



cables

Whitepaper

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Contents

Introduction	2
Team	2
Industry Landscape	3
Roadmap	6
Exchange Expansion	6
Feature Expansion	7
Cables Token	8
Platform Detail	9
Overview	9
Order Book and Liquidity	10
Assets	11
Order Types	11
Order Placement	11
Order Settlement	14
Event Web Socket and Catch-up Logic	15
Catch-up Logic First Scheduled Task Flow	15
Catch-up Logic Second Scheduled Task Flow	16
Order Cancellation	17
Order Rejection	19
Access	19
Fees	19

Introduction

The goal of Cables is to revolutionize the aging and monopolized foreign exchange (FX) industry and strengthen the young cryptocurrency trading industry by bringing blockchain rails to the FX market and FX liquidity and trading products to the stablecoin market. The platform will kickstart the FX industry's transition onto the blockchain in a secure, efficient, and friendly environment. By opening the FX markets to the blockchain, global access becomes possible for FX, and allows both institutions and retailers to trade freely while keeping custody of their assets. Building a digital FX exchange market also opens up the global economy through transparent pricing and trust-less liquidity. This will open a world of opportunities for not only FX firms, but also a large number of retail traders and people around the globe who do not have easy access to global currencies or methods to convert them. Cables is effectively able to solve a range of problems that the decentralized finance (DeFi) ecosystem currently faces, such as a lack of liquidity within decentralized exchanges, unsafe stablecoins built on misguided algorithms, and high fees or complete lack of support for unique trading pairs. Cables' use of a centralized order book and liquidity paired with self-custody and smart contract execution solves these problems.

Team

Cables was founded by a team with over 10 years of FX and 5 years of digital assets experience across two different bootstrapped companies. The two companies, Shift Markets and Nexus Markets, identified the need to bring the benefits of the blockchain to the FX space and decided to create Cables. Shift Markets (FX SaaS) is connected to over 50 FX exchanges across 30 different countries and sees an average weekly FX volume of \$25bn across their network of exchanges and FX brokers. Nexus Markets was created to provide liquidity to Shift's network of exchanges and has grown into its own fully operating liquidity exchange offering exotic crypto and FX trading pairs and lending pools. These companies have over 90 employees spanning the globe who help keep these two companies' profitability operating with a YoY growth since inception by the same founding team. The team

overseeing Cables is composed of Ian McAfee, CEO; Anthony DiSanti, CTO; Matthew Miller, COO; Chris Matthews, SVP of Product and Engineering; Joao Carvalho, and Benjamin Goldberg, Product Management; David Ramirez, VP of Business Development; Michael Zimkind, VP of Sales; Sarah Cullers, VP of Marketing; and Cameron Moore, Social Media Specialist. This team combines a range of expertise to oversee the development of Cables and ensure its success in production across multiple verticals.

Industry Landscape

Cables exists at the intersection of the maturing centralized exchange industry and the growing decentralized exchange industry. By bridging established centralized technology with the transparency and efficiency of decentralized technologies, Cables is able to create a blended, balanced, and trusted ecosystem for finance to be executed on-chain. For years, centralized exchanges (CEXs), which operate off-chain ledgers and order books, have been the only option for users looking to trade in a cheap and well-priced manner. However, since the inception of decentralized exchanges (DEXs) in 2014, their growth through the adoption of the automated market maker (AMM) has begun to outpace the growth of CEXs from a variety of factors. Uniswap is recognized as the creator of the first fully decentralized AMM-based DEX, where each trading pair has an underlying pool of the two assets, which then uses the current ratio of holdings to determine the price of trades. Opening up the ability to source liquidity from anyone, and allowing anybody to list their assets on Uniswap through the creation of their own underlying asset pool has led to quick adoption. Traders hold custody of their assets throughout the process as trades take place in atomic swaps, which batch together all of the transactions of the trade into one entry on the blockchain. Further, fees paid by traders are given to liquidity providers, thus opening opportunities for users to earn a yield on their cryptocurrency in a decentralized manner. Throughout the trade execution, there is complete transparency as all parts of the system are visible on the blockchain. This serves to give traders immense confidence in the DEX platforms and has driven large amounts of volume. CEXs operate in a more traditional manner in which users generally deposit their cryptocurrency into one larger bucket, which is then held and

tracked by the individual CEX. The benefit of this system is not having to pay for gas fees during each transaction. However, this comes at the cost of transparency and trader confidence as many centralized offerings have blown up over the years. From Mt. Gox in 2014 to Celsius earlier in 2022, these collapses continue to be a major problem and have sent traders looking for greener pastures in the DEX space. CEXs also have an ever-present settlement risk, where the trader can never be fully confident in trade execution and delivery, which is easily mitigated in the transparent and code-based DEX world. However, the incumbent CEXs still have a large sway over the cryptocurrency space and continue to see massive volumes. It is reported that centralized exchanges saw over \$14 trillion in crypto trading volume in 2021, with Binance facilitating over 67% of that volume.¹ This massive volume was due mostly to the explosion of the cryptocurrency space during 2021, which saw CEX trading volume grow by 689% from the year prior. Interestingly, DEXs saw an even larger 858% growth in volume to a total of over \$1 trillion in 2021. This growth continues to this day as DEXs continue to eat up more of the CEX market share. Many founders throughout the space are also looking to further innovate on the DEX and general DeFi spaces into the era of “DeFi 2.0,” which looks to solve many inefficiencies of the first era of DeFi and DEX protocols. The Cables team believes that the Cables platform sits inside of this new era of innovation as the exchange strives to take the benefits of both CEXs and DEXs, while leaving behind many of the deficiencies. In summary, DEXs benefit from their transparency and non-custodial nature, while CEXs benefit from the massive amount of incumbent liquidity being available off-chain and off-chain execution being generally quicker and cheaper. DEXs lack deep liquidity and their on-chain nature allows for frontrunning, while CEXs lack transparency and accessible protocols. Cables uses the blockchain for order placement and fund custody, while utilizing an off-chain orderbook and liquidity solution for order management.

Cables is ultimately targeting the physical exchanges that made up 49% of the \$6.6 trillion in daily volume by the FX industry at large in 2019.² The total FX industry is the world’s largest financial market and also arguably the most complex with a string of counterparties being involved with the large majority of transactions. Looking specifically at the physical exchange space, a markup of 0.5% or

¹ <https://www.theblock.co/linked/128526/centralized-crypto-exchanges-14-trillion-trading-volume-2021>

² https://www.bis.org/statistics/rpfx19_fx.pdf

higher is not uncommon to see for retail users and institutions alike that are on the lower part of the food chain. Cables offers a better route for these FX participants through the stablecoins on the platform (with a significantly smaller fee of 0.2% + gas). Stablecoins represent a digital alternative to the classic physical exchange market, due to the fact that they can be redeemed 1 to 1 with their related fiat currency. These stablecoins are a relatively new product, but have seen rapid growth and adoption over the past years. USD-pegged stablecoins alone have a combined circulating supply of around \$130 billion.³ A need has arisen in the space for an exchange that is able to tap into deeper centralized liquidity and offer it to users of the blockchain, which is the specific need that Cables fills. Further, as you will see in the Cables roadmap below, the Cables team has plans to expand the product beyond a simple exchange into a full fledged product suite that will allow the everyday person and business to take advantage of this new era of physical exchange.

The following diagram shows how users are able to benefit from the Cables blockchain-based system.



³ <https://www.federalreserve.gov/econres/ifdp/files/ifdp1334.pdf>

Roadmap

Cables is in an interesting position in that the completion of the exchange is considered just the beginning of the platform, which is looking to expand into a full-fledged trading venue for FX traders and provide an additional range of tools for all users.

Exchange Expansion

The first roadmap goal of the Cables team is to expand the base exchange product. Currently, the exchange is launched on the Algorand testnet with a small set of asset pairs and one execution facility connected to provide liquidity upon mainnet deployment. The launch on mainnet Algorand and expansion to Stellar and Avalanche is already underway. Our hybrid infrastructure allows the Cables team to launch the product on different chains more quickly than current DEX options. Launching Cables on multiple chains will open new, efficient cross-chain options for users, such as trading and general bridging, which will strengthen all involved chains.

The Cables team is also looking to partner with a wide array of stablecoin issuers throughout the globe, who will be onboarded and represent a vast range of national currencies. Cables is striving to become the fair liquidity provider for holders of all currencies worldwide.

At the same time, Cables is looking to greatly expand its liquidity offering. The platform has been built in a modular manner already and the Cables team is looking to build an easy-to-implement API and playbook allowing for any centralized liquidity provider to easily adopt the platform into their current system. This will serve to provide these liquidity providers with a significant boost in users and the Cables users with even more competitive pricing on the platform.

Finally, Cables will expand its trading offerings far beyond market and basic limit orders. Cables is first looking to introduce a range of order types, such as Stop-Loss, Stop-Limit, Take Profit, All or None, Immediate or Cancel, Fill or Kill, and Day orders. Beyond these trade types, there is a planned expansion to include various FX derivatives on the exchange, which would represent their first wide-reaching implementation in a decentralized platform. Leveraging the Cables team's FX

experience will allow Cables to be the first stablecoin exchange to properly introduce these order types and products, which are currently heavily adopted throughout the centralized FX space.

The team is additionally looking to create a developer-focused API, which will allow for integration of the Cables platform into other products easily. The opportunities for payment service providers and wallet providers to utilize the trade API within their product offering is just the tip of the iceberg when it comes to adoption for this growth area specifically. All five of these growth areas of the base product will allow Cables to capture an immense portion of the stablecoin trading volume in the space and become a market leader.

Feature Expansion

The Cables team envisions the finished product as much more than just an exchange. To this end, there are a range of features and sub-products that are already going through the early stages of development. The first of these is the creation of a stablecoin bridge. Once again, the Cables hybrid architecture will be a massive benefit here as this bridge will be able to provide users with the safety and stability of blockchain-native decentralized bridges, while removing the gas cost associated with the complex smart contract interactions required to lock and mint tokens in the traditional manner. The Cables stablecoin bridge will also have an improved structure compared to current centralized offerings, which provide no guarantees of speed and can charge variably high fees. The Cables bridge will allow users to bridge tokens for the price of a simple token transfer, while also facilitating near instant transfer cross-chain upon order confirmation on the incoming chain.

A second product currently being developed internally is the “Build-a-Cable” system, which looks to automate and improve various payroll, rent, and other recurring payment systems around the world. The system would allow users to create smart contracts that automate the process of currency conversion and splitting of payments using the hyper efficient Cables platform. This product is being designed with user experience at the forefront, with the goal of enabling users to take advantage of the blockchain and the Cables platform without needing to understand how either actually works beyond the fact that they are saving money and time using it. Use cases for this product grow everyday as the

remote and gig-based world continue to introduce complexities with currency conversion on a recurring basis. The goal is to take this product as far as being directly integrated with the traditional financial system, so that an employer in the United States can wire USD to their employee in Brazil via a specific account and rest easy knowing that the process of the conversion and deposit is being handled quickly and cheaply by the Cables platform.

The Cables ecosystem continues to grow as products are ideated and developed to the point of proof-of-concept, where their product-market fit can be determined and further development goals are set.

Cables Token

The Cables token is the third piece of the Cables roadmap, which will serve to drive mass adoption of the platform further. The utility token will have a range of uses throughout the platform, such as lowering fees for both traders and liquidity providers on the exchange, giving users of the platform further access to new features and premium pairs, enabling governance on the Cables platform, and serving as a powerful referral system driving users to all products in the Cables suite. The tokenomics are still being perfected, but the Cables token will likely follow a similar launch path as other DEX tokens in the space, with portions of the supply being kept for development and early parties, while a large portion of the supply will be given to early users through platform actions on a decaying basis.

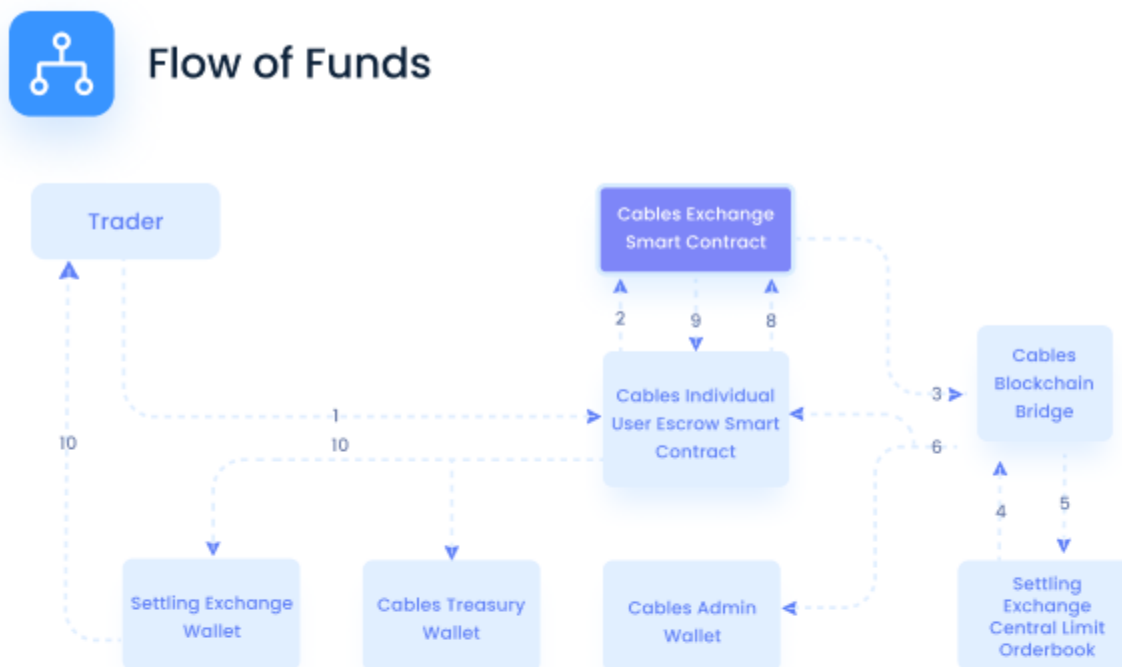
Please note that Cables is currently still in testing, so contents in this paper are subject to change in the future.

Platform Detail

Overview

The Cables platform is a hybrid system combining an off-chain order book and liquidity with on-chain settlement and transfer of value. The below iteration represents the version of Cables built for the Algorand network. This is a potentially viable application for other smart contract platforms, but may need to have certain pieces retooled considering the nuances of their implementation. This iteration of Cables achieves this hybrid system by utilizing multiple escrow contracts. Users access the exchange with a Web3-enabled wallet and their trades are handled via a stateless escrow contract, which interacts with the Cables-owned smart contracts and off-chain system. An escrow contract owned by the execution facility holds a set amount of funds corresponding to off-chain orders, which are utilized to facilitate the value transfer upon trade execution by a decentralized user. The key advantage of this system compared to traditional decentralized AMM models is that Cables allows for decentralized access to centralized liquidity that is deeper than decentralized liquidity offerings, while enabling users to have custody of their assets throughout the entire trading process, except for the brief moment the efficient on-chain execution of a wanted trade is taking place.

The following diagram helps visualize the flow of funds and data on the Cables platform.



Order Book and Liquidity

The first execution facility fueling the Cables off-chain order book and on-chain liquidity is Nexus, which aggregates liquidity from a wide array of centralized exchange offerings. This liquidity is aggregated and managed by an order management and matching system, which pairs with the Cables smart contracts to simultaneously update on-chain order data in real time. User orders on Cables are transmitted through the smart contracts to store their data, where they are also placed within the centralized system's order book and matching engine.

Assets

Cables aims to provide blockchain-based tools angled towards the FX industry. To that end, the platform is focused on stablecoins, which will comprise the majority of the available tokens and pairings, along with supported chain native token and Cables native token pairs. Cables currently supports BRZ, VCAD, USDC, and USDT. New token offerings and pairs can only be added by the Cables team. Asset data will flow in through the aforementioned centralized system, which will serve to give users accurate pricing with real time updates. In order to trade specific assets on Cables, users will need to opt-in to allowing the Cables smart contracts to access their tokens. The platform automatically checks the opt-in status for these assets and will prompt users to submit the proper authorization on-chain if necessary..

Order Types

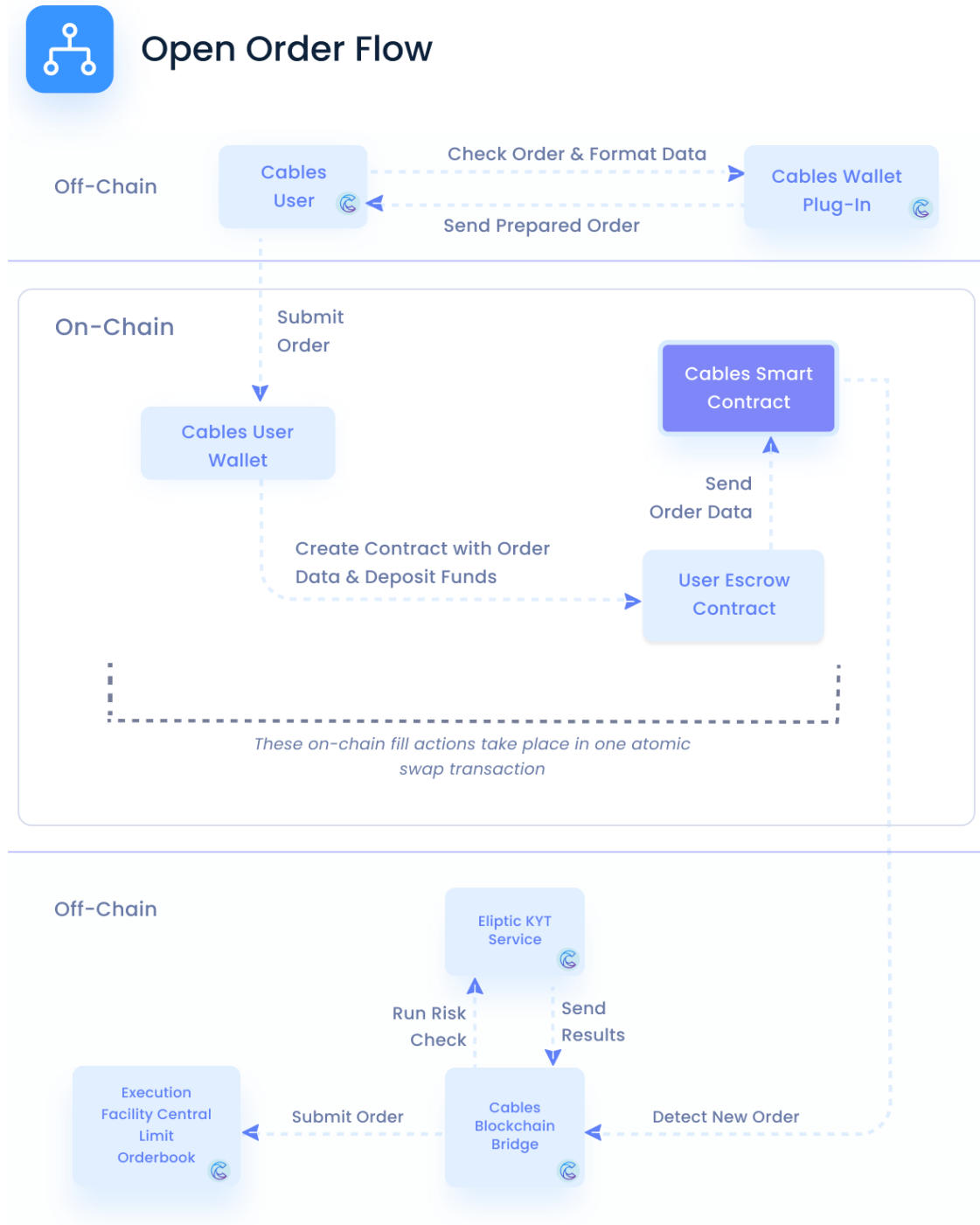
Cables supports both market and good 'til canceled (GTC) limit orders. Limit orders require user input of the quantity of base asset to be traded and the desired trading price. The order will stay open perpetually until it is fully filled or canceled by the user. Market orders only require the user input of the quantity of base asset to be traded. Market orders have a preset 5% slippage tolerance and upon submission will be automatically filled by the matching engine or canceled.

Order Placement

Upon order submission, Cables checks to ensure the user has opted in to the assets in the trading pair and satisfies the minimum balance criteria. The minimum balance criteria is calculated considering that the platform will collect an additional fee from users to cover any escrow-related transaction costs as their trade is processed. This network fee is returned to the user in full less the amount used to process the order upon order execution or cancellation. Once it is confirmed the user has satisfied the requirements to open an order, the Cables wallet plug-in formats the on-chain message for the user. This message contains details regarding the user's wallet address, asset pairing, quantity, and price. The given data is then used to create a hash, which serves as the escrow contract address for that individual trade. Each trade has its own unique escrow contract. Once the message has been created by Cables, the user is prompted to submit it on-chain using their Web3 wallet. Upon submission, a couple of actions take place simultaneously. If any of these actions fail individually, the entire order placement will fail and need to be attempted again by the user. The on-chain actions are the creation of the escrow contract using the aforementioned order data, deposit of funds from the user wallet into this escrow contract, and the signaling of the Cables-owned overarching application contract by the escrow contract. There is further a centralized blockchain bridge and associated local postgres database listening for these on-chain actions, which will log the new trades as they are confirmed on-chain and transmit them to the execution facilities' central limit order books. After an order is confirmed on-chain and before transmission by Cables to the execution facilities, the order data and user info are sent to Elliptic for Know Your Transaction (KYT) risk processing. This returns a risk score for the order. If the returned risk score goes above preset boundaries, then the order will be rejected. Otherwise, the order is transmitted forward in the process. After this process has been completed, the order will be displayed for the user on the Cables frontend. It is important to note that Cables does not have custody of the funds held in the escrow contracts and they are fully secure in that the only actions that can be taken from them is the fulfillment of the order by Cables, cancellation by the user, or fund reclaimment by the user upon order rejection. In summary, a placed order will have user funds stored in an individual secure escrow contract on-chain and order data stored in the same escrow

contract, the Cables on-chain application, the Cables off-chain bridge, and the execution facilities' off-chain central limit order books.

The following diagram helps visualize the order placement flow on the Cables platform.



Order Settlement

The order settlement process begins with the notification to the Cables blockchain bridge of an order status update by an execution facility. This settlement service is described more thoroughly below.

The bridge updates the order status in its local postgres database and signals the trade's individual escrow contract of the status update. At the same time, a signed proof transaction is generated via the Cables admin wallet. The individual escrow contract kicks off order settlement by sending the transaction batch with the Cables admin wallet proof to the on-chain application for validation and, upon validation, the individual escrow contract submits the atomic swap batch of actions on-chain. Similarly to the order placement process, all transactions take place in one atomic swap and will all fail in the event one of the underlying transactions fails. These on-chain actions are the transfer of the user funds or portion of user funds (in the case of a partial fill) from the individual escrow contract to the execution facility's on-chain liquidity wallet and the transfer of the corresponding amount of execution facility funds based on the order data from the execution facility's wallet directly to the user's Web3 wallet address. Additionally, this transaction includes the Cables admin wallet confirmation transaction ensuring the fill's validity and an update of the order status data held within the Cables application and the individual escrow contract. In the case of fully filled orders, the user's Web3 wallet is also returned the remaining network fee that was collected to handle the escrow actions upon order placement. Partially filled orders will appear in the user's open order tab with an updated status and fully filled orders will appear in the user's history tab.

The Cables blockchain bridge and on-chain components are in constant contact to ensure all order statuses and fills are fully up to date. These two components make up the Cables settlement service, which comprises two processes running in parallel - an event web socket and two scheduled tasks of catch-up logic.

Event Web Socket and Catch-up Logic

Submitted orders are handled by the centralized execution facility order books and associated matching engines, which emit an event upon order match and execution. When the event is received by the event web socket, the blockchain bridge will check the order status, associated user, and whether it is a partial or complete fill. Based on this data, the trade's unique escrow contract will be signaled to execute on-chain in the manner described above. The catch-up logic is two scheduled tasks running in parallel for two scenarios. The first scenario is to get the closed orders from $t=0$ and execute based on order status. The second scenario is to check the status of the unfilled and partially filled orders from the blockchain bridge's local postgres database and to execute those which are filled in the centralized database, but not on-chain. The second task serves to ensure that all orders are executed properly in case of centralized system downtime.

Catch-up Logic First Scheduled Task Flow

The specific operation of the catch-up logic's first scheduled task begins with the fetching of closed orders from $t=0$ every minute from the centralized database. Orders are then cross-checked with the orders saved in the blockchain bridge's local postgres database. If an order is completely filled in the centralized database, but has a different order status in the local postgres database, then the order is executed on-chain and its status is updated. If the order is partially filled in the centralized database and the status is unfilled in the local postgres database, then the order will be executed on-chain without any other conditions and its executed quantity, event id, and status will be updated in the local postgres database. If the order is partially filled in the centralized database and the status is partially filled in the local postgres database, then the executed quantity and event id (stored in the previous execution) will be checked. If any differences are found, then the order will be executed on-chain and updated in the local postgres database.

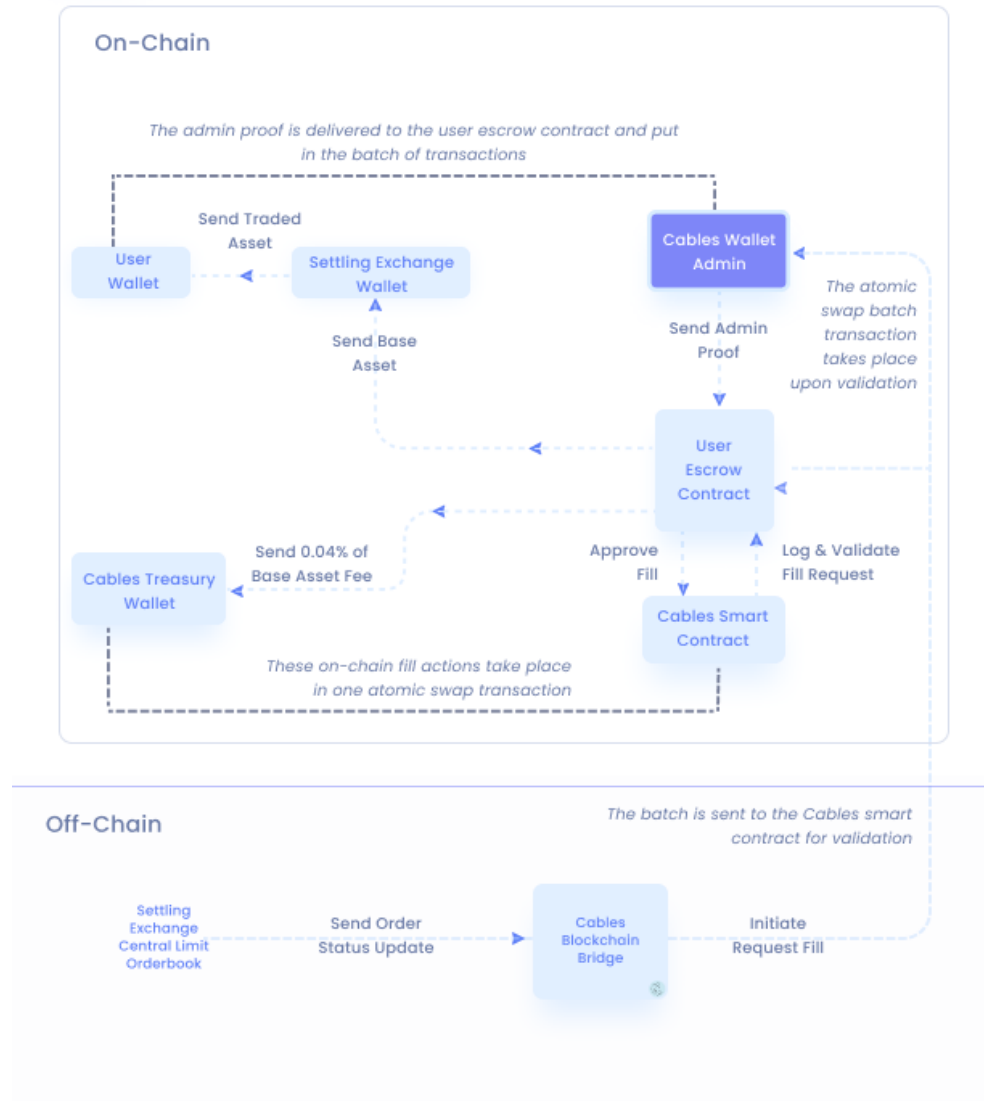
Catch-up Logic Second Scheduled Task Flow

The specific operation of the catch-up logic's second scheduled task begins with the fetching of unfilled and partially filled orders every ten minutes from the blockchain bridge's local postgres database. Order statuses are then cross-checked against the centralized database and executed based on their centralized database status. From there, orders with different statuses in the local postgres database and centralized database are executed and have their executed quantity, event id, and status updated in the same manner as the first task.

The following diagram helps visualize the order settlement flow for a partially filled order on the Cables platform.



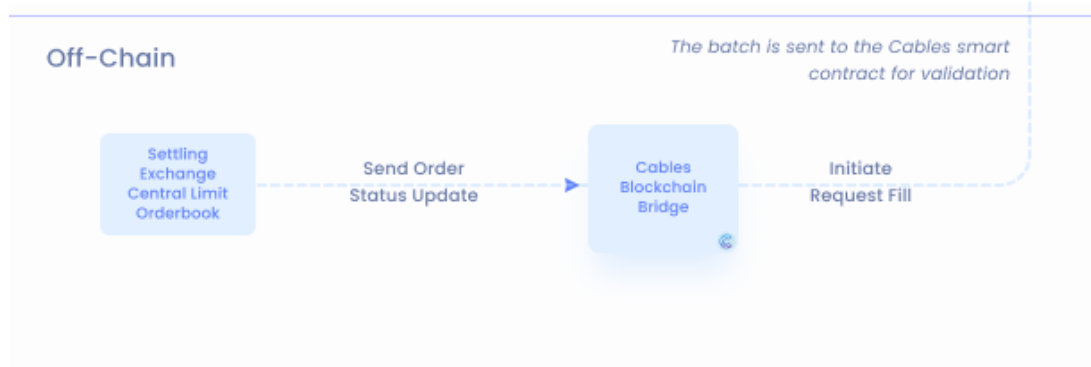
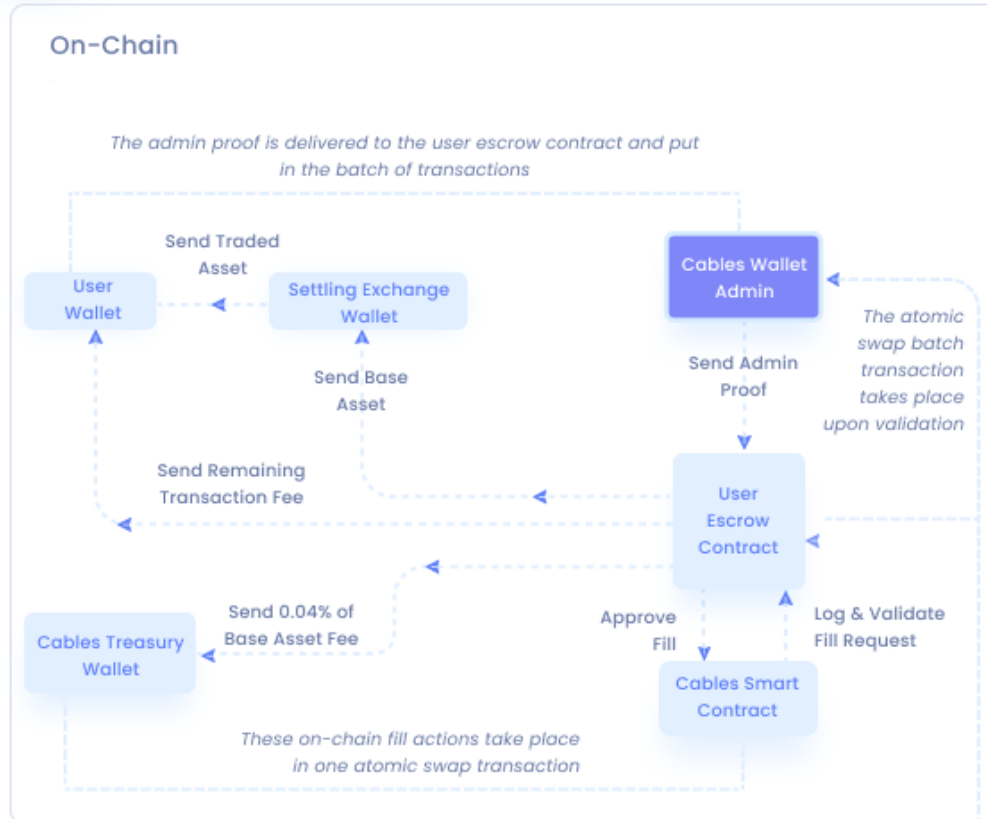
Partial Fill Order



The following diagram helps visualize the order settlement flow for a fully filled order on the Cables platform.



Full Fill Order

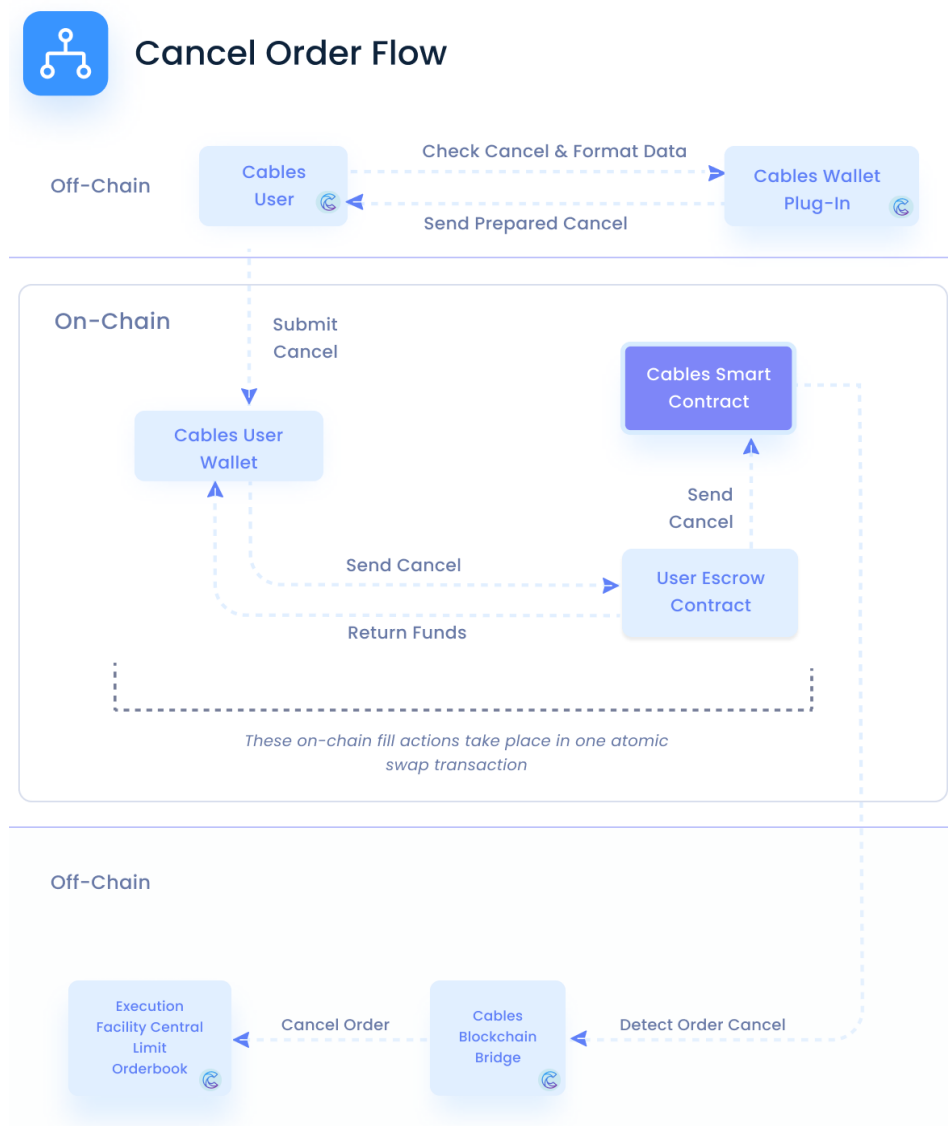


Order Cancellation

In the case of order cancellation, the process begins with the user selecting to cancel the order on the Cables frontend, where the message is properly formatted to be submitted on-chain. The user is then

prompted to submit the transaction through their Web3 wallet. Upon submission, the on-chain cancellation actions again occur simultaneously. The user transaction is sent to the specific trade's escrow contract, which cancels the order, returns user funds (including the remaining transaction fee) and notifies the Cables on-chain application of the cancellation. The blockchain bridge sees this cancellation confirmed in the on-chain application, which it logs and forwards to the execution facilities. From there, the execution facilities will remove the order from their books and the trade is considered canceled. The canceled trade will appear in the user's order history on the frontend.

The following diagram helps visualize the order cancellation flow on the Cables platform.



Order Rejection

In the case of order rejection, the order is not logged beyond the individual trade's escrow contract. User funds will remain in this escrow contract until the user takes the additional action of reclaiming them through the Cables frontend. This is a simple process, wherein the user selects the reclaim button, has the message formatted by the wallet plug-in and submits it on-chain in order to receive back the trade's associated funds and remaining transaction fees. The only sources of order rejection come from user failure of the Elliptic KYT risk check and potential general centralized system errors related to system maintenance downtime.

Access

The Cables platform is web-based and open to be used by any user with a Web3 wallet. However, users located in Puerto Rico, the Northern Mariana Islands, the U.S. Virgin Islands, Singapore, North Korea, Iran, the United Kingdom, Saint Vincent and the Grenadines, Guam, the United States, and British Columbia are not allowed to use Cables at this time. Cables employs a geofencing feature to ensure users are only able to access the platform from allowed jurisdictions. KYT procedures occur on the Cables platform using services from Elliptic. When a user connects their wallet to the Cables platform, Elliptic verifies the wallet and determines a risk score. Wallets that receive a score of 6 or higher will be restricted from using the platform, while all other users will be allowed entry. After order submission, Elliptic services are used again to run batch transaction analysis. The platform also has the ability to impose limits on any user regardless of actions taken directly through Cables.

Fees

All fees collected by Cables go to the Cables Treasury, which is strictly used for maintaining the platform and financing new features. Cables uses a maker-taker fee model for determining its trading fees. Maker orders are defined as orders that do not instantly fill and rest on the order book. Taker

orders immediately fill and cross Maker orders. They extract liquidity from the order book. Market orders will always be considered Taker orders, while limit orders may be Maker or Taker depending on their execution path. For both Maker and Taker order types, there is a 0.2% fee, which is taken in the sold currency of the trade. Additionally, Cables takes a protocol native token fee upon order creation to open the escrow contract that will hold the order's assets until closure. Upon closure, all of the remaining native token fee will be returned to the user along with the assets associated with the order. Due to the on-chain nature of the Cables platform, users will also need to pay gas fees to complete actions, such as opening a market order or closing a limit order.