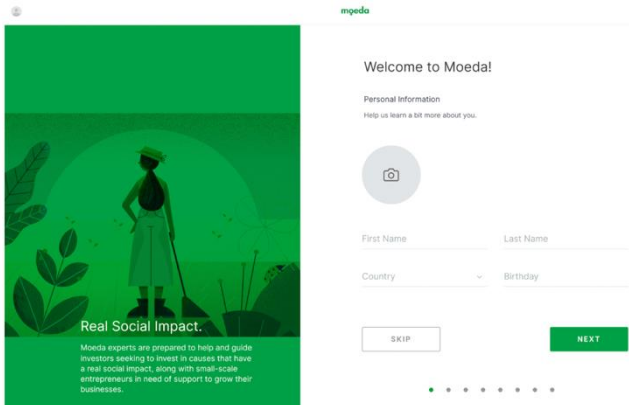
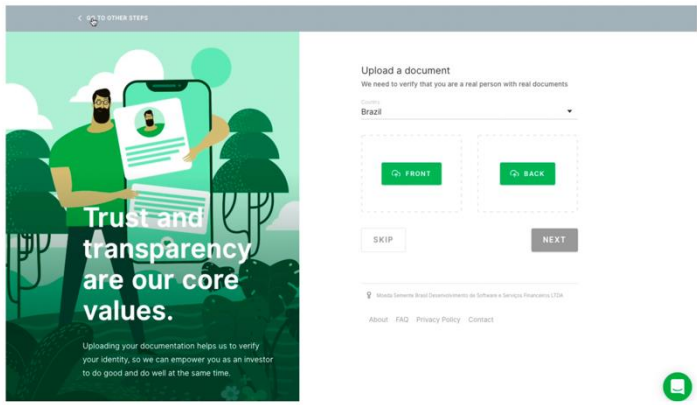
The blockchain technology facilitates the exchange of value without the need for intermediaries, enables transparent interactions of parties through a trusted and secure network that distributes certified and auditable access to data, simplifying the existing processes lowering the costs and increasing the capital efficiency.

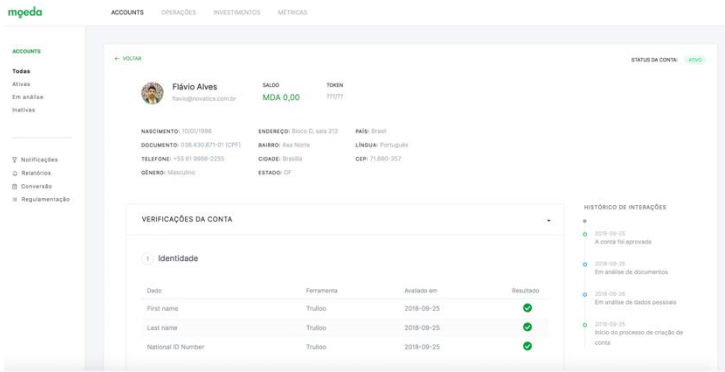
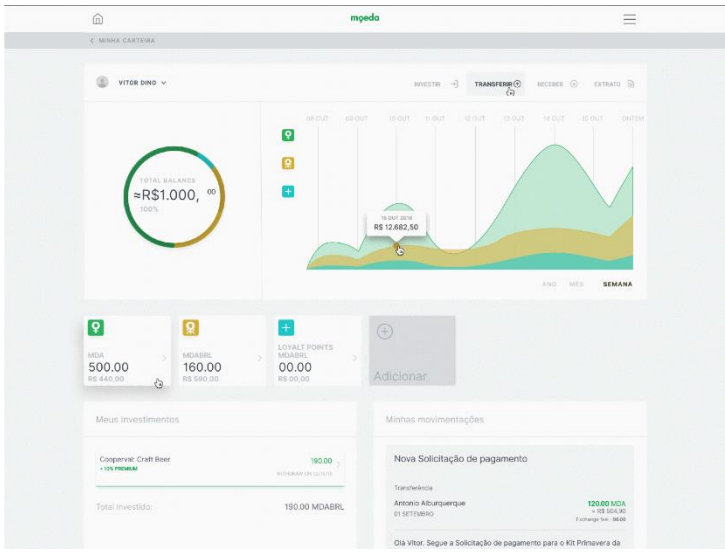

Section 2: Current process


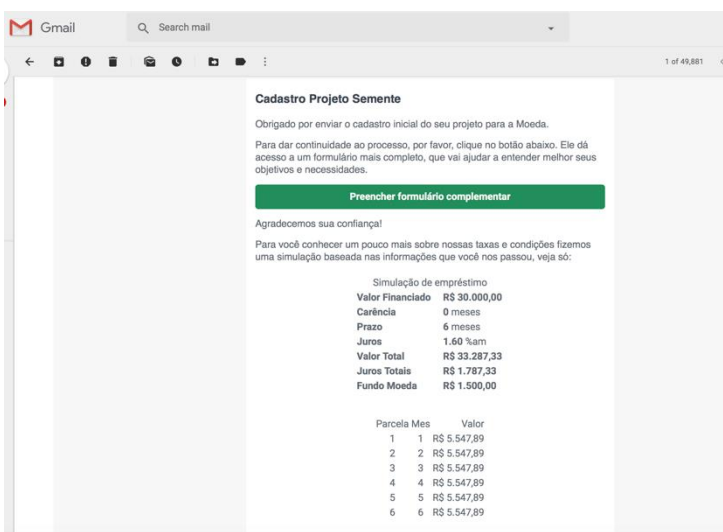
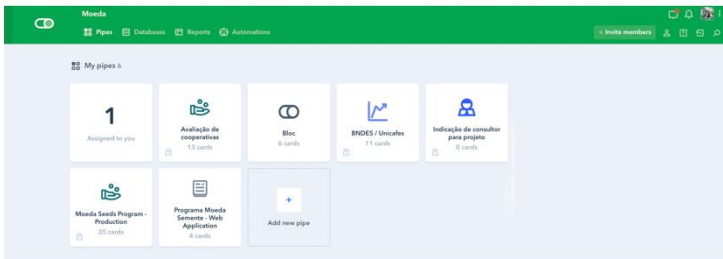
Current Solutions

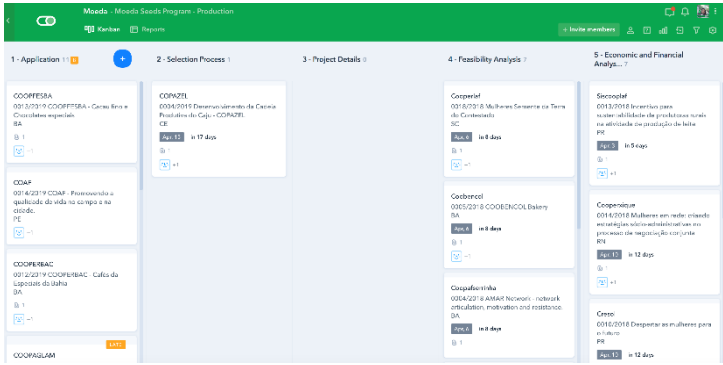

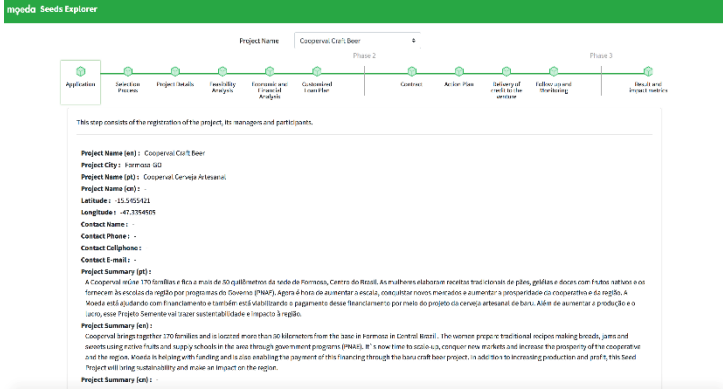
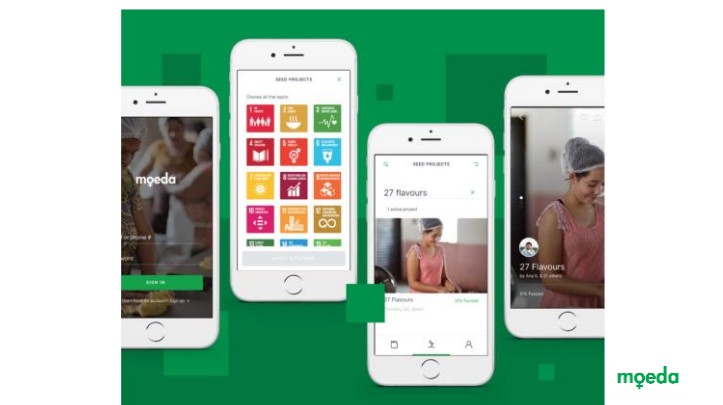
Moeda's Ecosystem utilizes DLT based trust of cryptographically assured blockchain records and contracts to provide the following solutions:

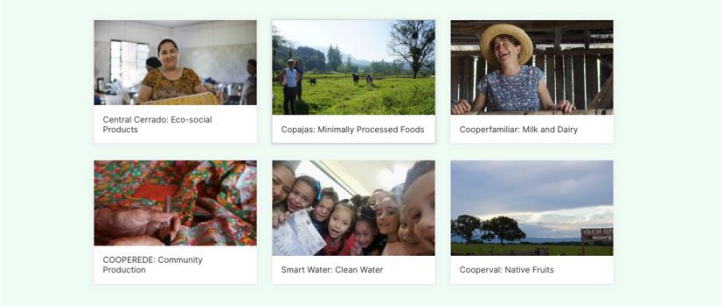
- *Access to SDG-aligned investment portfolio opportunities*
- *Greater transparency into SDG-aligned Impact Investments*
- *Increased auditability*
- *Decreased Risk*
- *Provide a multi-purpose digital identity and opportunities to build credit-worthiness and reputation*
- *Access to affordable capital*
- *Facilitate to efficiently scale community investments*
- *Facilitate payment transactions*
- *Access to online marketplace*

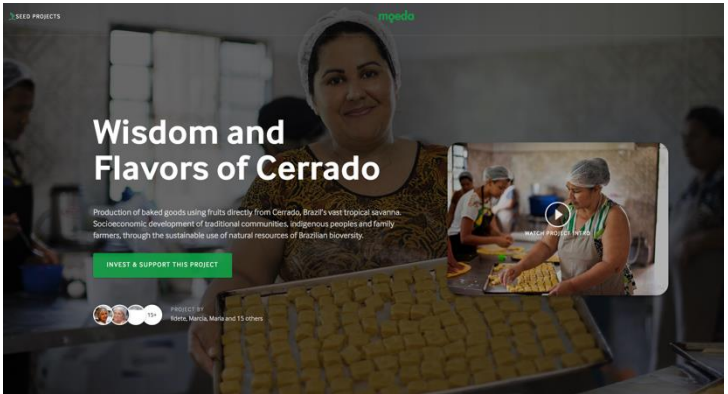




Existing Flow (as-is)		
Step	User Actions	System Actions
1.	<p><u>Account Sign Up</u></p> <p><i>User is required to submit personal information (name, age, country..) ID images, proof of address, acknowledge terms of use) to have access to a Moeda ID and Account</i></p>	 <p>The screenshot shows the 'Welcome to Moeda!' sign-up screen. On the left is a green illustration of a person in a field with the text 'Real Social Impact. Moeda experts are prepared to help and guide investors seeking to invest in causes that have a real social impact, along with small-scale entrepreneurs in need of support to grow their businesses.' On the right is a form titled 'Personal Information' with fields for First Name, Last Name, Country (dropdown), and Birthday. There are 'SKIP' and 'NEXT' buttons at the bottom right.</p>
2.	<p><u>ID Authentication (Global KYC/AML)</u></p> <p><i>User is required to submit personal information ID images, proof of address, acknowledge terms of use to have access to a Moeda Wallet and access to Investments)</i></p>	 <p>The screenshot shows the 'Upload a document' screen for ID authentication. It features a green illustration of a person holding a document with the text 'Trust and transparency are our core values. Uploading your documentation helps us to verify your identity, so we can empower you as an investor to do good and do well at the same time.' The form on the right has a 'Brazil' dropdown, 'FRONT' and 'BACK' document upload buttons, and 'SKIP' and 'NEXT' buttons. A chat icon is visible in the bottom right corner.</p>

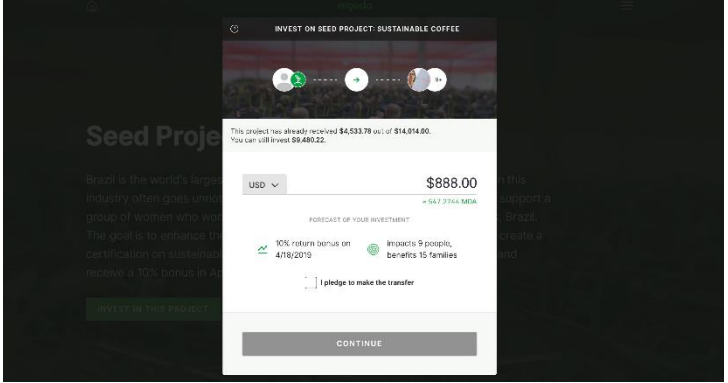
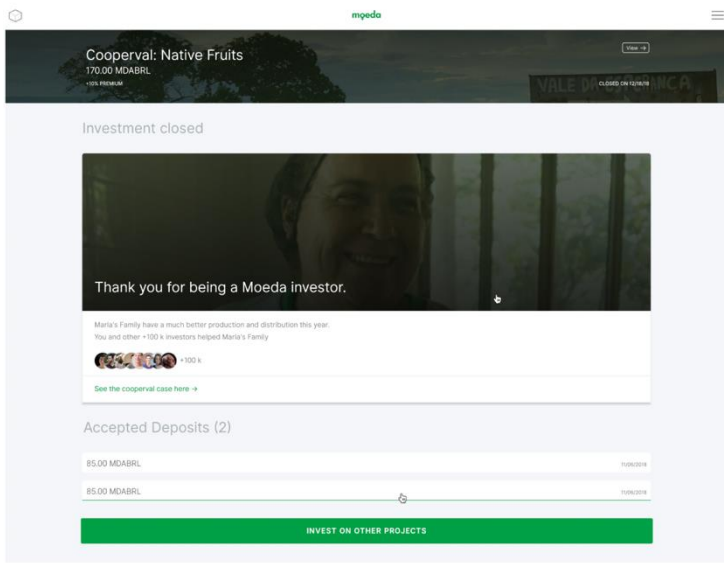
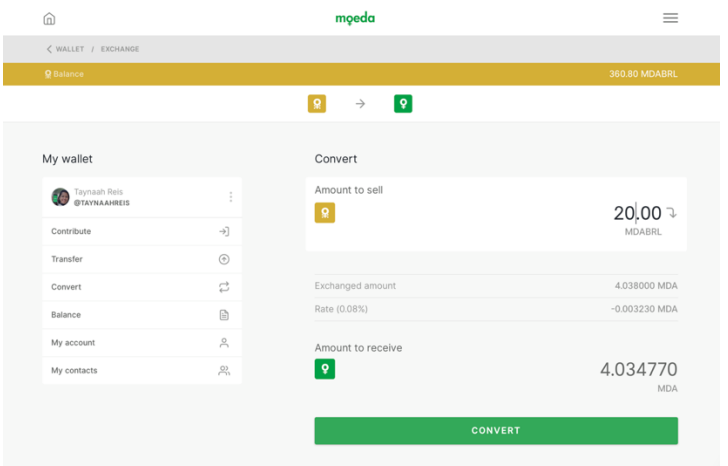
Existing Flow (as-is)		
Step	User Actions	System Actions
2.	<p><u>Backoffice Analysis of Accounts for KYC and AML with Global coverage</u></p> <p>Account Analysis uses both automatic machine learning process (Trulioo Global API and IDWall Brazil) and Manual process through Moeda's compliance team approval.</p> <p>Account approval takes from 3min to 3 days.</p>	
2.	<p><u>Moeda's Wallet</u></p> <p>Upon user's KYC/AML account approval, user is allowed to access it's Moeda's Wallet (Balance overview, investments portfolio, p2p payments Transfer, currency exchange)</p>	
	<p><u>Moeda Seeds Accelerator Program Project/Loan Submission</u></p> <p>To enter the Moeda Seeds Accelerator Program, Individuals/entrepreneurs are encourage to fill an application to submit it's Project/Loan</p>	

Existing Flow (as-is)																																					
Step	User Actions	System Actions																																			
	<p><i>Moeda Seeds Accelerator Program Project/Loan Submission</i></p> <p><i>The application allows Moeda's compliance team to curate projects in alignment with the programs objectives.</i></p>																																				
	<p><i>Moeda Seeds Accelerator Program Project/Loan Response</i></p> <p><i>Upon completing the application the Individuals/entrepreneurs receive within 3 min an automatic analysis and estimate simulation of the loan and is encourage to provide more details to work on a customized loan plan.</i></p>	 <table><caption>Simulação de empréstimo</caption><tr><td>Valor Financiado</td><td>R\$ 30.000,00</td></tr><tr><td>Carência</td><td>0 meses</td></tr><tr><td>Prazo</td><td>6 meses</td></tr><tr><td>Juros</td><td>1,60 %am</td></tr><tr><td>Valor Total</td><td>R\$ 33.287,33</td></tr><tr><td>Juros Totais</td><td>R\$ 1.787,33</td></tr><tr><td>Fundo Moeda</td><td>R\$ 1.500,00</td></tr></table> <table><tr><th>Parcela</th><th>Mes</th><th>Valor</th></tr><tr><td>1</td><td>1</td><td>R\$ 5.547,89</td></tr><tr><td>2</td><td>2</td><td>R\$ 5.547,89</td></tr><tr><td>3</td><td>3</td><td>R\$ 5.547,89</td></tr><tr><td>4</td><td>4</td><td>R\$ 5.547,89</td></tr><tr><td>5</td><td>5</td><td>R\$ 5.547,89</td></tr><tr><td>6</td><td>6</td><td>R\$ 5.547,89</td></tr></table>	Valor Financiado	R\$ 30.000,00	Carência	0 meses	Prazo	6 meses	Juros	1,60 %am	Valor Total	R\$ 33.287,33	Juros Totais	R\$ 1.787,33	Fundo Moeda	R\$ 1.500,00	Parcela	Mes	Valor	1	1	R\$ 5.547,89	2	2	R\$ 5.547,89	3	3	R\$ 5.547,89	4	4	R\$ 5.547,89	5	5	R\$ 5.547,89	6	6	R\$ 5.547,89
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	<p><i>Moeda's Project Tracking Dashboard</i></p> <p><i>Moeda Seeds Accelerator Program team and its partners are equipped with a unique system that allows to track each stage of a enterprise/individual loan/project submission (from application selection process, feasibility and economic analysis, payments, results and impact)</i></p>																																				

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	<p><i>Moeda's Project Explore using Hyperledger Fabric</i></p> <p><i>Moeda's share public information related to the project tracking system on it's website</i></p>	<p>Where the project is at this moment?</p> <p>Every project at Moeda goes thru a Technical Assistance team that will help from the qualification until the measure of the outcomes. Every transaction on these steps are registered via Blockchain so the information is secure. The projects themselves will be tradable blockchain assets on a future exchange to provide more liquidity and a lower cost of capital for entrepreneurs.</p> <p>Wisdom and Flavors of Cerrado is at Phase 2 - Contract</p> 
	<p><i>Moeda Seeds Accelerator Program Explore using Hyperledger Fabric</i></p> <p><i>Moeda's share public information related to the projects tracking system on it's websites</i></p>	
	<p><i>Moeda's APP</i></p> <p><i>Users are allowed to access the platform to an Android App available on Google Play Store</i></p>	

Existing Flow (as-is)		
Step	User Actions	System Actions
	<p><i>Moeda's Investment Portfolio</i></p> <p><i>Upon selection on the Moeda Seeds Program Accelerator, projects are showcased on the website (www.moedaseeds.com.br/projects) and can be open for co-investment and it's progress can be monitor online</i></p>	 <p>Central Cerrado: Eco-social Products</p> <p>Copajas: Minimally Processed Foods</p> <p>Cooperfamiliar: Milk and Dairy</p> <p>COOPERED: Community Production</p> <p>Smart Water: Clean Water</p> <p>Cooperval: Native Fruits</p>

Existing Flow (as-is)								
Step	User Actions	System Actions						
	<p><i>Moeda's Investment Portfolio Project Details</i></p> <p><i>Upon selection on the Moeda Seeds Program Accelerator, projects are showcased on the website and can be open for co-investment and it's progress can be monitor online</i></p>	 <p>Wisdom and Flavors of Cerrado</p> <p>Production of baked goods using fruits directly from Cerrado, Brazil's vast tropical savanna. Socioeconomic development of traditional communities, indigenous peoples and family farmers, through the sustainable use of natural resources of Brazilian biodiversity.</p> <p>INVEST & SUPPORT THIS PROJECT</p> <p>PROJECT BY: Rêda, Maria, Maria and 11 others</p> <p>The History behind Wisdom and Flavors of Cerrado</p> <p>Wisdom and Flavors of Cerrado was first established in 2004, as an informal collective of 19 community-based projects based in the Federal District of Brazil, where Brasília is located. They were beneficiaries of the Small Social Projects Program (PPPEcos), operated by the Institute for Society, Population and Nature – ISPN, which together sought an alternative for products. At present, the Central has 21 community organizations in its framework, located in the states of Maranhão, Tocantins, Mato Grosso, Pará, Goiás, Piauí, Mato Grosso do Sul and Minas Gerais and operates in the development of 25 value chains from extractivism, agroextractivism and of traditional family agriculture, among them the babassu chain.</p>   <p>Impact this project is generating</p> <p>Every project lists at Moeda is generating great impact. Wisdom and Flavors of Cerrado was first established in 2004, as an informal collective of 19 community-based projects based in the Federal District of Brazil, where Brasília is located.</p> <table border="1"> <thead> <tr> <th>DIRECT BENEFICIARIES</th> <th>INDIRECT BENEFICIARIES</th> <th>NEW JOBS</th> </tr> </thead> <tbody> <tr> <td>2.350 people</td> <td>500.000 people</td> <td>50 positions</td> </tr> </tbody> </table> <p>SUSTAINABLE DEVELOPMENT GOALS</p> <p>This project covers 6 goals of social and economic development issues agenda created by United Nations.</p>   <p>Seed Project: Sustainable Coffee</p> <p>Brazil is the world's largest exporter of coffee. However, the role women play in this industry often goes unnoticed. The Seed Project: Sustainable Coffee seeks to support a group of women who work with coffee production in the State of Minas Gerais, Brazil. The goal is to enhance the structures they have in place, provide training, and create a certification on sustainable coffee production. Invest now in this Seed Project and receive a 10% bonus in April 2019.</p> <p>INVEST IN THIS PROJECT</p>	DIRECT BENEFICIARIES	INDIRECT BENEFICIARIES	NEW JOBS	2.350 people	500.000 people	50 positions
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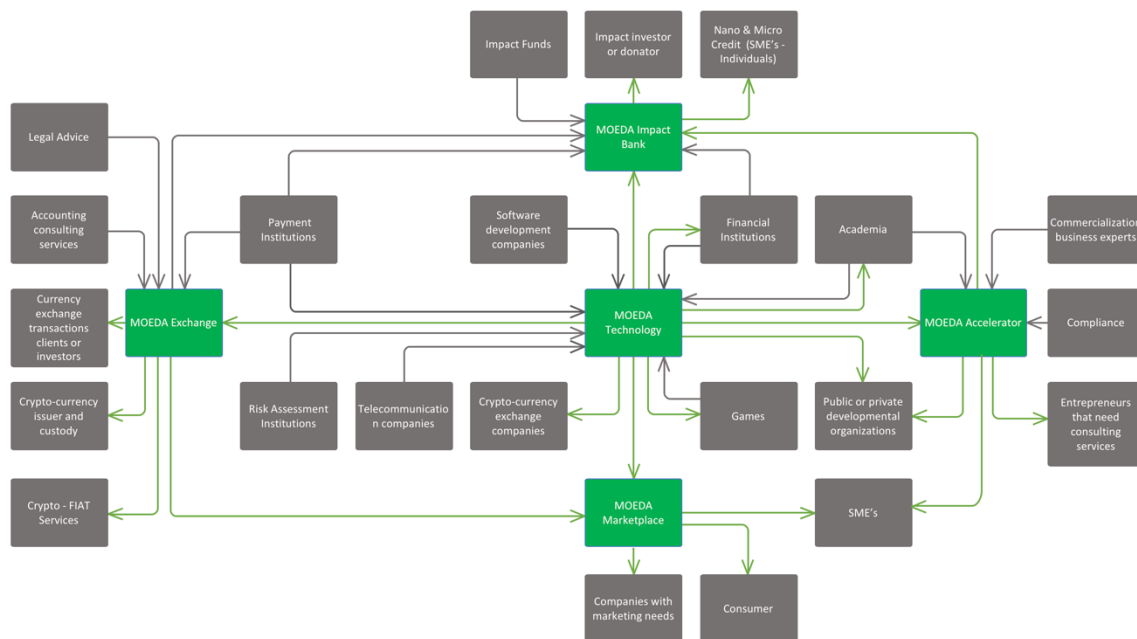
Existing Flow (as-is)		
Step	User Actions	System Actions
	<p><i>Moeda's Investment Portfolio</i></p> <p><i>Projects accept the following cryptocurrencies: MDA, MDABRL, MDALLOYAL, BNB and MDAX</i></p>	
	<p><i>Moeda's Development Impact Bond</i></p> <p><i>Co-Investors at the Moeda Seeds Program Accelerator Portfolio of Projects receive a Moeda's Development Impact Bond (MDADIB) to track it's investments on the dashboard.</i></p>	
	<p><i>Moeda's Wallet</i></p> <p><i>User is allowed to exchange cryptocurrencies within the ecosystem</i></p>	

Existing Flow (as-is)		
Step	User Actions	System Actions
	<p><i>Moeda's Marketplace</i></p> <p><i>With pioneering and singularity initiative in construction an e-commerce platform with built-in cross-blockchain-based technology, especially related to an ecosystem of positive impact and sustainable generation, Moeda Market Place establishes the last mile of sales' and distribution of an entire chain of production, selection and development of social products, confirming its commitment with the circular and creative economy, corroborating its capacity to generate social impact and positive transformation.</i></p>	 <p>The screenshot shows the Moeda Marketplace interface. At the top, there's a header with the logo and some navigation links. Below the header, a banner reads 'Here you can buy Moeda Seed Products'. Underneath, there are three product cards: 'Baru Craft Beer' priced at \$ 15.00, 'Cold Brew Coffee' at \$ 10.00, and 'Hand Bag' at \$ 30.00. Each card has a 'More details' button.</p>
	<p><i>Moeda's Marketplace</i></p> <p><i>Performing split transparent payments. Initially, through MDABRL, the use of the Stellar protocol allows the tracking of financial resources. It grants transparency in the ability of the user to verify how much is coming to the producer in relation to that purchase, and the amount that remains for the operation for Moeda Seeds.</i></p> <p><i>In addition, for each MDABRL transaction held in Moeda Market Place, Stellar protocol establishes a direct relationship with the Moeda Loyalty Program, which instantly generates MDALOYAL (XLM) points for users. Outside the incentive system, in case of purchasing products using PayPal, for</i></p>	 <p>The screenshot shows the Moeda Marketplace interface with three main sections: 'Moeda', 'Seed Product', and 'Moeda Seeder'. Each section displays a balance in MDABRL and MDALOYAL, along with a 'View on blockchain' button. The 'Moeda' section shows 1.50 MDABRL and 0.00 MDALOYAL. The 'Seed Product' section shows 13.50 MDABRL and 0.00 MDALOYAL. The 'Moeda Seeder' section shows 190.00 MDABRL and 15.00 MDALOYAL.</p>

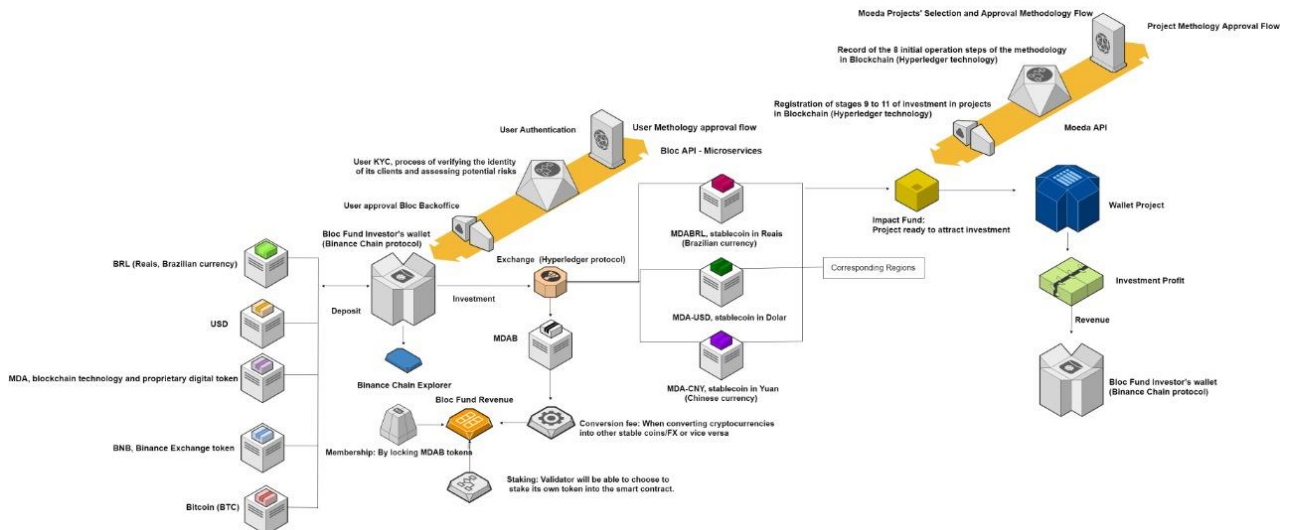
Existing Flow (as-is)		
Step	User Actions	System Actions
	<p><i>example, the user does not receive points.</i></p> <p><i>With Moeda ecosystem integrated user login and also direct integration with the Moeda Stellar Wallet already registered by the user, it is possible to use his own current balance to buy products at Market Place.</i></p> <p><i>All transactions performed at Moeda Market Place are registered in the Stellar public network, and its information can be observed in real time.</i></p>	

Process scheme (as-is)

Moeda's Ecosystem flow of Assets and Services



Moeda's Ecosystem Hybrid Architecture (Developed by the main system's Architect Taynaah Reis)



Data and information (as-is)

Data	Type	Description
1	Attributes to ID and Authentication	All on-chain data related to Moeda's Platforms token transactions are kept private, such as documentation related to identity and authentication, confidential contracts and other agreements with sensitive information are managed through Hyperledger Fabric. Users retain sole custody of their private keys throughout the transaction process, this gives full control to investors over their own funds without having to rely on an exchange.

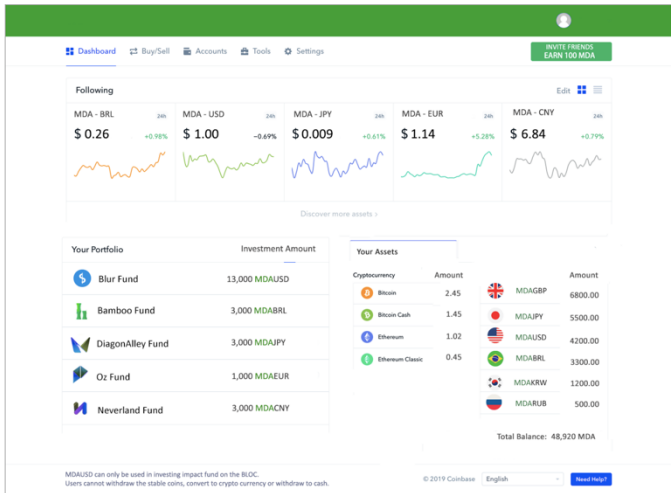
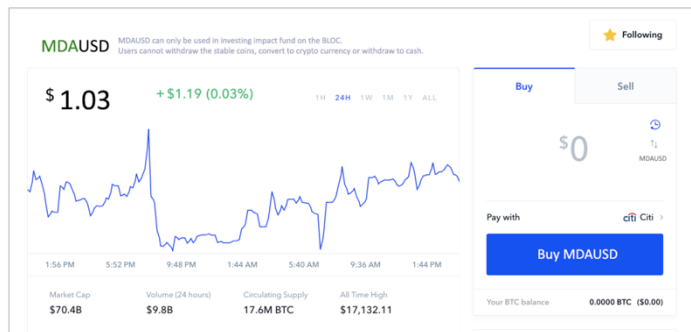
2	<p>Payment Transactions (Wallet Account, Balance, Transfer, Exchange, Swap, Split)</p>	<p><i>Stellar network performs as a gateway for Fiat-Crypto transactions on Moeda's platforms. Stellar network allows easy and fast conversions of almost any fiat currencies into MDA-Fiat cryptocurrencies. Also it supports smart contracts which will ensure the whole Moeda's platforms to run smoothly.</i></p> <p><i>On the other hand, in order to bring more scalability, decentralization and security to the software and more liquidity to token holders, Crypto-Crypto transactions on Moeda's platforms happen on Binance chain.</i></p> <p><i>At Moeda's platforms, interchain swap tools and protocols were developed in conjunction with other transaction performance-enhancing tools both on Binance chain and Stellar network.</i></p> <p><i>Moeda cryptocurrencies (stable/reserves coins MDABRL, MDAUSD, MDAEURO, debenture coin MDADIB, loyalty/rewards coins MDAB, MDALOYAL, MDAX) are deployed on both Stellar network and Binance chain. The tokens on Stellar network function as the actual utility tokens, while those on Binance chain can be exchanged with other cryptocurrencies. The token ownerships on both Stellar network and Binance chain are synchronized on a real-time basis thanks to interchain swap technologies.</i></p> <p><i>Moeda's BLOC Platform aggregates liquidity across token exchanges by treating the entire landscape as a potential reserve. Bloc reserves provide a supply and demand of various tokens that are readily available to be executed based on the reserve's quoted buy and sell prices for that token. These reserves are created by on-chain smart contracts (Moeda's Chain) that enforce the trade execution and settlement process. The trade price is also programmatically determined by a smart contract. The reserve model enables Bloc users to enter trades more easily given that the supply and demand sides have fixed terms and are readily available to trade upon those terms. This removes the potential friction involved in discovering counterparties and negotiating.</i></p> <p><i>Automated order filling</i></p> <p><i>With an automated order filling Bloc Reserve Managers feed dynamic exchange rates into the Moeda's smart contract and orders are filled at the current exchange rate, an algorithm will match orders automatically. Automated order filling reduces the amount of user time and effort needed to identify suitable trades, thereby reducing order filling latency.</i></p> <p><i>Moeda's BLOC Transaction Settlement</i></p>
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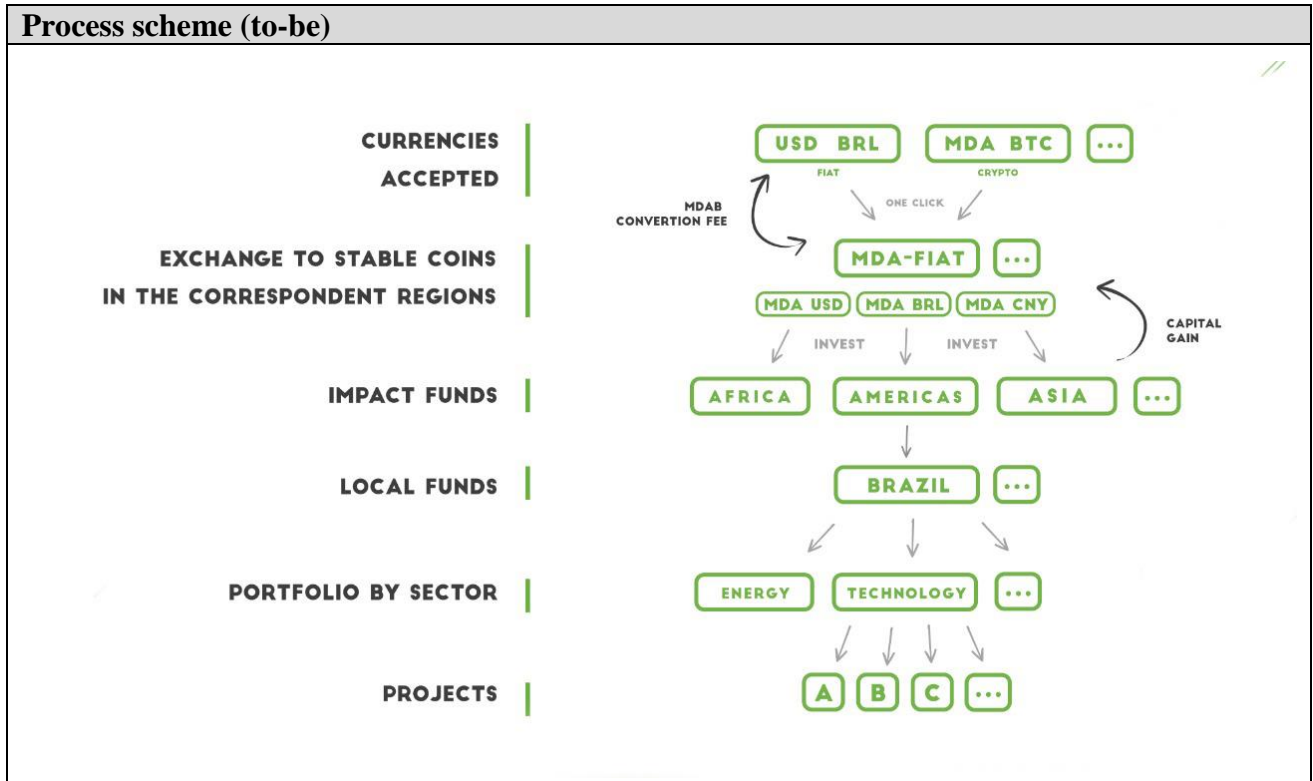
Data and information (as-is)		
Data	Type	Description
		<p><i>On-chain settlement helps users publicly verify on the ledger that their trades were settled according to their desired terms.</i></p> <p><i>Moeda's BLOC Consensus</i></p> <p><i>Bloc has a flexible governance model MDAB-weighted delegated voting system where voting power is directly proportional to the amount of MDAB you have. Validator will be able to choose to stake its own token into the smart contract. Any holder of the MDAB token will have the option of proxying the held MDAB token to some Validator Node for Staking.</i></p>
3	Documentation (Projects Accountability, Supply chain, Wiki)	<p><i>Moeda's Hyperledger Fabric Application</i></p> <p><i>By establishing a changeless record database on all financial transactions, Hyperledger's use in Moeda's Ecosystem goes beyond its financial aspect. As well as in the Projects Approval Flow of Moeda Seed Projects, in Market Place Hyperledger keeps track of all steps of approval of the product until its entrance to commercialization. In this way, all the steps that classify products to be socially responsible for their availability become transparent and unalterable. Hyperledger Fabric's modular capability gives Moeda a chance to separate products from Moeda Seed projects or outside.</i></p> <p><i>Another fundamental aspect of Hyperledger is related to traceability the application in the productive process of the respective commercialized products. Initially applied and available for only a few specific products within Market Place, the full history of the product, its certificates of origin, quality and working conditions will be recorded and displayed. These products will receive a traceability and uniqueness ID, granting the new Moeda certification for socially responsible products in the New Economy Blockchain Market and beyond. In medium term, with optimized processes of selection and evaluation, also counting on the modular aspect of the used protocol, it will be possible to apply this certification not only for entry into the Market Place, but also for other similar environments.</i></p> <p><i>As a database of immutable records and with calibrated business rules, Hyperledger also prints transparency in the ability to see split payments also made via PayPal.</i></p> <p><i>With a separate node in the Currency network, but permeating its entire environment, Hyperledger Fabric connects and integrates with the Backoffice both the Moeda administrative portal and the Backoffice of the respective Projects (Producer</i></p>

Data and information (as-is)		
Data	Type	Description
		Portal) to follow up on its movements, deliveries and product approvals, among many others.

Participants and their roles (as-is)		
Actor	Type/Role	Description
1	Borrowers	Individuals, Entrepreneurs, SME's, Cooperatives
2	Investors	Individuals, Private Institutions and Impact Funds, Financial Institutions Agencies, Government and Public Sector
2	Research and Academia	International Development Organizations and Academic Institutions

Section 3: Expected process

Expected Flow (to-be)		
Step	User Actions	System Actions
1.	Users will be allowed to invest in other Impact Investment Funds and Global portfolios with both FIAT and Cryptocurrencies.	 <p>The screenshot shows a dashboard with a green header. It includes a navigation bar with links like Dashboard, Buy/Sell, Accounts, Tools, and Settings. Below this, there's a 'Following' section with several currency pairs (MDA - BRL, MDA - USD, MDA - JPY, MDA - EUR, MDA - CNY) each with a price and a small line chart. A 'Your Portfolio' section lists five funds: Blur Fund, Bamboo Fund, DiagonAlley Fund, Oz Fund, and Neverland Fund, each with an investment amount. To the right, 'Your Assets' section shows a list of cryptocurrencies and fiat currencies with their respective amounts. At the bottom, it displays the 'Total Balance' as 48,920 MDA.</p>
2.	Moeda will provide other services like insurance and currency-hedge	 <p>The screenshot shows a trading interface for MDAUSD. It features a large price chart with a blue line representing the price over time. Above the chart, the current price is \$1.03 with a green indicator showing a slight increase of \$1.19 (0.03%). To the right of the chart, there are 'Buy' and 'Sell' buttons. Below the chart, there's a section for 'Pay with' showing a Citi card and a 'Buy MDAUSD' button. At the bottom, it displays the user's BTC balance as 0.0000 BTC (\$0.00).</p>



Security and privacy

Transaction history, digital bank account information, and customer credit card credentials, investment preferences are a few examples of data that needs to be secured from unauthorized access. Unauthorized exposure is often prevented using data encryption and that's is the reason why we have been using blockchain Hyperledger, Stellar, Ethereum and Binance protocols through our systems to significantly increasing data availability and integrity, reducing paperwork handling, storage and loss, and other process improvements related.

Blockchain allows for the creation of trustworthy, immutable records, as well as cost-saving operational efficiencies that then lower the cost of lending while increasing safety.

Offering financial services also require specific approach with backup systems, to guarantee our systems will continue running in case of an incident. Backup schedules and tools are outlined in relevant policies and regularly reported on by functional managers. Awareness training includes how to establish whether backups have effectively been made of organizational data and how to securely store backups on the systems provided.

Moeda has built a partnership with IBM and DACS (Digital Asset Custody Services) and leverages IBM's LinuxOne servers and Crypto Express6S HSMs to provide the strongest possible security environment. Crypto Express6S is the highest commercially rated HSM in the world (FIPS 140-2 Level 4). Private keys are always encrypted and cannot be extracted or imported.

Main Success Scenario + expected time line

We aim to **significantly improve** Impact Results, by funneling sustainable development investments into local communities across the globe.

We started in Brazil with and plan to expand the ecosystem to LATAM and Africa in 2019 to reach 1 million associates by 2020 and 10 million by 2022.

Performance needs

Moeda's ecosystem platforms have achieved:

- *Low cost of transaction (~0)*
- *Transaction cost <\$0.00001*
- *Funds cleared 3-5 seconds*
- *transactions per second 1.000+*
- *Energy per transaction 0.03Wh*
- *Scale capacity to analyse and approve 200 projects weekly (from wallet to projects, investors to results)*
- *Firmness MDABRL parity with The Fiat Brazilian Reais*
- *Easiness Hyperledger Fabric Projects token flow integration to Moeda Seed Projects transparent accountability*
- *Hyper-secure from the top down: Private keys are always encrypted and cannot be extracted, imported or compromised*
- *Decentralized architecture: Transactions require multiple layers of authentication via key signing. No single point of failure*

Legal considerations

To achieve MOEDAs mission of connecting disadvantaged entrepreneurs to modern financial systems we aim to license our proprietary technologies and operate our fiat-crypto services in a global scale. That's why we have established Moeda's Exchange company in Uruguay free-trade zone, a special economic zone part of the Latin America Free Trade Association (LAFTA).

We are encouraged by the Uruguayan governments business-friendly environment and we have many advantages, including tax exemptions, unfettered foreign currency trading and logistical support. Also, the introduction and trade of foreign currency, gold, precious metals, and public values, is completely free.

Like in the rest of the Uruguayan territory, inflow and outflow of foreign currency is free.

U.S. investment bank Merrill Lynch, India's Tata Consulting and copier maker Ricoh are among international companies that have established operations in Uruguay's free-trade zones, according to published reports.

Moeda plans to maximize its use by being established in free-trade zones in Uruguay and other countries to improve the overall trade efficiency of its clients and partner organizations.

MOEDA has pledged to the Brazilian Central Bank, Brazilian tax authorities and regulatory bodies that it will maintain a transparent-and-compliant digital banking venture that will regularly provide information about its seed projects and other operations in the country.

External References and Miscellaneous

www.moedaseeds.com