OPA
TOKEN

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White Paper

OpenAI is a global leader in artificial general intelligence (AGI) research, development, and secure deployment. Its core mission is to ensure that AGI—systems with high autonomy capable of surpassing humans in most economically valuable tasks—can benefit all humanity.

CATALOGUE

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1 Project Background and Objectives

1.1 Background of Intelligent System's Scale Development

With the continuous advancement of intelligent model capabilities, artificial intelligence systems are evolving from experimental technologies into general-purpose infrastructure. Intelligent systems are no longer confined to single scenarios or closed environments, but are widely applied in multiple fields such as content generation, decision support, software development, data analysis, and automated operations.

This evolution process makes the intelligent system from "model ability itself" to "system operation ability", that is, how to provide intelligent service in a stable, safe and efficient manner under the conditions of large scale, multi-user, high concurrency and long-term operation, which becomes a new core problem.

In the context of large-scale application, the operation of intelligent system is no longer a single-point computing problem, but a complex system engineering involving model management, computing power scheduling, resource allocation, security control and service quality assurance.

Intelligence capability is gradually regarded as a general resource that can be invoked, measured and managed, and its large-scale development has put forward higher requirements for the underlying infrastructure.

1.2 Core Challenges of Existing Smart Infrastructure

Despite the continuous advancement of intelligent models, existing smart infrastructure still faces multiple challenges in large-scale deployment.

First, the resource abstraction capability is insufficient. Computing power, inference, and model services are typically provided as technical interfaces, lacking a unified and quantifiable resource representation. This results in limited scheduling efficiency within the system and constrained cross-entity collaboration capabilities.

Secondly, the supply-demand coordination mechanism remains imperfect. The demand for intelligent services exhibits high volatility, while underlying computing resources are constrained by rigidity and cost. The existing framework struggles to establish long-term, stable resource coordination relationships among different stakeholders.

Thirdly, incentives and contributions are difficult to quantify. In complex intelligent systems, long-term contributions such as model optimization, system maintenance, and tool development are hard to be accurately assessed and sustainably incentivized, which affects the overall evolutionary efficiency of the system.

Finally, system expansion and long-term operational pressure increase. With the expansion of usage scale, the costs of security, stability, compliance, and governance continue to rise, making the single-organization model inadequate to support the long-term sustainable operation of intelligent systems.

1.3 Background of OPA TOKEN's Proposal

Against this backdrop, OPA TOKEN was introduced as a system-level resource coordination tool for OPENAI's intelligent systems.

The OPA TOKEN was not designed for financial purposes, but rather to address the long-term operational needs of intelligent systems. Its core objective is to abstract highly complex intelligent resources and system behaviors into unified, measurable, and manageable functional tokens.

Through OPA TOKEN, OPENAI aims to achieve the following capabilities:

- Unified measurement of computing power, inference, and intelligent services
- Establish a stable internal resource settlement and scheduling mechanism within the system
- Mapping the actual contributions of different stakeholders into sustainable system benefits
- Reduce coordination and management costs during system expansion

As an integral component of the system, OPA TOKEN is deeply integrated with OPENAI's technical architecture. Its existence is driven by the system's actual operational needs rather than independent market activities.

1.4 Long-term Project Objectives and Design Scope

The long-term goal of the OPA TOKEN project is to support OPENAI's intelligent systems in achieving sustainable, scalable, and governable operations worldwide.

This goal is not about short-term scale expansion, but focuses on the stability, reliability, and long-term efficiency of smart infrastructure.

At the design level, OPA TOKEN explicitly defines the following boundary conditions:

- OPA TOKEN does not represent any form of ownership, profit rights, or control rights
- Not designed as a financing instrument or investment target
- No commitment to any price, return, or appreciation expectations
- All functions support system operation and ecosystem collaboration

The design philosophy of OPA TOKEN is fundamentally driven by technical requirements and system efficiency, with its success ultimately determined by the real-world application scenarios and long-term value creation potential of OPENAI's intelligent systems.

2 Issuing entity: OPENAI

2.1 Introduction to OpenAI

OpenAI is a global leader in artificial general intelligence (AGI) research, development, and secure deployment. Its core mission is to ensure that AGI—systems with high autonomy capable of surpassing humans in most economically valuable tasks—can benefit all humanity.

2.2 Core Technical Capabilities

Natural Language Understanding and Generation:

- Capability: Achieves human-level or even superior performance in tasks such as text creation, complex reasoning, code generation, multi-turn dialogue, and multilingual translation. It can understand context, grasp subtle semantics, and generate coherent, logically structured long-form content.
- Representative models: GPT series (GPT-3.5, GPT-4, GPT-4o).

Multimodal perception and generation:

- Capability: Enables mutual understanding and generation across different modalities such as text, images, and audio. For example, it can generate highly realistic or artistic images (DALL·E) based on detailed textual descriptions, or convert visual information into precise textual descriptions.
- Representative models: DALL·E series, GPT-4V (Visual), Sora (Text-to-Video), Whisper (Speech Recognition & Translation).

Context Learning and Generalization:

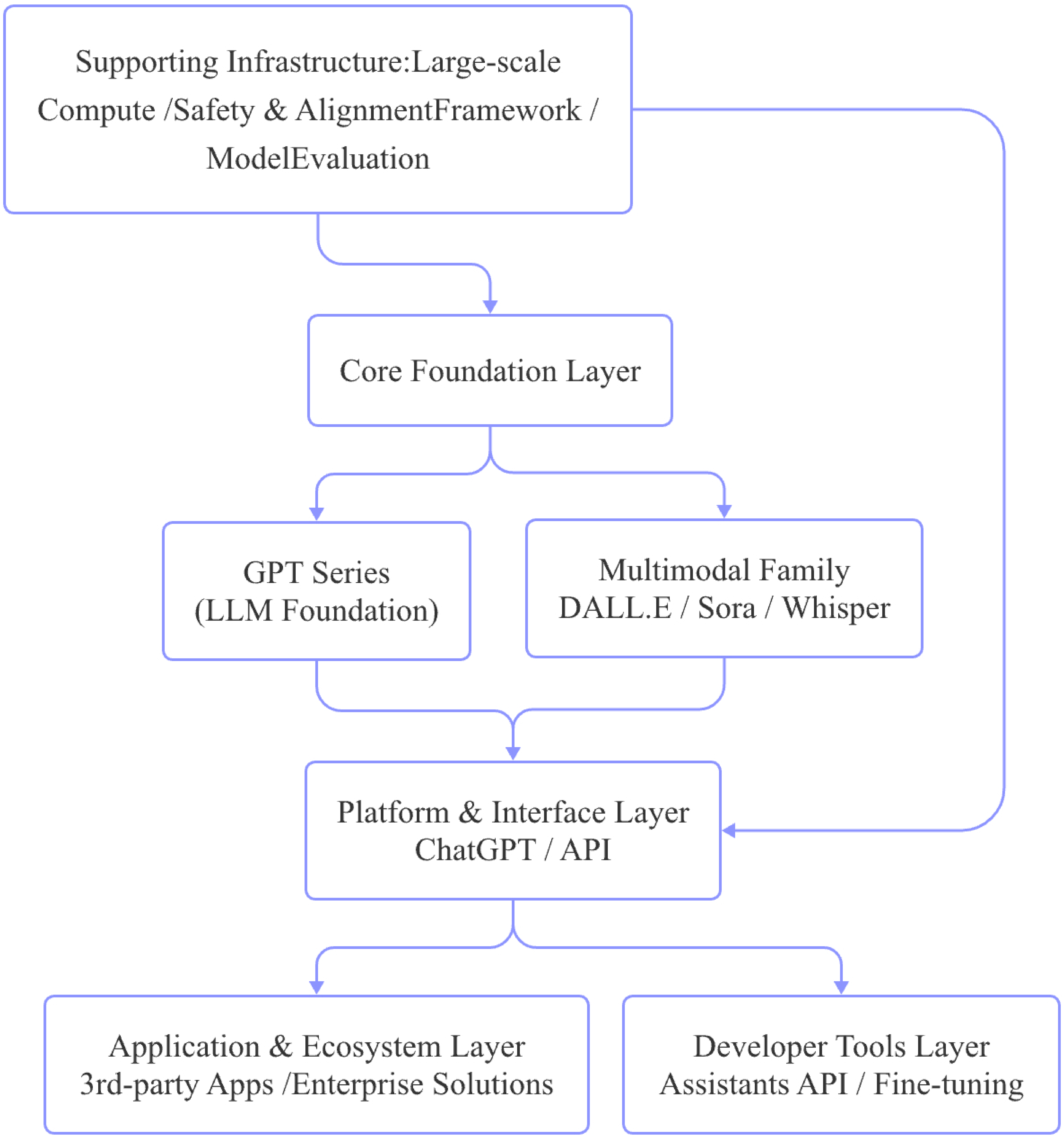
- Capability: Capable of adapting to new tasks rapidly without fine-tuning for specific tasks, demonstrating strong generalization and task flexibility through minimal or no sample learning.

Complex task planning and decomposition:

- Capability: Capable of breaking down complex and abstract user requirements into a series of executable sub-steps, and sequentially completing them by invoking corresponding tools or inference chains.

2.3 Overview of OpenAI's Technology System

OpenAI's technological framework is a three-dimensional architecture, with large language models (LLMs)as its core foundation, extending to multimodal capabilities, and empowering external applications through platform-based tools.



2.4 The Relationship Between OPENAI and OPA TOKEN

The OPA Token, issued by OPENAI and integrated into its intelligent system architecture, serves as a functional token for resource measurement, settlement, and collaboration within the system.

OPA TOKEN is not an independent asset; its use requires actual invocation and participation in the OPENAI intelligent system.

During system operation, OPA TOKEN is primarily used for:

- Measure the usage of computing power, inference, and intelligent services
- Coordinate resource exchange among different stakeholders
- Support system-level incentive and contribution mapping mechanisms

2.5 Issuance Principles and Long-term Consistency

The issuance and management of OPA TOKEN adhere to long-term principles that are highly aligned with OPENAI's technology strategy, primarily including:

- System Demand Driven: Token Usage and Release Based on Real System Demand
- Stability priority: Avoid short-term fluctuations in system operation
- Transparency and traceability: clear and auditable rules for issuance and use
- Long-term sustainability: support system evolves stably over multiple cycles

3 Project Overview: OPA TOKEN

3.1 Definition of OPA TOKEN

OPA TOKEN is a system-level functional token designed for large-scale AI system environments, enabling unified representation and coordination of computing resources, system services, and operational permissions across multiple participants, resource types, and operational states. Its core function is not value storage or speculative trading, but rather serves as an "operational credential" and " resource scheduling medium" in intelligent systems, achieving technically measurable, verifiable, and settleable system behavior mapping. From its inception, OPA TOKEN has been embedded into OPENAI's intelligent infrastructure architecture as an integral part of the system's operational mechanism.

3.2 Core Objectives of the Project

The core mission of the OPA TOKEN project is to establish a stable, scalable, and decentralized coordination mechanism for the long-term operation of complex AI systems. Key objectives include: unified measurement and scheduling of computing power, model services, and system resources; reducing trust and settlement costs in cross-entity collaboration; maintaining system order and resource efficiency without relying on centralized control; and establishing a clear, evolving incentive and constraint framework for future intelligent system scaling. OPA TOKEN is not intended to replace existing technological components, but rather serves as a coordination and settlement layer between them.

3.3 Design Logic and Basic Assumptions

The design logic of OPA TOKEN is grounded in three fundamental assumptions: First, future AI systems will increasingly adopt large-scale, distributed, and multi-agent collaborative architectures, making it impossible for any single organization to fully assume all resources and responsibilities. Second, intelligent systems must exhibit measurable and verifiable operational behaviors to ensure long-term stability. Third, system-level incentives that fail to align with actual operational contributions will create structural imbalances over time. Building on these principles, OPA TOKEN transforms system behaviors into quantifiable state changes through standardized and programmable mechanisms, thereby achieving long-term consistency at the engineering level.

3.4 System-level Value Positioning

Within the overarching framework, OPA TOKEN's value proposition is positioned at the system level rather than the application or financial layers. Its value is manifested through supporting system operations, reducing coordination friction, enhancing resource utilization efficiency, and improving the predictability of ecosystem participation. OPA TOKEN neither guarantees returns, nor maps assets, nor assumes centralized governance functions. Its value stems from the system's ongoing demand for its functionalities. As OPENAI's intelligent infrastructure expands in scale and operational complexity increases, OPA TOKEN will serve as a critical coordination unit within the system, consistently delivering foundational and irreplaceable engineering value.

4 OPENAI's Technical Architecture and System Design

4.1 Overview of System Architecture

The technical architecture of OPENAI employs a layered, decoupled, and modular system design to ensure the stability, controllability, and scalability of large-scale intelligent systems under long-term operational conditions. The overall architecture is based on resource abstraction, with a unified system coordination layer connecting computing resources, intelligent models, and external invocation interfaces.

The system is designed to avoid making any single component an irreplaceable core node. All modules communicate through standardized interfaces, thereby reducing overall risks during system expansion or upgrades. OPA TOKEN, as a system-level operational and settlement unit, is embedded in the coordination layer to represent system state changes and resource usage relationships, rather than functioning as an independent feature.

4.2 Intelligent Models and Inference Engines

The intelligent capabilities in the OPENAI system are built upon multiple model units. These models are deployed as service-oriented components, with their capabilities constrained by system rules and operational boundaries. The inference engine handles external request parsing, task decomposition, and execution scheduling, while selecting appropriate model resources based on real-time system load and security policies to complete inference tasks.

The model itself does not directly interact with the external environment. All calls must be processed through the inference engine and system coordination layer, ensuring that the model's behavior can be monitored, recorded, and restricted. This design aims to reduce the risk of model misuse and enhance overall operational predictability.

4.3 Computing Power Abstraction and Resource Scheduling Mechanism

In the OPENAI system, computing power is regarded as a foundational operational resource that is measurable, composable, and schedulable. Through an abstraction layer, computing resources of various origins and types are uniformly described as standardized computing units, enabling the system to make scheduling decisions without relying on specific hardware implementations.

The resource scheduling mechanism dynamically allocates computing resources based on task priority, system load, operational risks, and historical usage patterns. OPA TOKEN tracks resource consumption and system status changes during this process, providing traceable system-level records for scheduling actions.

4.4 Data Processing and Knowledge Structure System

The data architecture of OPENAI follows a hierarchical management principle, clearly distinguishing between raw data, processed data, and structured knowledge representations. The system strictly defines data flow paths and access permissions through predefined rules, effectively preventing unauthorized access or unauthorized dissemination.

The knowledge architecture supports model inference and system decision-making, with its update process strictly controlled to ensure behavioral consistency and explainability. Both data processing and knowledge updating are incorporated into system monitoring to guarantee stability and reliability during long-term operation.

4.5 Safety, Stability, and Risk Control

The system's security design is implemented across all layers of the OPENAI technical architecture. Through mechanisms like task isolation, resource isolation, and permission control, the system can contain the impact of a single point of failure, preventing it from spreading to the entire operational environment.

The stability assurance mechanism incorporates real-time monitoring, anomaly detection, and automated intervention strategies. When the system's operational status deviates from predefined safety thresholds, relevant modules are restricted or suspended to maintain overall system controllability. The objective of risk management is not to eliminate uncertainties entirely, but to confine them within the system's manageable scope.

4.6 System Scalability and Upgrade Mechanism

The OPENAI system is designed with future expansion and upgrade capabilities in mind. New models, resource types, or system modules can be integrated through standard interfaces without requiring structural modifications to the existing system.

The upgrade mechanism emphasizes gradual progression and backward compatibility to prevent disruptions or inconsistencies in the running system. OPA TOKEN rules maintain continuity during upgrades, with parameter adjustments serving as part of system evolution to adapt to changing operational requirements.

5 OPA TOKEN Functional System

The OPA TOKEN serves as a system-level operational unit within the OPENAI intelligent system, designed to achieve engineering objectives of measurability, constraint enforceability, and coordination. Unlike standalone modules, this token is embedded in the system's operational logic, forming an integrated relationship with resource scheduling, service access, and collaboration rules. This chapter provides a structured overview of the OPA TOKEN's core functionalities.

5.1 Resource Measurement and Settlement Units

In OPENAI systems, computing resources, model inference, data processing, and system services are all high-consumption operational elements. OPA TOKEN is used to uniformly map the consumption behavior of these heterogeneous resources into measurable system state changes.

The system converts different resource usage behaviors into corresponding TOKEN metrics through predefined rules, enabling unified settlement logic across resource types. This settlement is solely for internal accounting and scheduling decisions within the system, without involving any external exchanges or value commitments.

The OPA TOKEN enables continuous resource usage tracking, providing reliable data for load control, capacity planning, and operational optimization.

5.2 Intelligent Service Access and Call Credentials

OPA TOKEN serves as the access credential for intelligent services in the system. Any call to model inference, system interfaces, or advanced computing services must be authenticated with the corresponding number or quota of TOKENs, provided that the predefined permissions and rules are met.

This mechanism restricts unauthorized calls, prevents resource contention, and maintains service quality in high-concurrency environments. OPA TOKEN does not determine service availability but serves as a verification element in the access process, working in tandem with the permission system and scheduling policies.

5.3 System Incentives and Collaborative Media

In multi-stakeholder collaborative systems, cost inefficiency and behavioral inconsistency pose persistent operational challenges. OPA TOKEN serves to validate and provide feedback on compliant and effective system behaviors within the established framework.

When participants make verifiable contributions in computing power provision, system maintenance, model optimization, or other system support activities, the system can adjust their TOKEN status based on predefined rules, thereby establishing a stable collaboration mechanism without relying on human judgment.

The goal of this feature is not to encourage expansion, but to ensure that the behavior of all parties remains consistent with the overall stability of the system over the long term.

5.4 Ecological Participation and Contribution Mapping

OPA TOKEN is a unified mapping tool in the system for representing participation behaviors. Different types of participation behaviors—such as resource provision, technical support, operation and maintenance, or compliance use—can be converted into recordable and traceable TOKEN changes through system rules.

This mapping mechanism enables the system to process diverse contributions uniformly without requiring subjective evaluation, and to incorporate them into subsequent scheduling, permission, or service policies. In this process, OPA TOKEN serves as the state recorder and rule execution mediator.

5.5 Use Cases and Value Flow Logic

All usage scenarios of OPA TOKEN stem from system operations, including resource consumption records, service call identifiers, collaboration relationship coordination, and contribution status reflection. Its circulation path is strictly governed by system rules, forming a closed loop exclusively within the system.

The value of OPA TOKEN lies in its role in supporting system stability, scalability, and collaborative efficiency. As the system scales up and operational complexity increases, the frequency and rules of TOKEN usage may be adjusted, but its core functions remain aligned with the system's operational needs.

6 Token Economy Model

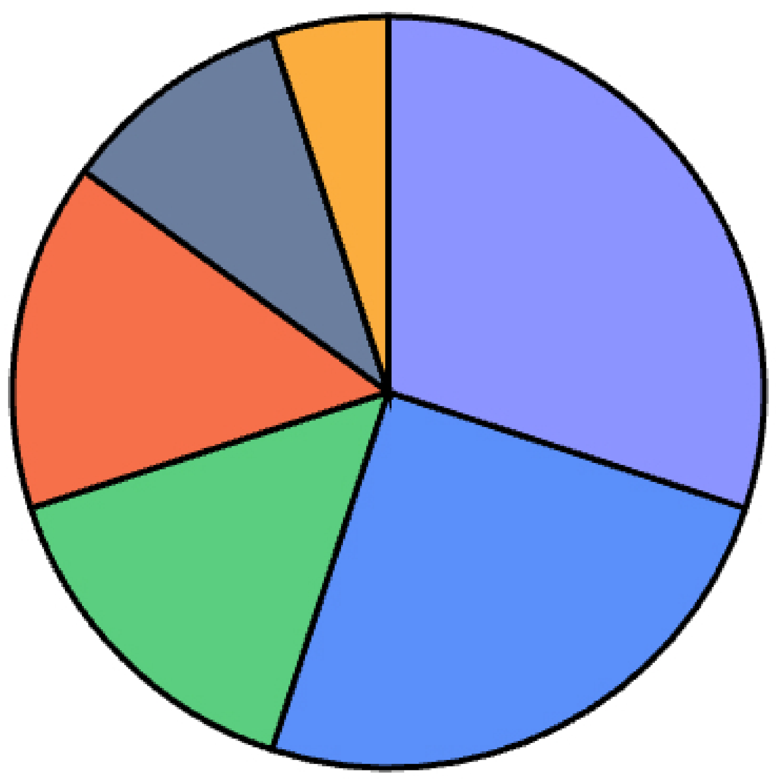
The OPA Token serves to standardize resource consumption measurement, coordinate multi-party collaboration, regulate system behavior, and ensure long-term stable network operation. Its economic model is designed around three core principles: predictable supply, clear division of labor, and long-term sustainability.

6.1 Basic Token Parameters

Token name: **OPA Token**

Token symbol: **OPA**

Total tokens: **800 million**



- Core protocols and system reserves: 30%
- Infrastructure nodes and service providers: 25%
- Ecological development and technical integration support: 15%
- Governance and ecological collaboration pool: 15%
- Ecological application and use incentive: 10%
- Early system construction and launch support: 5%

6.2 Incentive Mechanism and Supply Control

The OPA system does not employ an inflation-based incentive model, but instead maintains supply order through the following mechanisms:

- Fixed total dose + staged release
- A resource settlement mechanism that destroys resources upon consumption
- Locking up governance actions reduces the supply in circulation
- System reserve is enabled only when necessary

This design ensures:

- System scaling won't cause token chaos
- Incentives are always tied to actual contributions
- Long-term operating costs are predictable

6.3 Supply and Demand Balance and System Stability

The supply-demand dynamics of OPA Tokens are naturally regulated by the system's inherent behavior.

- Increased system usage frequency → higher token consumption
- Increased nodes and services → Enhanced incentive release
- Enhanced governance participation → Increased lock-in ratio

Through a closed-loop mechanism of 'consumption—motivation—lock-in—redistribution,' the OPA Token achieves the following without relying on any market narrative:

- Stable pricing of system resources
- Multi-stakeholder collaboration for long-term sustainability
- Safe, transparent, and predictable infrastructure operations

7 Team Introduction

The OPA project team, composed of OPENAI members, oversees daily operations and technical maintenance. Members collaborate on developing, deploying, and sustaining the OPA system, with their roles spanning system architecture, protocol design, infrastructure management, and governance coordination.

7.1 Core Management Team

Jakub Pachock -- Chief Protocol Architect

Responsible for the design of OPA core protocols and system abstraction layer, leading the development of resource measurement logic, permission models, and cross-module interface specifications. With extensive experience in distributed systems and underlying protocol research, specializing in structural stability and evolutionary design for highly complex systems.

Mark Chen -- Chief Systems Officer

Responsible for the overall system engineering and operational architecture of OPENAI, including node systems, resource scheduling mechanisms, and long-term operation and maintenance models. Expertise in large-scale system deployment, fault-tolerant design, and high-availability architecture governance.

Schuyler Akins -- Chief Governance & Coordination Officer

Responsible for the system governance framework, permission boundary design, and cross-team collaboration mechanisms of OPA, ensuring traceability and consistency in protocol upgrades, parameter adjustments, and system decision-making processes.

7.2 Consultants and Long-Term Collaborating Experts

OPA's consultants and partner experts are not temporary advisors, but rather long-term collaborators dedicated to establishing sustainable partnerships focused on ensuring long-term technical and system stability.

Consulting areas include:

• Distributed Systems and Network Architecture Expert

• Cryptography and Information Security Researchers

• Expert in large-scale infrastructure operations and cloud platform management

• Participants in technical governance and open protocol standard development

These experts provide OPA with architectural reviews, key decision-making recommendations, and long-term technical direction validation, ensuring the system maintains engineering rationality and technical consistency throughout its evolution.

8 Development Roadmap

8.1 Technology Evolution Path

The technology evolution follows the principle of "stability first, expansion second, and abstraction last", progressively enhancing the system's capacity to handle complexity.

Basic Protocol Stabilization Phase

Complete the engineering implementation of the OPA core protocol, resource metering model, and permission system to ensure repeatable and predictable system behavior in a controlled environment.

system module decoupling phase

The intelligent model, computing power scheduling, data processing and security control modules are further decoupled to reduce the internal dependence of the system and improve the efficiency of maintenance and upgrade.

The stage of automation and intelligent scheduling

The higher level of automation scheduling and policy execution mechanism is introduced, which enables the system to dynamically adjust the operation policy according to the load, resource status and security constraints.

cross-system collaboration phase

It supports protocol collaboration and resource coordination across multiple systems and environments, enhancing OPA's adaptability in complex technical ecosystems.

8.2 OPA TOKEN Function Extension

The functional expansion of OPA TOKEN is always centered on the mapping of internal system capabilities.

Basic resource settlement function

It is used for unified metering and settlement of computing, storage and intelligent service calls.

Enhanced capability for permission and quota expression

By introducing a more granular permission hierarchy and resource quota model, OPA TOKEN can express different levels of system access and usage capabilities.

The system incentive logic is perfect

The use and allocation rules of OPA TOKEN are mapped more accurately to the protocol maintenance, system contribution and stable operation behavior.

introduction of governance synergy function

Under strict technical constraints, OPA TOKEN participates in governance processes including protocol parameter adjustments and system policy selection.

8.3 Ecological Scaling Phase

The goal of ecological expansion is not to pursue quantity growth, but to achieve system compatibility and collaboration quality.

Developer and System Integration Phase

Provide standardized interfaces, development tools, and documentation to simplify system integration.

Node and resource participation in expansion

Support more types of computing, storage, and service nodes to connect to the system under unified rules.

Cross-organizational collaboration phase

Within clearly defined permissions and governance boundaries, it enables collaboration among diverse technical teams through the Open Platform Architecture (OPA) protocol.

ecological stabilization stage

Establish feedback and regulation mechanism of ecological operation to avoid the system complexity out of control.

8.4 Long-term System Vision

In the long run, OPA is not just a single protocol or tool, but a sustainable framework for intelligent system infrastructure.

Its vision includes:

- To serve as the universal foundational layer for resource measurement and scheduling in intelligent systems
- Provides a verifiable, governable, and evolving intelligent service runtime environment
- Achieve long-term stable operation without relying on a single entity
- To provide a reliable technical and governance foundation for future complex intelligent systems

The ultimate goal of OPA is not to replace existing systems, but to serve as a foundational coordination layer that enhances the controllability and collaborative efficiency of the entire intelligent infrastructure.

9 Disclaimer

This white paper is intended solely to explain the technical architecture, functional design, operational logic, and development plans of OPA TOKEN and its related systems. As a technical and informational document, it does not constitute any form of investment advice, offer, commitment, or guarantee. Any individual or organization that makes decisions or actions based on the content of this white paper shall bear full responsibility for such actions.

OPA TOKEN is a functional component of OPENAI's technical framework, primarily used for resource measurement, system invocation, permission expression, and protocol governance. OPENAI makes no endorsement, endorsement, or guarantee of any external circulation, pricing, exchange, or derivative use of OPA TOKEN.

While OPENAI adheres to rigorous technical standards and security principles in system design, engineering implementation, and operational maintenance, all complex technical systems may encounter uncertainties and potential risks during actual operation. These risks include but are not limited to software defects, protocol vulnerabilities, system failures, network anomalies, resource interruptions, security attacks, or unforeseen operational issues. OPENAI does not guarantee uninterrupted or error-free system operation under any circumstances, nor shall it be liable for any direct or indirect losses arising therefrom.

The technical architecture, functional modules, parameter configurations, and development roadmap outlined in this white paper are based on the current design status and reasonable technical projections. These may be adjusted, modified, or updated depending on system test results, engineering optimizations, governance decisions, or changes in the external technical environment. OPENAI reserves the right to revise, supplement, or delete the content of this white paper without prior notice. No historical version constitutes a guarantee of the future system state.

Any individual or organization using, deploying, integrating, or participating in the OPA system shall independently verify and comply with applicable laws, regulations, and regulatory requirements in their jurisdiction. Users shall bear all compliance risks, legal liabilities, and third-party disputes arising from the use of the OPA system or OPA TOKEN. OPENAI shall not be held liable for such matters.

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