Coinbax Protocol

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Stablecoin Escrow and Dispute Resolution Layer for Payments

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Abstract

Stablecoins offer the potential for fast, near-instant settlement, but their inherent irreversibility creates significant risks, hindering adoption in critical commercial areas like e-commerce, platform ecosystems, and high-value B2B transactions where counterparty trust may be limited. Coinbax addresses this by providing a robust, multi-chain escrow and dispute resolution layer designed to accelerate fund access for recipients while mitigating risks like payment fraud and friendly fraud (when a legitimate buyer falsely claims a problem to force a refund). By integrating the programmability of DeFi, the compliance potential of regulated stablecoins (CeFi), and the necessary dispute mechanisms inspired by TradFi, Coinbax establishes a versatile trust infrastructure. Our system supports multiple Layer 1 and Layer 2 networks, empowering e-commerce platforms, businesses, exchanges for work, and their users to transact with greater confidence and speed. This paper details Coinbax's architecture, technical design, economic rationale, competitive positioning, regulatory approach, and potential applications, positioning it as a foundational component for secure, efficient digital commerce.

Table of Contents

1 | Introduction—The Evolving Landscape of Stablecoin Commerce

Stablecoins, digital currencies typically pegged to stable assets like the U.S. dollar, represent a significant evolution in payment technology. As of April 2025, their total market capitalization ranges between $225 billion and $236 billion , with leading stablecoins USDT and USDC collectively accounting for approximately 88-91% of the market . Annual transaction volumes reached trillions of dollars in 2024 , demonstrating significant capacity, and major financial institutions are increasingly integrating stablecoins, recognizing their potential for faster, cheaper transactions .

For businesses and platforms receiving payments, stablecoins promise near-instant settlement , a stark contrast to the multi-day delays common with traditional ACH or card payments . This speed can significantly improve cash flow. Furthermore, stablecoin transactions on efficient blockchains can have network fees of mere fractions of a cent (e.g., Solana) or fixed low fees (e.g., Hedera at ~$0.0001), potentially offering substantial savings compared to the 1.5%-3.5% average fees for credit cards or fees associated with domestic wires (sender fees $0-$35, recipient fees $0-$15) and ACH processing (average $0.20-$1.50 per transaction). These benefits are particularly relevant for e-commerce platforms managing payouts and businesses involved in high-value domestic transfers.

However, the finality of blockchain transactions—settlement within seconds or minutes—poses a substantial challenge . Unlike traditional systems with reversal mechanisms, standard stablecoin transactions are

generally irreversible once confirmed . This exposes recipients to significant risks, not only from outright payment fraud but also from "friendly fraud", which plagues traditional commerce . This lack of recourse hinders adoption in scenarios with lower counterparty trust, such as transactions between new users on a platform or large B2B payments where verification is crucial .

Coinbax directly addresses this trust deficit by layering escrow and dispute resolution onto stablecoin payments. This allows recipients to benefit from the speed of stablecoins while mitigating fraud risks. Our system provides a structured process to handle disputes, deterring friendly fraud and building confidence for transactions where counterparties may not have established trust, ultimately enabling faster, more secure stablecoin adoption in key commercial ecosystems. While consumer protection is a component, the primary focus is enabling faster, safer funding for recipients in complex transactional environments.

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2 | Problem Statement—The Trust Gap in Irreversible Stablecoin Payments

The core value proposition of blockchain technology—speed and immutability—creates a significant challenge for commercial transactions. Once a stablecoin payment is confirmed on the blockchain, it is final and cannot be easily reversed . This finality, while preventing certain types of fraud, leaves recipients vulnerable to others and creates friction in transactions requiring trust.

Platforms managing payouts to users, businesses receiving large domestic payments, and merchants dealing with new customers face significant risks. Without a mechanism for recourse, recipients are exposed to losses from sophisticated payment scams and the growing problem of friendly fraud, where legitimate transactions are improperly disputed . Traditional payment systems, despite their costs (e.g., card fees averaging 1.5%-3.5%) and delays, offer mechanisms like chargebacks to handle disputes, albeit imperfectly .

The absence of similar, reliable dispute resolution for stablecoins creates a "trust gap." It forces recipients to choose between the speed and potential cost savings of stablecoins and the (often costly) security of traditional rails. This gap particularly hinders stablecoin use in environments with lower inherent counterparty trust, such as online e-commerce platforms, exchanges for work, or high-value B2B transactions between less familiar parties . Coinbax aims to bridge this gap by providing the necessary infrastructure for secure settlement and dispute resolution, enabling faster funding and reduced risk for recipients.

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3 | Solution Overview—Coinbax as a Programmable Trust Layer

Coinbax provides a blockchain-native escrow and dispute resolution system designed to operate across multiple Layer 1 and Layer 2 networks. Our solution integrates the programmability of DeFi smart contracts, the stability of regulated stablecoins, and essential TradFi-inspired dispute resolution mechanisms to create a secure and efficient environment for digital commerce, particularly benefiting payment recipients and platforms.

Core Mechanism:

Payments facilitated through Coinbax-integrated platforms are initially held in secure, audited smart contract escrows during a configurable "review window." The duration of this window can be adjusted based on transaction risk factors (see Section 6.1), balancing speed of access for the recipient with necessary review time. If no dispute is raised by the payer within this period, the funds are automatically released to the recipient, enabling faster access to funds compared to traditional settlement cycles. If a dispute is initiated, the funds remain locked in escrow, and a formal dispute resolution process is triggered (see Section 6.3). This structured process provides a mechanism to combat payment fraud and deter friendly fraud. Based on the resolution outcome, the smart contract automatically distributes the funds—either releasing them to

the recipient or returning them to the payer.

This mechanism provides key benefits for recipients and platforms:

- Accelerated Fund Access: Enables recipients to access funds more quickly after the review window closes, compared to traditional multi-day settlement delays. This is further enhanced by optional instant liquidity solutions (see Section 4.1).
- Reduced Fraud Losses: The escrow and dispute process mitigates risks from various types of payment fraud, including friendly fraud, by providing a formal resolution pathway instead of automatic reversals. This protects recipient revenue.
- Enabling Low-Trust Transactions: By providing a safety net via escrow and dispute resolution, Coinbax facilitates transactions between parties with limited pre-existing trust, crucial for e-commerce platforms, exchanges for work, and high-value B2B deals.
- Enhanced Confidence: The presence of a clear dispute mechanism builds overall confidence in using stablecoins for significant commercial transactions. While offering recourse options benefits payers, the primary outcome is a more secure and reliable payment ecosystem for recipients.
- Developer Integration: Provides APIs and SDKs for seamless integration into existing e-commerce platforms, marketplaces, payment applications, and B2B payment systems.

By embedding these trust and dispute functionalities, Coinbax aims to make stablecoin payments a more viable, secure, and efficient option, particularly for platforms and businesses seeking faster funding and reduced risk.

3.1 Multi-Blockchain Architecture and Privacy Considerations

Coinbax is designed for interoperability, initially supporting key Layer 1 and Layer 2 networks, including Solana, Optimism, Arbitrum, and Base. This multi-chain approach enables integration with high-throughput, low-cost networks ideal for consumer-facing platforms (e.g., Solana), as well as Ethereum-compatible Layer 2s preferred for enterprise-grade and B2B use cases (e.g., Optimism, Arbitrum). Transaction costs are optimized through L2 scaling and potential batch processing, offering significant savings over traditional rails. For example, Hedera offers fixed transaction fees of approximately

$0.0001, while Solana and the targeted L2s typically maintain fees within a fraction of a cent range.

Maintaining user privacy while supporting regulatory compliance is a core design principle. In its initial implementation, Coinbax employs privacy-preserving techniques tailored to each network's native capabilities—balancing performance, transparency, and confidentiality:

- Layer 2s (Base, Optimisim,Arbitrum): Coinbax leverages encrypted off-chain data storage and modular smart contract logic to deliver privacy-preserving, compliance-ready infrastructure from the start. This model supports traceable, auditable transactions while keeping sensitive evidence and metadata secure. The architecture is designed to accommodate emerging zero-knowledge proof (ZKP) systems, including zk-SNARKs, allowing for future integration of selective disclosure and decentralized compliance mechanisms as these technologies mature.
- Hybrid Privacy Model on Solana/Hedera: On Solana, Coinbax applies a hybrid model. Sensitive dispute materials (e.g., documents, media, messages) are encrypted client-side using strong algorithms (e.g., AES-256) and stored off-chain via decentralized systems like IPFS. On-chain cryptographic commitments (e.g., CIDs) preserve linkage and data integrity. Access control is governed through secure key exchange, granting decryption rights only to relevant parties (e.g., recipient, payer, arbiter).

Both privacy approaches are designed to support necessary KYC/AML compliance checks, associating pseudonymous wallet addresses with verified identities where required by regulation, and enabling auditable trails for regulatory bodies without compromising general user privacy .

3.2 Focus on Regulated Stablecoins

To enhance trust and ensure a compliant foundation, Coinbax prioritizes support for regulated or transparently backed stablecoins, such as USDC (Circle), PYUSD (PayPal/Paxos), USDP (Paxos), and GUSD (Gemini). These stablecoins generally operate under stricter oversight regarding reserves and operational standards. For PYUSD, Coinbax targets its use on public blockchains (e.g., Solana, Ethereum) where it exists outside of PayPal's closed ecosystem, enabling dispute resolution for merchants accepting it directly on-chain. Coinbax is

designed to be adaptable, anticipating the emergence of future regulated stablecoins, potentially including those issued by traditional banks , ensuring the protocol remains aligned with evolving regulatory landscapes and market standards.

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4 | Economic Opportunity and Business Model

Coinbax addresses critical friction points in the rapidly growing digital payments landscape, aiming to unlock the potential of stablecoins for secure commerce by providing a necessary trust layer. The global retail e-commerce market was valued at approximately $6.33 trillion in 2024 and continues its expansion . Stablecoins settled trillions of dollars in transaction volume in recent years (e.g., $6.3 trillion in the 12 months to Feb 2025), demonstrating their capacity, with significant activity attributed to organic payments and remittances .

4.1 | Settlement Acceleration & Liquidity Infrastructure

While the escrow and dispute resolution mechanisms are foundational to Coinbax's value proposition, we recognize that merchants and platforms require immediate access to funds for operational efficiency. To address this need, Coinbax provides recipients with optional immediate access to funds, even before the escrow review window closes. This is achieved through two complementary liquidity options—both denominated entirely in regulated stablecoins and designed to preserve the on-chain integrity of the platform:

- A bank-supported, stablecoin-denominated credit line, and
- A native, staked stablecoin liquidity pool operated by the Coinbax protocol.

These mechanisms allow Coinbax to offer instant settlement while preserving dispute resolution rights. Coinbax or its liquidity providers bear the risk during the review window when advance funding is provided, with the advanced funds being separate from the escrowed

funds and collateralized by them. This structure manages risk in a capital-efficient, programmable manner.

4.1.1 | Bank-Backed Stablecoin Credit Line

Coinbax partners with regulated financial institutions that provide credit lines denominated in regulated stablecoins (e.g., USDC, PYUSD, USDP). These lines are used to instantly fund merchants and platforms upon payment initiation, while the actual transaction remains in escrow during its review window. Once the window closes—or the dispute is resolved favoring the recipient—Coinbax repays the bank in full, directly from the escrow smart contract. If a dispute favors the payer, the advanced funds are subject to recovery based on the terms agreed upon with the recipient and the risk parameters managed by Coinbax.

- Operational Flow:
  - Payer initiates a transaction → funds go to escrow smart contract.
  - Based on risk parameters (separate from escrow window tiering), Coinbax draws from a pre-approved stablecoin credit line to fund the recipient immediately with separate funds.
  - When escrow concludes (favoring recipient), escrowed funds automatically repay the credit line, including any associated fees. If escrow resolves favoring the payer, Coinbax manages the recovery of advanced funds according to its risk policies.
- Economic Model:
  - Merchant Fee: A small advance fee charged per transaction, priced based on risk assessment.
  - Bank Interest Cost: Usage-based interest paid to the financial institution on the drawn credit.
  - Margin: Coinbax retains the spread between the merchant fee and the cost of capital (interest + risk provision) as platform revenue.
  - Optional Subscription Fees: Platform clients may pay for premium SLAs or API access.

This model is particularly compelling for platforms or B2B providers that want instant payouts but require the trust and underwriting of a regulated financial institution. It mirrors traditional card-acquiring

models—now fully on-chain.

4.1.2 | Coinbax Native Liquidity Pool

Coinbax also supports a decentralized, smart contract-governed native liquidity pool where stablecoin holders stake capital that is used to advance payouts to recipients. This pool acts as a protocol-level liquidity engine, underwriting lower-risk transactions based on Coinbax's internal risk parameters. Liquidity providers (LPs) earn yield but also bear the risk of loss if advanced funds cannot be recovered after a successful payer dispute.

- Operational Flow:
  - Payer initiates a transaction → funds go to Coinbax escrow.
  - For eligible low-risk transactions, the protocol advances payout to the recipient using separate funds from the native liquidity pool.
  - When the escrow concludes (favoring recipient), the original payment is used to replenish the pool automatically. If escrow resolves favoring the payer, the pool absorbs the loss according to predefined rules.
- Economic Model:
  - Merchant Advance Fee: Charged per transaction for immediate access to funds, based on risk.
  - Investor Yield: A portion of the fee is distributed to liquidity providers (LPs) as yield, compensating them for providing capital and bearing risk.
  - Protocol Revenue: Coinbax retains the remaining spread to support operations and protocol sustainability.

This model positions Coinbax as the underwriter, using protocol-governed logic and programmable risk scoring to enable instant settlement—ideal for crypto-native platforms or global businesses already comfortable operating with stablecoins.

Together, these models form the foundation for Coinbax's scalable, programmable settlement engine—ensuring that recipients can access funds immediately, while the protocol retains the ability to manage and resolve disputes safely. This dual approach to liquidity allows Coinbax to serve a diverse range of clients with varying preferences regarding traditional finance integration versus decentralized infrastructure, with clear risk allocation for each model.

4.2 | Addressable Market & Competitive Positioning

Coinbax targets transactions where trust, security, speed of funding for the recipient, and cost-efficiency are paramount. Our primary focus areas include:

- E-commerce & Platform Payments: Platforms facilitating online retail, digital goods sales, online gaming transactions, subscription services, or other peer-to-peer transactions can leverage Coinbax for secure, automated fund release and dispute resolution. This enhances trust, reduces fraud and payout friction, and minimizes operational overhead.
- Exchanges for Work: Platforms connecting clients with freelancers or service providers (e.g., Upwork model) can use Coinbax escrow to secure funds, releasing them upon milestone completion or satisfactory delivery, mitigating risk for both parties.
- High-Value Domestic B2B Payments: For large payments within the US, stablecoins facilitated by Coinbax offer a cost-effective and faster alternative to domestic wires and high-percentage credit card fees . The added security of escrow and dispute resolution is particularly valuable for mitigating risk in significant transactions between businesses where counterparty trust may not be fully established.
- B2B Cross-Border Payments: While a competitive space , stablecoins offer significant advantages over traditional international wire transfers, which are slow (days) and expensive (sender/intermediary/recipient fees often exceeding $50-$100+, plus FX markups). Coinbax, by facilitating secure stablecoin transfers, can enable near-instant, 24/7 settlement at potentially much lower costs, accelerating funding for international suppliers or partners .
- Industries Sensitive to Chargebacks: Merchants in sectors with high chargeback rates (e.g., certain digital goods, high-risk industries) can benefit from the finality of stablecoin transactions, augmented by Coinbax's structured dispute resolution process as a recourse mechanism. This helps reduce losses from chargeback fraud and friendly fraud .

The emergence of solutions like Circle's Refund Protocol validates the market need for stablecoin dispute resolution. Coinbax focuses on providing a robust, multi-chain solution with integrated liquidity options to serve segments where faster funding, lower risk, and enabling transactions in low-trust environments are most compelling

today. While broad consumer e-commerce adoption faces hurdles due to the dominance of credit cards and their associated benefits (rewards, chargebacks) , Coinbax concentrates on these specific commercial applications.

4.3 | Revenue Model Approach

Coinbax intends to implement a sustainable business model centered around the value delivered through each secured transaction. The goal is to capture a fair portion of the economic benefit provided to users, primarily derived from accelerated funding, reduced fraud losses (including friendly fraud), mitigated counterparty risk, and potential cost savings compared to traditional methods. We anticipate employing transaction-centric approaches, potentially including:

- Transaction Processing Fees: A transparent fee structure for each payment processed and secured through the Coinbax escrow and dispute resolution system. Fees may be tiered based on factors like transaction volume, risk profile, or value-added features utilized.
- Advance Funding Fees: Fees associated with the immediate liquidity options detailed in Section 4.1, with amounts that vary based on risk parameters, transaction size, and funding method selected. These fees cover the cost of capital and risk associated with providing instant settlement.
- Dispute Resolution Fees: Fees related to the initiation or handling of third-party mediation or arbitration process (see Section 6.3), structured to cover the costs of the dispute mechanism and incentivize fair usage.
- Value-Added Service Fees: Optional, premium services related to specific transaction types (e.g., complex e-commerce payouts, enhanced compliance reporting) for additional fees.
- Liquidity Provider Returns: In the native liquidity pool model, distributing portions of advance funding fees to staked liquidity providers as yield for their capital and risk assumption.

The specific fee structure will be designed to be competitive and transparent, clearly demonstrating value to recipients and platforms by enabling faster, safer transactions, particularly in comparison to the costs and risks of alternatives. The model must sustainably cover the operational costs of maintaining a secure, compliant, multi-chain infrastructure, including network interactions, data storage, security audits, compliance programs, and the dispute resolution network.

Further details on pricing will be available in commercial documentation.

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5 | Regulatory Alignment and Compliance Strategy

Coinbax is designed with regulatory compliance as a core principle, aiming to operate as a trusted and responsible infrastructure layer within the evolving global landscape for digital assets and stablecoins. Our strategy focuses on proactive alignment with key regulatory trends and obtaining necessary licenses in operational jurisdictions.

5.1 United States

The U.S. regulatory landscape for stablecoins is actively developing. As of April 2025, significant legislative proposals are under consideration, including:

- The STABLE Act (H.R. 2392): Introduced in the House in March 2025 and ordered reported by the Financial Services Committee in early April 2025 .
- The GENIUS Act (S. 394): Introduced in the Senate in February 2025 and referred to the Committee on Banking, Housing, and Urban Affairs .

These draft bills primarily focus on regulating payment stablecoin issuers, establishing requirements for licensing, reserves (e.g., 1:1 backing with high-quality liquid assets), capital, reporting, and supervision . While both bills aim to enhance consumer protection , they do not appear to explicitly mandate transactional escrow or dispute resolution systems like Coinbax's model in their current forms .

Coinbax's approach, however, aligns with the spirit of enhanced consumer protection and market integrity embedded in these legislative efforts. By providing a mechanism for recourse and secure settlement,

Coinbax complements the goals of ensuring stablecoin reliability. Coinbax itself, as a service provider utilizing stablecoins, will need to navigate its specific regulatory classification under existing state and potential future federal frameworks. We are actively monitoring legislative developments and engaging with policymakers to ensure our model fits within a compliant structure.

5.2 European Union

The EU's Markets in Crypto-Assets (MiCA) regulation provides a comprehensive framework for crypto-assets and service providers . Key MiCA provisions relevant to Coinbax include:

- Effective Dates: Rules governing stablecoins (Asset-Referenced Tokens - ARTs, and E-Money Tokens - EMTs) applied from June 30, 2024. Rules governing Crypto-Asset Service Providers (CASPs) applied from December 30, 2024 .
- CASP Licensing: To operate within the EU, Coinbax will likely require authorization as a CASP from a National Competent Authority (NCA) in an EU member state . This involves meeting requirements related to capital adequacy, governance, risk management, operational resilience, client asset protection, conflicts of interest, and transparent disclosures . We are planning our operational structure and compliance program to meet these CASP requirements. Transitional periods for existing providers may apply until mid-2026 depending on the member state .
- Complaints Handling: MiCA mandates that CASPs establish effective and transparent procedures for handling complaints from clients regarding their own services . While Coinbax's dispute resolution mechanism addresses disputes between users (e.g., buyer-merchant), our internal operations will incorporate MiCA-compliant procedures for handling complaints about the Coinbax service itself.
- Transfer of Funds Regulation (TFR): Coinbax's operations must comply with the TFR, which requires CASPs to collect and exchange information on the originators and beneficiaries of crypto-asset transfers (the "Travel Rule"), effective from December 30, 2024 . Our privacy mechanisms are being designed with TFR compliance in mind.

Coinbax's escrow and dispute resolution service enhances the consumer protection goals of MiCA, providing an additional layer of security

for stablecoin transactions within the EU framework.

5.3 Global Compliance Approach

Recognizing the fragmented nature of global digital asset regulation , Coinbax adopts a strategy of prioritizing compliance in key initial markets (US and EU) while actively monitoring regulatory developments in other significant jurisdictions. Our goal is to build a globally respected platform by adhering to high standards of transparency, security, and consumer protection, adapting our operations as necessary to meet local requirements. We aim to function as compliant infrastructure, facilitating the convergence of DeFi's efficiency, CeFi's regulated assets, and TradFi's trust principles.

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6 | Technical Design

Coinbax's architecture is designed for security, transparency, efficiency, and adaptability across multiple blockchain environments. The core components include the escrow mechanism, dispute process, arbitration governance, and fund distribution logic.

6.1 Escrow Mechanism

- Smart Contracts: Payments are held in audited smart contracts deployed on supported blockchains. These contracts govern the locking, release, and refund logic based on predefined rules and arbitration outcomes. Security is paramount; contracts undergo rigorous internal testing, multiple external audits (reports to be made available), and will be covered by a bug bounty program to incentivize vulnerability discovery.
- Risk-Tiered Review Windows: The escrow mechanism incorporates risk management through configurable parameters, primarily the 'review window' duration. A registry smart contract (or equivalent mechanism depending on the chain) assigns risk tiers to participating merchants or platforms based on factors such as verified identity, transaction history, transaction value, and business category. This tier determines the duration of the

escrow "review window."
    - *Low-Risk:* (e.g., established merchants/platforms, low-value transactions) – Shorter windows (e.g., 24–48 hours) to facilitate faster fund access for the recipient.
    - *Medium-Risk:* Moderate windows (e.g., 3-7 days).
    - *High-Risk:* (e.g., new merchants/platforms, high-value digital goods, specific industries, lower counterparty trust scenarios) – Longer windows (e.g., up to 30 days) for enhanced scrutiny before funds are released. The specific inputs, weighting, and algorithm for risk tiering are under continuous development and refinement, potentially leveraging on-chain data and verified off-chain credentials. The mechanism aims to balance recipient liquidity needs with robust payer protection and risk mitigation. Coinbax may also integrate with specialized third-party fraud detection and risk assessment services via secure APIs to enhance risk tiering accuracy and identify potentially problematic transactions, further strengthening the security framework without relying on direct on-chain oracle feeds for dynamic parameter adjustments.
- Fund Security: Escrowed funds are held non-custodially within the smart contracts, ensuring Coinbax does not take direct possession of user assets.

6.2 Dispute Process

- Initiation: Buyers or authorized platform administrators can initiate a dispute via the integrated platform interface during the active review window. This action locks the funds in escrow pending resolution, preventing premature release to the recipient while ensuring funds are secured.
- Evidence Submission: Both payer and recipient are prompted to submit relevant evidence (e.g., communication logs, shipping details, service agreements, product descriptions, photos/videos) through a secure portal. The smart contract logic facilitates the linking of submitted evidence (via hashes/CIDs) to the specific dispute case on-chain.
- Evidence Storage & Privacy: To ensure privacy and manage potentially large files efficiently, submitted evidence is encrypted client-side using robust algorithms (e.g., AES-256) before being stored off-chain on decentralized storage networks like IPFS . Access keys are securely managed and shared only with the involved parties and the assigned arbiter/mediator . A

cryptographic hash (CID) of the encrypted evidence bundle is recorded on-chain within the dispute contract to ensure tamper-evidence and link the off-chain data immutably to the specific dispute . Data persistence on IPFS is ensured through redundant pinning across multiple nodes managed by Coinbax or reputable third-party pinning services, with costs factored into the operational model . Secure key management protocols and potentially private IPFS networks are employed for highly sensitive cases.

- Arbitration/Mediation: The dispute case, including access to the encrypted evidence, is handled according to the tiered governance model (Section 6.3).
- Resolution: Based on the outcome determined through the process outlined in Section 6.3, a final decision (e.g., rule in favor of payer, rule in favor of recipient, partial resolution) is recorded on-chain.
- Smart Contract Integration: The smart contract includes logic to manage the dispute lifecycle: enforcing the merchant response window, triggering escalation if the timer expires, and automatically executing fund distribution based on the final, recorded resolution .

6.3 Arbitration Governance

Coinbax employs a structured, multi-tier approach to dispute resolution, prioritizing automation, clarity, and fairness. This model replaces subjective or decentralized arbitration concepts with a system grounded in deterministic rules, merchant-first handling, and optional third-party adjudication—tailored for commercial use.

- Tier 1: Smart Contract Logic
  - *Initial Handling:* Disputes are first evaluated by pre-configured smart contract rules. These rules may assess delivery confirmation, platform data, or risk-based logic to determine if conditions for fund release or refund are met.
  - *Deterministic Outcomes:* If the dispute meets objective criteria (e.g. proof of delivery, no counterclaim), the contract automatically resolves the transaction.
  - *Rationale:* Automates straightforward cases, reduces operational overhead, and increases transparency through predictable outcomes.
- Tier 2: Merchant First Response
  - *Fallback Handling:* If the smart contract cannot resolve the

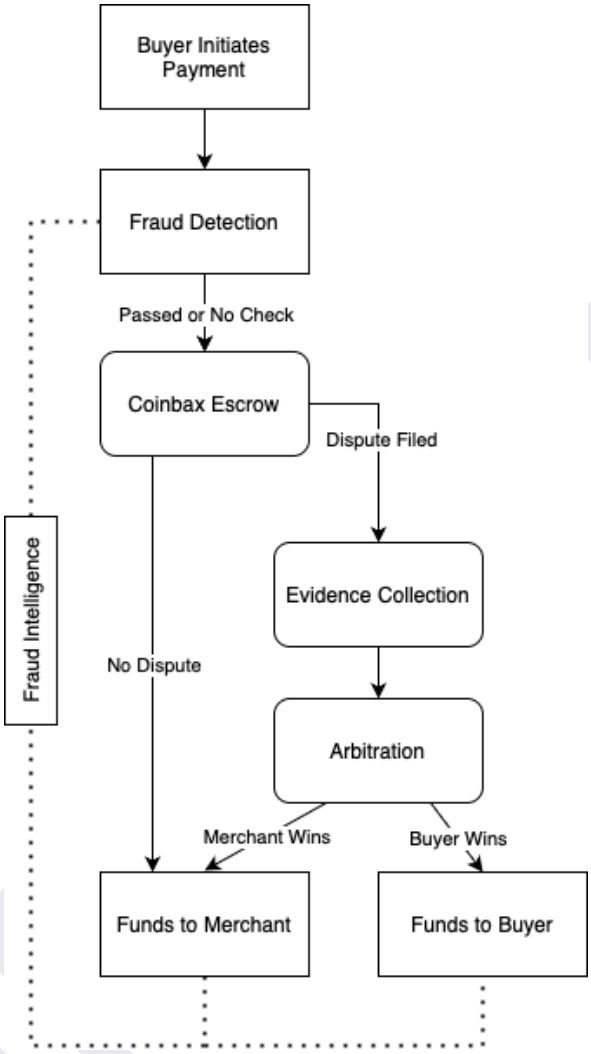
case deterministically, the merchant becomes the first human point of contact. A defined time window (e.g., 72 hours, configurable by risk tier or agreement) is set within the smart contract for the merchant to respond.
    - *Resolution Options:* The merchant can review the dispute and evidence, and choose to accept the payer's claim (triggering a refund), deny the claim (requiring further evidence or escalation), or propose a partial resolution. Evidence is submitted through a secure portal.
    - *Rationale:* Mirrors traditional chargeback representment processes, empowering sellers to resolve disputes efficiently and directly.
- Tier 3: Third-Party Arbitration Services
    - *Escalation Trigger:* or unresolved, high-value, or complex disputes, either party may escalate to a third-party arbitration service. This can be triggered manually or based on platform rules (e.g. non-response, fraud risk, or claim value thresholds).
    - *Integrated Services:* Coinbax supports integration with established arbitration providers such as JAMS and AAA. These services handle case intake, evidence review, and final resolution using their own procedures.
    - *Outcome:* The arbitrator's decision is recorded on-chain and enforces fund release or return through the smart contract.
    - *Rationale:* Ensures commercial-grade dispute resolution with legal standing, especially for high-risk or regulated environments.

This tiered approach balances speed and cost-effectiveness for common disputes with the robustness and legal assurance required for more complex commercial scenarios.

6.4 Fund Distribution

- Automated Execution: Upon conclusion of the review window (if no dispute) or upon the final, on-chain recording of a resolution decision from the appropriate tier, the escrow smart contract automatically executes the fund distribution.
- Immutability: Funds are transferred directly to the designated payer or recipient wallet address(es) as per the outcome. This process is deterministic, transparently recorded on the blockchain, and resistant to tampering.

Figure 1: Coinbax Escrow and Dispute Resolution Flow



7 | Applications

Coinbax's programmable trust layer, combining escrow with multi-tiered dispute resolution, enables a wide array of applications where secure stablecoin payments are advantageous. The initial focus is on market segments where the benefits of faster funding for recipients, significant reduction in fraud (including friendly fraud), and the enablement of transactions in lower-trust environments provide the most immediate and compelling value proposition.

- E-commerce Platforms: This remains a primary target application area. Coinbax facilitates secure payment processing and automated payouts for a diverse range of online businesses:
    - Online Retailers & Digital Goods Providers: Secure handling of payments for physical goods (with escrow potentially tied to delivery confirmation) and digital products (where disputes over access or functionality are common).
    - Online Gaming Platforms: Managing transactions for virtual assets, in-game currency, tournament entry fees, and prize payouts. Coinbax's dispute mechanism offers a structured way to address issues specific to virtual economies, potentially reducing reliance on costly chargebacks.
    - Subscription Services: Providing a reliable mechanism for recurring billing using stablecoins, coupled with a process for handling service-related disputes (e.g., dissatisfaction with service level) that is less disruptive than traditional chargebacks. Integration allows platforms to offer enhanced trust, reduce their own risk exposure in facilitating transactions, and streamline payout operations.
- Exchanges for Work: These platforms, connecting clients with freelancers, contractors, and service providers, are ideally suited for Coinbax's core escrow functionality.
    - Freelance Marketplaces (Upwork/Fiverr models): Coinbax provides a secure holding mechanism for project funds, releasing payment upon completion of agreed milestones or the final deliverable to the client's satisfaction. This mitigates risk for both parties – freelancers are assured of payment for completed work, while clients are protected against non-delivery or unsatisfactory results.
    - Gig Economy Platforms: Facilitating secure and timely payments for short-term tasks or services. By embedding trust into the transaction flow, Coinbax can significantly reduce friction and disputes related to payment and service delivery in the growing gig and freelance economy.
- High-Value Domestic B2B Payments: Coinbax offers a compelling alternative for businesses conducting large domestic transactions.
    - Utilizing stablecoins through Coinbax can provide faster settlement than traditional ACH and potentially lower overall costs compared to domestic wires or commercial card payments.
    - The escrow feature provides crucial counterparty risk mitigation, particularly valuable when dealing with new

suppliers, clients, or partners where established trust is limited.

- B2B Cross-Border Payments: Coinbax can streamline international commerce by leveraging stablecoins.
    - Offers significantly faster (near-instant, 24/7) and potentially cheaper settlement compared to the delays and high fees associated with traditional international wire transfers.
    - The added security layer of escrow and dispute resolution helps build confidence and reduce risk when transacting with international partners, facilitating smoother trade finance, supplier payments, and intra-company fund movements.
- Industries Sensitive to Chargebacks: Merchants operating in sectors frequently targeted by chargeback abuse and friendly fraud can utilize Coinbax as a strategic tool.
    - Accepting stablecoin payments secured by Coinbax offers a way to leverage the finality of blockchain transactions while still providing a structured, formal dispute process as an alternative to the often merchant-unfriendly chargeback system. This is relevant for sellers of digital goods, certain subscription models, and other verticals deemed high-risk by traditional processors.
- Targeted E-commerce Scenarios: While acknowledging the challenges of displacing credit cards for general consumer purchases due to existing habits and reward systems, Coinbax is well-suited for specific e-commerce niches.
    - This includes transactions involving high-value goods (e.g., luxury items, collectibles) where enhanced security and proof of transaction are desired by both buyer and seller.
    - It can also apply in contexts where both parties explicitly prefer the transparency and security features offered by a stablecoin escrow system for a particular online purchase, potentially enabling transactions that might otherwise be considered too risky by one or both parties.

8 | Conclusion

Stablecoins hold immense potential to reshape the landscape of digital commerce, offering compelling advantages in speed, operational efficiency, and potentially lower transaction costs compared to traditional payment rails. These benefits are particularly pronounced for B2B transactions, platform-based ecosystems, and cross-border payments. However, the widespread adoption of stablecoins for mainstream commercial use has been significantly hampered by the inherent risks associated with the finality and irreversibility of blockchain payments, coupled with the general lack of robust, standardized dispute resolution mechanisms comparable to those in traditional finance. This critical gap limits their utility in numerous scenarios that require high levels of trust or involve substantial financial value.

Coinbax provides the critical trust infrastructure needed to bridge this gap and unlock the full potential of stablecoins for secure commerce. By intelligently combining programmable smart contract escrow with sophisticated risk-tiered controls, adaptable multi-chain support, robust privacy-preserving techniques for sensitive data, a structured, multi-tiered dispute resolution process leveraging both merchant involvement and established third-party arbitration services, and an unwavering commitment to regulatory alignment, Coinbax offers a secure, reliable, and transparent framework for conducting commerce using stablecoins.

Our strategic focus is centered on enabling faster funding cycles for payment recipients – further enhanced by optional integrated liquidity solutions – while simultaneously reducing financial losses from payment fraud and the growing challenge of friendly fraud. Furthermore, Coinbax is designed to actively facilitate transactions in environments characterized by lower initial counterparty trust, making it particularly well-suited for e-commerce environments (including specialized areas like online gaming and subscription services), exchanges for work connecting clients and service providers, and high-value B2B payments both domestically and internationally.

The Coinbax solution effectively bridges the divide between the technological efficiency inherent in blockchain and stablecoins, and the fundamental trust and security requirements of modern commerce. It offers essential protections for all participants while prioritizing the critical needs of recipients and platforms for payment speed, security, and reliability. By thoughtfully aligning with emerging

global regulatory standards and integrating proven principles from Decentralized Finance (DeFi), Centralized Finance (CeFi) through the use of regulated stablecoins, and Traditional Finance (TradFi) via its structured dispute mechanisms, Coinbax is strategically positioned to facilitate the next significant wave of digital payment adoption, fostering a more secure, efficient, and trustworthy global digital economy.

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9 | Glossary

- ACH (Automated Clearing House): An electronic network for financial transactions in the United States, typically used for direct deposits, payroll, and B2B payments; generally slower and cheaper than wires.
- Arbitration: A process where impartial third parties (arbiters) resolve disputes based on evidence, leading to a binding decision. In Coinbax, this primarily refers to established third-party services like JAMS or AAA for escalated cases.
- B2B (Business-to-Business): Transactions conducted between two businesses, rather than between a business and a consumer.
- CASP (Crypto-Asset Service Provider): An entity providing crypto-asset services (e.g., exchange, custody, transfer) as defined under regulations like the EU's MiCA.
- Chargeback: A demand by a credit card provider for a retailer to make good the loss on a fraudulent or disputed transaction.
- CID (Content Identifier): A unique hash used in IPFS to identify content based on what it is, rather than where it is stored.
- Counterparty Trust: The level of confidence one party has in another party's reliability and integrity to fulfill their obligations in a transaction.
- DeFi/CeFi/TradFi: Decentralized Finance (DeFi) uses blockchain for permissionless financial services; Centralized Finance (CeFi) offers regulated crypto services via intermediaries; Traditional Finance (TradFi) includes established banks, payment networks, etc.
- E-commerce: Commercial transactions conducted electronically on the internet, including online retail, digital goods sales,

online gaming transactions, and subscription services.

- Escrow: A smart contract or arrangement where funds or assets are held by a neutral third party (or autonomously by code) until specific conditions are met.
- Exchanges for Work: Online platforms connecting clients with freelancers, contractors, or service providers for specific tasks or projects (e.g., Upwork, Fiverr).
- FedNow / RTP (Real-Time Payments): Instant payment networks in the US enabling 24/7 real-time settlement between participating financial institutions.
- Fiat Currency: Government-issued currency that is not backed by a physical commodity, such as the US Dollar (USD) or Euro (EUR).
- Friendly Fraud: When a legitimate customer disputes a valid transaction, often claiming non-receipt or dissatisfaction, to obtain a refund illegitimately (effectively a form of chargeback abuse).
- Hybrid Privacy Model: Coinbax's approach combining on-chain commitments/hashes with encrypted off-chain data storage (e.g., via IPFS) for sensitive information, balancing transparency, scalability, and privacy.
- Interchange Fee: A fee paid by the merchant's bank (acquirer) to the customer's bank (issuer) for each credit/debit card transaction; typically the largest component of card processing fees.
- IPFS (InterPlanetary File System): A peer-to-peer protocol for storing and sharing files in a distributed manner, using content addressing (CIDs).
- Layer 1/Layer 2: Layer 1 (L1) refers to base blockchain networks (e.g., Ethereum, Solana, Hedera). Layer 2 (L2) refers to scaling solutions built on top of L1s to improve speed and reduce costs (e.g., Optimism, Arbitrum, Base).
- Mediation: A facilitated negotiation process where a neutral third party (mediator) assists disputing parties in reaching a mutually acceptable resolution. In Coinbax, this is an optional second tier handled by Coinbax operations.
- MiCA (Markets in Crypto-Assets Regulation): Comprehensive EU regulation governing crypto-asset issuers and service providers.
- Non-Custodial: A system where users retain direct control over their private keys and assets, without relying on a third-party custodian. Coinbax escrow is non-custodial as the protocol itself doesn't control the funds directly.
- Off-Ramp / On-Ramp: Processes for converting cryptocurrency (like stablecoins) into traditional fiat currency (off-ramp) or

vice-versa (on-ramp), typically via exchanges or payment platforms.

- Oracle (Blockchain): A third-party service or decentralized network that connects smart contracts to off-chain data sources and systems. Oracles fetch, verify, and feed external information (e.g., price feeds, real-world event outcomes) to smart contracts. Note: Coinbax minimizes direct reliance on oracles for core escrow logic.
- Risk Tiering: Coinbax's system for categorizing merchants/platforms based on risk factors (e.g., identity, history, value, category) to determine appropriate escrow parameters (e.g., review window duration).
- Smart Contract: Self-executing code deployed on a blockchain that automatically enforces the terms of an agreement when predefined conditions are met.
- Stablecoin: A type of cryptocurrency designed to maintain a stable value, typically by pegging to a fiat currency (e.g., USD) or other assets.
- Wire Transfer: An electronic transfer of funds via a network administered by banks; often used for large or international payments, typically faster but more expensive than ACH.
- ZK-Proofs (Zero-Knowledge Proofs): Cryptographic techniques allowing one party (prover) to prove the validity of a statement to another party (verifier) without revealing any underlying information beyond the statement's validity. Used for enhancing privacy and scalability. zk-SNARKs are a specific type of ZKP.

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10 | References

Bastion Insights, The State of Stablecoins, March 2025. (Citing DefiLlama data)

Blockhead, Stablecoins: A New Haven Amid Tariff Panic.

Binance News via Binance Square, Stablecoin Market Cap Reaches $233.54

Billion with USDT Leading. (Citing DefiLlama data)

TheStreet Crypto, USDC and USDT stablecoins occupy 90% market share: Report. (Citing Dune/Artemis data for Feb 2024-Feb 2025)

CoinMarketCap Academy, USDC Nears $61 Billion Supply in 2025 as Institutional Demand Outpaces USDT.

Mitrade News, Stablecoins gain ground as centralized and DeFi crypto markets took hits. (Citing Coingecko data)

PaymentsCMI, Regulation, Liquidity, and the Stablecoin Tipping Point of Cross-Border Payments. (Citing $6.3T volume 12mo to Feb 2025)

Modern Treasury, Stablecoins in Action: Reshaping B2B and B2C Payments. (Citing $27.6T volume for 2024)

Deloitte, 2025: The Year of Payment Stablecoins?, February 2025.

Thunes Insights, Stablecoin Adoption: The Tipping Point for Mainstream Payments?

Ramp Blog, A Guide to ACH Processing Fees: Costs and Comparisons.

Hedera Documentation, Fees.

Clearly Payments Blog, How to Reduce Credit Card Payment Processing Fees in 2025.

SwipeSum Insights, The True Cost of Credit Card Processing in 2025: A Merchant's Guide.

Clearly Payments Blog, How Much Should Merchants Pay for Credit Card Processing in 2025?

Tipalti Resources, ACH Fees: How Much does ACH Payment Processing Cost?

Hypernative Blog, Dismantling the Fraud Barrier to Stablecoin Payments Adoption.

PYMNTS News, Stablecoins Keep Racking Up Milestones, Can They Crack B2B Payments?

Rapid Innovation Blog, Zero-Knowledge Proofs in Blockchain: Enhancing

Privacy and Scalability.

Chainalysis Blog, Introduction to Zero-Knowledge Proofs (ZKPs).

Solulab Blog, Zero-Knowledge Proof (ZKP) in Blockchain: A Comprehensive Guide.

IACR ePrint Archive, Auditing Zero-Knowledge Proof Circuits: Challenges and Strategies, 2024.

Rapid Innovation Blog, Blockchain IPFS: Comprehensive Guide To Decentralized Storage Solutions.

SellersCommerce Blog, Ecommerce Statistics In 2025 (Top Picks), (Citing eMarketer for $6.33T 2024 retail e-commerce).

Backlinko, Ecommerce Statistics (2025), (Citing eMarketer for $6.33T 2024 retail e-commerce).

Codora Blog, Stablecoins & Enterprise Payments: The 2025 Outlook.

Orbital Blog, Stablecoins: Solving Real-World Challenges in B2B Payments.

Crypto Briefing NewsBriefs, Circle introduces Refund Protocol for decentralized dispute resolution in USDC transactions.

Congress.gov, Text - H.R. 2392 - 119th Congress (2025-2026): STABLE Act of 2025.

Congress.gov, Committees - H.R. 2392 - 119th Congress (2025-2026): STABLE Act of 2025.

Congress.gov, S. 394 - 119th Congress (2025-2026): GENIUS Act of 2025.

Congress.gov, Actions - S. 394 - 119th Congress (2025-2026): GENIUS Act of 2025.

InnReg Blog, MiCA Regulation Guide: Key Dates & Compliance Steps for 2025.

AMF France, MiCA Regulation Explained.

ESMA Website, Markets in Crypto-Assets Regulation (MiCA).

Hogan Lovells Publications, The EU's Markets in Crypto-Assets (MiCA)

Regulation: A Status Update, February 2025.

Sumsub Blog, EU Crypto Regulations: MiCA, TFR, AMLD5 Explained (2025 Update).

IPFS Documentation, Privacy and encryption best practices.

Ohio State Law Journal, Decentralized Arbitration as Contractual Interpretation: A Case Study of Kleros, 2022.

ResearchGate, When Codes Meet Courtrooms- Examining the Enforceability of Blockchain Based Arbitral Awards, 2025.

Conflict Resolution Quarterly, Blockchain Arbitration: A Solution in Search of a Problem?, 2023.

Chambers Articles, The Future of Dispute Resolution: Enforcing Metaverse-Related Blockchain Arbitral Awards, 2024.

International Journal of Online Dispute Resolution, Decentralized Justice: The Case of Kleros, 2018.

IPFS Documentation, Privacy and encryption.

Grand View Research, E-commerce Market Size & Trends Analysis Report, (Citing $29.46T 2024 broader e-commerce).

ESMA Press News, ESMA and the European Commission publish guidance on non-MiCA compliant ARTs and EMTs, January 2025.

Visa Onchain Analytics, Transactions.

DirectPayNet Blog, Average Fees for Credit Card Processing in 2025.

Statista, E-commerce Topic Overview.