Cordex V0 Protocol Overview

Shaan Fulton @shaanfulton
Roger Mas @rogermas05
Kushagra Srivastava @kushagras481

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1 Introduction

Perfect markets create opportunity: they let the best and most cost-effective services rise to the top, no matter who builds them. In a truly open marketplace, anyone with a better or cheaper solution can compete—and win—based on merit, not marketing budgets or access to exclusive infrastructure.

Cordex is building the world's first fully open, decentralized API marketplace. Using blockchain technology and the Cordex Token (token address to be released), we make it possible for anyone to deploy, monetize, and access API services on equal footing. No more barriers. No more middlemen deciding who gets a chance.

1.1 Background

Today, just a few companies—OpenAI, Google, and Anthropic, to name a few—control the major APIs behind large language models, generative AI, and cloud-based data services. "API services" here means anything from AI model inference (text or image generation), to real-time data feeds (weather, finance), or other compute-driven endpoints.

If you build a faster LLM, a smarter document pipeline, or a more efficient image generator, getting it into users' hands means overcoming massive obstacles: building your own infrastructure, setting up payments, and finding users in a market dominated by tech giants. Cordex changes that. With Cordex, anyone can launch these kinds of API services directly on-chain and get paid automatically—no need for your own billing system or website.

Cordex enables new providers and independent innovators to compete directly with industry leaders. The result is more choice, better prices, and access to cutting-edge technology for everyone.

2 Network Stakeholders

- **API Users:** Entities that consume API services (e.g., querying Large Language Models, accessing weather or map data).
- **API Providers:** Entities that offer API services (e.g., local machine learning models, data providers).
- **Middlemen:** Intermediary actors such as routers and marketplace interfaces that facilitate, aggregate, or mediate transactions between users and providers.

Cordex supports a diverse ecosystem of stakeholders and remains fully use-case agnostic.

3 Technical Architecture

Cordex consists of two fundamental smart contracts:

1. **ProviderContract**: Manages secure transactions and token escrow between users and providers.
2. **ContractFactory**: Enables efficient deployment of ProviderContracts using the minimal proxy pattern (EIP-1167).

3.1 ProviderContract

ProviderContract facilitates secure transactions with features including:

- **Token Escrow**: Users deposit Cordex Token to secure API services.
- **Request Tokens**: Unique, expirable tokens that represent user API requests.
- **Claims and Refunds**: Providers claim payments upon fulfilling API requests, with automated refunds for incomplete or expired services.

3.2 ContractFactory

ContractFactory simplifies provider onboarding through:

- **Rapid Deployment**: Minimal proxy cloning ensures cost-effective, quick contract setups.
- **Provider Autonomy**: Independent management of API endpoints and escrow terms by providers.

4 Trust and Verification

Cordex is intentionally minimal by design: the protocol itself only makes it possible for an API endpoint to receive payment for services rendered. It does not verify the content, accuracy, or quality of responses from providers. Instead, trust and accountability in the network are managed by third-party routers, marketplaces, and curators.

These third-party actors play a critical role in ensuring that API endpoints deliver on their promises. Routers and marketplaces can implement customer rating systems, service reliability metrics, and require providers to stake Cordex Token as collateral—creating strong incentives to maintain high standards and penalizing misconduct or poor service.

Importantly, this is not centralization. Instead of relying on a single authority, Cordex enables a decentralized network of curators and mediators. Anyone can build or operate a router or marketplace interface, and multiple competing curators naturally balance each other out. This open ecosystem maintains the decentralized nature of Cordex while empowering users to select the providers and intermediaries they trust most.

Router Implementation

Routers act as intermediaries or sophisticated users within the Cordex ecosystem. They handle requests on behalf of API users, manage data flow to providers, and securely retain request data. Because routers have access to the full transaction context and service outcomes, they can fairly mediate disputes between users and providers, providing an additional layer of security and trust—without creating a single point of failure or control.

5 Workflow

The Cordex protocol enables seamless, secure transactions between API users and providers. Here is a step-by-step workflow, reflecting both the user experience and the underlying smart contract mechanics:

1. **Provider Setup**: API providers deploy their own `ProviderContract` using the `ContractFactory`. During deployment, they set parameters such as the API endpoint URL and a maximum escrow amount. This contract will securely hold user payments and manage service fulfillment.
2. **User Request and Escrow**: An API user interacts directly with the provider's smart contract. The user specifies the desired service and deposits a chosen amount of Cordex Tokens into escrow by calling `generateToken()`. The contract issues a unique, expirable request token representing their service request.

3. **Service Fulfillment**: The provider monitors incoming requests, processes each API call, and delivers the requested service (such as running an LLM pipeline or generating an image) at the specified endpoint. The off-chain service references the on-chain request token for authentication and billing.

4. **Payment Claim**: Once the service is delivered, the provider claims payment by calling `claimToken()` on their smart contract. Importantly, the provider does not automatically receive the full escrowed amount; instead, they specify (and can only claim) the actual portion of escrow required to fulfill the request (the "cost of service"). Any unspent portion is automatically refunded to the user.

5. **Settlement and Refunds**: If a request is not fulfilled before the token expires, or if the provider fails to claim payment, users can reclaim their escrowed tokens by calling `refundExpiredToken()`. All settlements—claims and refunds—are executed transparently on-chain.

6. **Transparency and Auditability**: All transactions are recorded immutably on the blockchain. Users and providers can independently verify payments, refunds, and service outcomes at any time.

This workflow ensures that users never overpay for incomplete or failed requests, that providers are compensated fairly for services rendered, and that all interactions are trustless and transparent.

Note: In practice, most users will not interact directly with provider contracts. Instead, they will typically send their requests to a router or marketplace interface that handles the transaction process on their behalf. Routers act as intermediaries, managing service requests, payments, and dispute resolution. They can require providers to stake tokens as collateral and may implement their own dispute resolution frameworks, ensuring that disputes are handled fairly and that both users and providers are appropriately compensated or refunded when issues arise. This layered approach maintains trust while preserving Cordex's decentralized architecture.

6 Benefits

Cordex unlocks a new era of competition and innovation in the API economy. By removing barriers and central gatekeepers, Cordex ensures that the best solutions—regardless of who builds them—can reach users directly.

- **Level Playing Field**: Whether you're a solo developer or an established company, if you build a superior API—like a faster document summarizer using a custom pipeline of LLMs, or a uniquely efficient image generator powered by your own Stable Diffusion workflow—you can offer it side-by-side with industry giants.

- **Real Market Discovery**: Cordex lets the open market decide which APIs deliver the best results for the best price. Users can easily compare performance and cost, driving rapid iteration and improvement.

- **Instant Monetization & Access**: Launch new models or data services without building your own billing system or web app. Deploy on-chain and start earning immediately.

- **Transparent and Trustless**: Every transaction, every payment, and every service outcome is secured and auditable on the blockchain. Providers and users interact directly, with no middlemen dictating terms.

- **Breaking Monopolies**: Cordex makes it possible to challenge the status quo. No longer are OpenAI, Google, or Anthropic the only options—anyone with a better idea can compete.

- **Accelerated Innovation**: Lowering the barriers to entry means more experiments, faster iteration, and a richer ecosystem for everyone.

6.1 Use Cases

Cordex enables a wide spectrum of applications:

- Deploy an LLM-powered pipeline that summarizes books or legal documents at a fraction of today's cost.
- Launch an image generation API using your own optimized Stable Diffusion models.
- Offer real-time financial or weather data feeds from independent sources.
- Share IoT sensor data securely across organizations.
- Provide decentralized analytics tools that anyone can use and improve upon.

With Cordex, the best ideas are just one deployment away from being discovered—and rewarded—by the market.

7 Token Economy

All transactions within the Cordex ecosystem are powered by the Cordex Token, which serves as the native currency for accessing and providing API services. By standardizing payments with Cordex Token, Cordex ensures seamless, trustless value exchange between users, providers, and intermediaries.

7.1 Token Supply and Incentives

Controlling the token supply gives Cordex the flexibility to strategically grow and support the ecosystem. In the early stages, we can allocate tokens to incentivize adoption—rewarding both API users and providers for their participation, and attracting high-quality services to the marketplace. This approach helps bootstrap liquidity and activity, accelerating network effects.

Additionally, a portion of the token supply will be set aside to fund ongoing protocol development, including improvements to smart contracts, audit processes, and user-facing router and marketplace interfaces. This ensures that Cordex remains secure, user-friendly, and at the forefront of innovation.

7.2 Future Utility and Governance

While the Cordex Token initially serves as a payment and escrow mechanism, future updates will introduce governance features. Token holders will be able to participate in protocol decisions—such as proposing and voting on upgrades, fee structures, or incentive programs—thereby shaping the evolution of Cordex in a decentralized and community-driven manner.

As the ecosystem grows, additional utilities for Cordex Token may include staking for service quality assurance, collateral for dispute resolution, or access to premium features within third-party routers or marketplaces.

7.3 Summary

By aligning economic incentives with network growth and community governance, the Cordex Token is designed to drive sustainable participation and continuous innovation across the decentralized API marketplace.

8 Roadmap

- **Phase 1**: Deployment of core protocols and smart contracts.
- **Phase 2**: Release user-friendly marketplace interfaces and routers.
- **Phase 3**: Release smart routers that automatically find the best APIs in the network to service the user's particular request.

9 Conclusion

Cordex fundamentally transforms API interactions, fostering an open, secure, and decentralized marketplace. By democratizing API and AI resources, Cordex drives innovation, enhances transparency, and promotes equitable technological growt.