2021 Roadmap to Institutional Adoption in Crypto Markets

LIQUIDITY ⟷ SECURE CUSTODY ⟷ CLEARING & SETTLEMENT

3 Eliminating counterparty and settlement risk:

"Clearing and Settlement"

GCEX Trustology BOSONIC

Clearing & Settlement on Layer-2 Blockchain:

How to Eliminate Counterparty Credit and Settlement Risk as a Digital Asset Broker

Institutional demand for access to cryptocurrencies and other digital assets has undeniably arrived. This is evident from headlines about large outright purchases of Bitcoin, to the land grab for institutional infrastructure through acquisitions and investments by the leading traditional financial institutions and fintech players.

Many of these institutions will access the digital asset markets through regulated brokerages, and therefore, many traditional brokerages and new, specialized brokerages, are looking to offer digital asset trading and services to their clients. Once a brokerage firm is comfortable with their regulatory positioning, the next major tasks include: 1) determining how they will handle custody safely and in a compliant manner; 2) how to efficiently access highly fragmented liquidity; and 3) avoiding or eliminating counterparty credit and settlement risk.

How do you bring together neutral, regulated, insured custody with aggregated global liquidity from all the top retail and institutional exchanges, market makers and OTC desks for best execution, as well lending and borrowing, plus the trading screens and APIs to deliver all of this to the end customer? Read on to learn how Bosonic brings together world-class, independent digital asset custody from Trustology and deep liquidity from GCEX in an Infrastructure-as-a-Service offering that can power your digital asset brokerage with the lowest possible risk and cost.

How Does Clearing and Settlement Work in Traditional Markets vs. Digital Asset Markets?

The process involves trade netting to identify what is owed to whom between a number of different parties, while simultaneously enforcing how a payment will be settled. Clearing is arguably the most complex of the two functions, since it involves netting down trades from many different counterparties into a net settlement amount due between the parties. For maximum capital efficiency and lowest risk, this must be done multilaterally in real-time. Typically, settlement is the riskier process since it involves managing the actual transference of ownership of fiat and digital assets in order to achieve finality.

In traditional markets, clearing and settlement of trades can take up to three days, thus, there's typically a large financial institution who acts as the backstop for the money owed. These can be Tier-1 banks serving as the Prime Broker and/or Central Counterparty (CCP) or other clearinghouse organizations who are then responsible to make sure that there is no counterparty credit or settlement risk, even if the original counterparties to the trades don't settle.

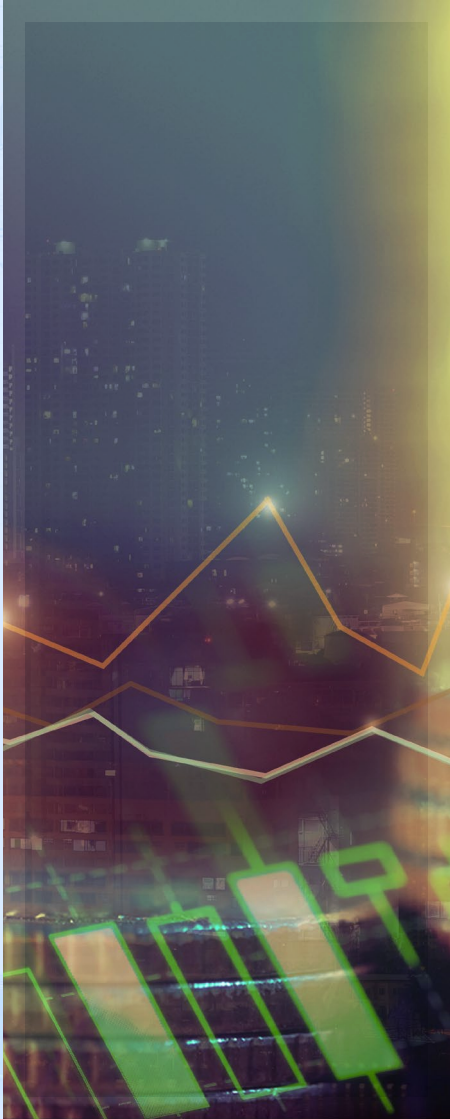
Currently, the biggest barrier to adoption for institutional investors, and especially fiduciaries in crypto and digital assets, is that there is no Tier-1 bank prime broker, central clearinghouse or institutional consortium like DTCC or CLS Bank providing an equivalent solution to fully eliminate these major risks to trading counterparties.

What is Prime Brokerage Anyway?

There is confusion in the digital asset space about what a prime broker provides to its clients. Some associate lending or liquidity aggregation with prime brokerage, but the core function is actually ***credit intermediation***. This means substituting the Prime Broker's credit for the client's credit so that the client trades legally and financially in the name of the Prime Broker, i.e., on the prime broker's own credit line with other counterparties and/or their counterparties' Prime Broker. This is similar and functionally equivalent to a clearinghouse which novates trades by becoming the buyer-to-every-seller and the seller-to-every-buyer, and bearing all the counterparty risk for both sides of every trade. Huge amounts of balance sheet, loss-reserve funds, member capital, insurance programs and other sources of funding sit behind these services.

Today, no organization in the digital asset space has a big enough balance sheet to facilitate true credit intermediation at scale for the entire institutional market. Even if a major bank decided to take balance sheet risk as a Prime Broker, it likely would have limited utility, because very few market participants would qualify for this credit underwriting and the balance sheet requirements would be very high and thus, the leverage gained would be very low (e.g., CME Bitcoin futures leverage is approximately 2:1 maximum so the clearinghouse can manage the risk).

The way the existing digital asset marketplace is structured, there is no such guarantor for clearing and settlement, so if the net amounts due aren't settled, it can result in a total loss. A default can have a cascading effect as other counterparty settlements fail – known as Herstatt Risk – and can ultimately force even major market participants into default and bankruptcy. Leverage in the system can make this cascading effect even more extreme.



Fake Prime Brokerage

Some companies claiming to provide "prime brokerage" services in digital assets actually increase their clients' counterparty credit and settlement risk substantially. How so? These firms **1) hold their client assets directly and/or, 2) extend unsecured credit (aka leverage) to their clients for trading, 3) place client assets at centralized exchanges or create credit relationships with the exchanges, and they 4) establish credit lines with market makers and OTC desks that are not secured by any collateral.** This is necessary in order to access liquidity on the clients' behalf or for their own hedging (where they are acting as a principal or riskless principal on the trades).

When assets are deposited with a centralized crypto exchange, the traders are issued the equivalent of a promissory note for their deposit held in an omnibus structure. However, these promises to repay could be rendered worthless if the exchange suffers from a hack, fraud or flash crash that results in off-market trading and liquidation of levered positions that blow through client collateral, creating debit (negative) balances on client accounts. Such losses may be mutualized and borne by all the clients of the exchange. Additionally, accounting information for all trades cleared and settled internally is in a regular database and not blockchain-based with cryptographically provable transactions and ownership chains, making it easy to manipulate and adding another dimension of risk. Institutional clients and fiduciaries want to avoid even indirect exposure to retail exchanges as counterparties. Needless to say, they also want to avoid uncollateralized credit risk with market makers and OTC desks.

With such so-called "prime brokerage" firms, whether they are trading with the client as a principal or on an agency basis, the client is accepting substantially increased and non-transparent counterparty credit risk for the convenience of having a single account to access multiple sources of liquidity. Even where advanced execution technologies are provided, the gains do not justify the risks for institutions and fiduciaries. Institutions entering the space could have a false sense of security based on their experience and reliance on traditional prime brokers – they need to remember to ask these digital asset "prime brokers" some critical questions, such as: **1) who is my counterparty to the trades?; 2) how big is the counterparty's balance sheet?; 3) will my assets be held at retail exchanges?; 4) will I have indirect exposure to credit based trading with exchanges or market makers or even other clients?; and 5) if yes, are these credit arrangements collateralized or unsecured?**

Settlement Network Risks and Limitations

In the OTC crypto market where trades occur off-exchange between clients and market makers and OTC desks, trades are settled bilaterally between each pair of trading counterparties. While some wallet solutions are dressed up as a "settlement network," and may make it easier and faster to settle net amounts due bilaterally between the parties, material counterparty credit risk still exists.

In such self-custody solutions, the counterparties must, at the time that settlement is due: **1) have the assets to settle—which is dependent on trade netting and receipt of settlement payments from many other parties; 2) agree to settle; and 3) have someone agree to go first, i.e., you transfer USD and hope to receive BTC in return from your counterparty—rinse and repeat with every counterparty, every day**. For brokers and asset managers who are fiduciaries, these are unacceptable risks. Furthermore, regulated entities generally can't self-custody client assets, which can make certain solutions commonly used to facilitate bilateral settlement unsuitable and not regulatory compliant.

Other attempts at trying to create a settlement network have different tradeoffs such as forcing all counterparties to a single custodian "walled garden," and then forcing allocation of capital to specific individual exchanges on a pre-trade basis, or forcing use of custodian provided liquidity and trade execution. Ultimately, it is critically important to be able to trade not just with any counterparty at a single custodian from a single pool of collateral in the client's own account, but with any counterparty at any custodian. This requires a cross-custodian trade execution and trade netting and settlement capability that uses a shared protocol, and avoids transferring risks to the participating custodians. It seems obvious that to scale, this solution needs to leverage blockchain and smart contracts with atomic settlement movements that are payment-vs-payment (PVP: concurrent and atomic). Mere promises to pay based on contractual obligations with settlement movements that are delivery-vs-payment (DVP: "who goes first" or Herstatt Risk issues) are not even used in traditional markets for net settlement between institutions.

Flavors of Liquidity Aggregation

Liquidity aggregation is critical for any institutional crypto offering, but not all "aggregations" are created equal. Some digital asset trading platforms do the technical work of integration to multiple liquidity sources and display consolidated liquidity in the aggregate with useful execution tools. However, to make the aggregation actionable, clients must: **1) have an account and assets at each underlying exchange; 2) have a credit line with each underlying market maker in order to trade on the aggregation; and then 3) they must rebalance assets on the various exchanges and make bilateral settlement payments continuously.** These solutions are generally non-custodial with respect to the platform provider, which is important, but there are material flaws in this approach including: **1) not eliminating counterparty credit and settlement risk to the underlying exchanges and market makers; 2) extremely inefficient use of capital (collateral); and 3) substantial manual human reconciliation and rebalancing effort with increased operational risks and costs.**

Other liquidity aggregators that often position themselves as "prime brokerage" are custodial given the clients open an account similar to that of a centralized exchange and transfers assets into their custody. These types of aggregators may send your assets to exchanges and/or open up uncollateralized credit lines with market makers to source liquidity for you or for their own hedging purposes. They often become the counterparty to the trades as principal or riskless principle. The underlying liquidity sources may not be transparent to the client, nor is the markup on the underlying core liquidity, increasing the spread that clients may receive and therefore execution costs. While providing some convenience, these types of solutions increase risk substantially.

Truly tradable aggregation of liquidity with no counterparty credit or settlement risk is only possible with Tier-1 bank or clearinghouse credit intermediation. Today, this doesn't exist in digital asset markets. The only viable alternative is the approximation of credit intermediation based on technology which performs an atomic exchange of fiat and crypto assets that have been digitized onto Layer-2 custodial blockchain ledgers with real-time clearing and settlement. This solution allows clients to face any liquidity source they choose, from exchanges to market makers, OTC desks and other market participants from the safety of their own custodial account. Brokerages can take advantage of existing pools of deep liquidity such as GCEX offers from their own account at their own custodian.

Lending and Borrowing

Institutional lending and borrowing are highly intermediated and inefficient in digital asset markets. Lenders generally entrust their assets to lending intermediaries and have to transfer their assets to this intermediary. The intermediary then seeks to find a borrower, AML/KYCs the borrower, and then enters into an agreement with the borrower. The borrower then sends collateral assets to the intermediary (e.g., USD) who then transfers the loan proceeds or assets (e.g., BTC) to the borrower. The intermediary then has to actively manage the default risk and eventually sends a portion of the interest rate paid by the borrower to the asset owner after first taking their cut. The current solutions have too much risk, not only to the intermediaries holding the assets, but with assets moving between various parties, and without a way to compel the return of coin when the crypto appreciates beyond the value of the collateral.

A model has emerged where lenders and borrowers hold fiat or digital assets at their own trusted custodian and avoid any asset movements. Lenders can easily manage their interest rates and risk parameters such as initial, variation and liquidation margin levels (LTV levels), as well as credit preferences. The assets are digitized without moving them from the owners' accounts to facilitate programmatic lending and borrowing in a real-time lending marketplace. This approach makes it possible for anyone with collateral on the network to be able to borrow assets made available for lend programmatically, on-demand, elastically, intra-day and at high velocity with no commitments on duration. Lend/borrow transactions can be executed as a repo transaction in real-time on custodial blockchain ledgers as an atomic exchange. This will make it possible to achieve unprecedented levels of capital velocity and trading activity.

This frictionless approach using digitized assets held by custodians can provide the institutional market with an aggregation of virtually unlimited third-party balance sheet for large-scale Prime Services like short lending, margin and leverage financing. This will support asymmetric trading relationships between various counterparty funding configurations, e.g., credit vs. fully funded, credit vs. margin, credit vs. credit, margin vs. margin, etc., while allowing the parties to be fully funded legally intra-day, and shifting credit risk to a wide range of willing lenders who know how to price these risks. It will also facilitate a competitive lending marketplace without intermediation, rehypothecation risks, or movement of collateral, as well as drastically reducing systemic risk by distributing risks away from any single balance sheet and guarantor structure.

What Can Digital Asset Brokers Do to Plan Ahead For a DeFi Future?

Today's emerging digital asset brokers should note that decentralized finance (DeFi) is a broad and complex playing field. There is a big AML/KYC question to solve for institutional participation in DeFi. In the current DeFi landscape, interactions are anonymous, but brokers need transparency because institutional clients will require it. Brokers can partner with a custodian like Trustology who can facilitate staking and lending from a custodial account while maintaining policies and controls necessary for regulatory compliance.

Institutional DeFi-like services amongst parties that each AML/KYC through a regulated custodian, such as the above described lending marketplace, offer a near-term solution for opportunities like margin and leverage financing for a yield. Without a doubt, future solutions will bridge to the broader DeFi protocols and unlock tremendous potential gains in both access to liquidity and crowdsourced balance sheet, as well as yield farming.

Institutional Technology Infrastructure to Bring Custody and Liquidity Together

It is important to clearly understand all of the risks and tradeoffs in order to scale an institutional digital assets brokerage. The key foundations and capabilities of a winning solution include:

1. **Custodian Agnostic:** hold your fiat and crypto assets in your own account at a neutral, compliant custodian that focuses on bullet-proof asset custody and security.
2. **Real-time Clearing and Settlement with Atomic Exchange:** tokenize your fiat and digital assets at your trusted custodian on a Layer-2 blockchain and experience trade execution as an atomic exchange on-chain in milliseconds, with zero counterparty credit or settlement risk -- Payment-vs.-Payment.
3. **Automated Net Settlement Movements:** continuous net settlement processed by custodians based on standing instructions from the clients and without any custodial balance sheet or credit risk, and without operating a clearinghouse.
4. **Cross-Custodian Trading and Net Settlement:** trade with counterparties at any other custodian with cross-margining, continuous netting, and custodian-to-custodian atomic net settlement on behalf of all trading counterparties.
5. **Tradable Liquidity Aggregation:** freedom to choose any counterparties for liquidity from retail and institutional exchanges, ECNs, market makers, OTC desks and brokerages, with a full range of trading platforms. White label capabilities for all trading needs including a lit CLOB exchange, dark pool, and liquidity aggregation with smart order routing, as well as an RFQ block trading solution.
6. **Lending/Borrowing via Institutional DeFi:** ability to aggregate unlimited third-party balance sheet through a lending marketplace where collateral stays in lender and borrower accounts at their own custodian(s). Margin and leverage financing are facilitated with repo transactions in real-time, executed as an atomic exchange on custodial Layer-2 blockchain ledgers.
7. **Real-Time Payments:** facilitates cash sweeps at the custodial blockchain level for multi-asset brokerage operations that need to support instant margin movements for clients 24x7.

Better with Bosonic: Clearing & Settlement Infrastructure-as-a-Service

See how custodians, exchanges, market makers, brokerages, and institutional trading firms benefit from atomic exchange with real-time clearing and settlement of fiat and digital assets with zero counterparty credit and settlement risk. Learn more about our end-to-end infrastructure today. Schedule a demo.

Next up in our series:

Think Ahead: "Get Ready for a DeFi and Technologically Innovative Future"

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