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White Paper

# Raydium(RAY) Whitepaper



OKX Learn

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Lecture de 39 min.

👍 1



🪙 BNB -2,21 %

🪪 RAY -3,57 %

🪙 SOL -0,69 %

## CRYPTO-ASSET WHITE PAPER - [RAY]

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### I. DATE OF NOTIFICATION

The Date of Notification of this Crypto-Asset White Paper is [2025-11-20].

## II. STATEMENTS

A. This Crypto-Asset White Paper has not been approved by any Competent Authority in any Member State of the European Union. OKX Europe Limited is solely responsible for the content of this Crypto-Asset White Paper.

B. This Crypto-Asset White Paper complies with Title II of the Regulation (EU) 2023/1114, to the best of the knowledge of the management body, the information presented in the Crypto-Asset White Paper is fair, clear, and not misleading and the Crypto-Asset White Paper makes no omission likely to affect its import.

C. The Crypto-Asset White Paper provides that RAY may not be transferable, or liquid, or lose its value, in part or in full.

D. The Utility Token referred to in this Crypto-Asset White Paper may not be exchangeable against the good or service promised in the Crypto-Asset White Paper, especially in the case of a failure or discontinuation of the Crypto-Asset Project. This statement is TRUE.

E. The Crypto-Asset referred to in this Crypto-Asset White Paper is not covered by the investor compensation schemes under the Directive 97/9/EC of the European Parliament and of the Council.

F. The Crypto-Asset referred to in this Crypto-Asset White Paper is not covered by the deposit guarantee schemes under Directive 2014/49/EU of the European Parliament and of the Council.

### III. WARNING

- A. The summary should be read in conjunction with the content of the Crypto-Asset White Paper.
- B. The Prospective Holder should base any decision to purchase this Crypto-Asset on the content of the Crypto-Asset White Paper as a whole and not on the summary alone.
- C. The offer to the public of the Crypto-Asset does not constitute an offer or solicitation to purchase financial instruments and that any such offer or solicitation can be made only by means of a prospectus or other offer documents pursuant to the applicable National Law.
- D. This Crypto-Asset White Paper does not constitute a prospectus as referred to in the Regulation (EU) 2017/1129 of the European Parliament and the Council or any other offer document pursuant to the European Union or National Law.
- E. The RAY token is a fungible crypto-asset issued on the Solana blockchain, compliant with the SPL token standard, and has a fixed maximum supply of 555,000,000 units. It is also available as a wrapped asset on other blockchain networks, such as the BNB Smart Chain (BSC). As a utility token, RAY grants holders certain rights within the Raydium protocol. These rights include the ability to stake RAY tokens to earn a share of protocol-generated trading fees and to participate in liquidity mining programs to earn further RAY rewards.
- F. As a utility token, RAY grants holders access to specific services within the Raydium ecosystem. Holders can stake RAY to earn a share of protocol-generated trading fees or provide liquidity to earn RAY emissions. A governance system is planned for the future, which will allow token holders

to vote on community proposals. The RAY token is freely and instantly transferable, utilising the underlying blockchain network's standard processes.

G. This whitepaper is published solely in connection with the admission to trading of the RAY token on OKX Europe Limited's trading platform. There has been no offer of the crypto-asset to the public, and the crypto-asset has not been made available in exchange for fiat currency or other crypto-assets prior to its listing. The crypto-asset will be admitted to trading via OKX Europe Limited, an authorised crypto-asset service provider ("CASP") operating within the European Union. The trading admission does not involve any subscription, sale, or fundraising process. The purpose of this document is to provide key information regarding the characteristics of the crypto-asset, its governance, rights, and associated risks, to enable informed decision-making by users and market participants in the context of its admission to trading. Access to the crypto-asset on the trading platform may be subject to user verification, platform conditions, or applicable legal restrictions depending on the jurisdiction.

## **IV. INFORMATION ON RISKS**

### **1. Offer-Related Risks**

This whitepaper is submitted by OKX Europe Limited solely for the purpose of the assets admission to trading. No public offer of RAY tokens is being made by the issuer or OKX Europe Limited.

Risks associated with the admission to trading include:

**Service-related interruption:** Holders may be unable to access the utility due to technical, operation, or regulatory disruptions.

**Jurisdictional limitations:** RAY services or token utility may not be available in all jurisdictions, potentially restricting access.

**Platform reliance:** Access depends on third-party infrastructure (wallets, platforms) and service interruptions or failures may affect token utility.

**Limited liability:** OKX Europe Limited assumes no responsibility for the issuers project continuation, and token ownership does not confer contractual rights or guarantees.

**Unexpected Risks:** Beyond the risks outlined in this whitepaper, there may be additional risks that are currently unforeseen. It is imperative to note that certain risks may emerge from unforeseen events, changes, or interactions among factors that are difficult to predict. These unexpected risks may significantly and negatively impact the crypto-asset, the project, or the parties involved.

## 2. Issuer-Related Risks

**Operational Risks:** There is a risk that the issuer may face financial or operational difficulties, including insolvency, which could impact the continued development or availability of the services associated with the RAY token.

**Counterparty Risks:** Counterparty risks may arise where the issuer relies on third-party service providers or technology partners.

**Reputational Risks:** Adverse media and/or damage or loss of key personnel could negatively affect the ecosystem that the RAY token lives on.

**Competition Risk:** The issuer may face increased competition or changes in market conditions that affect its ability to carry out its objectives.

**Regulatory Risks:** The issuer may be subject to investigations, enforcement actions, or change in regulation that affect the tokens legal status in certain jurisdictions.

**Disclosure Risks:** The issuer may not be required to provide financial statements, limiting RAY token holders visibility into the financial health status of the issuer/project.

**Issuer Risks:** The information provided is based solely on publicly available sources and does not constitute any form of guarantee or warranty as to its accuracy or completeness.

**Governance Risk:** Projects that lack a formal, decentralised community governance mechanism, with decisions regarding protocol upgrades, treasury management, and strategic direction being made centrally by the project team may increase project centralisation risks. As a result, the direction of the project may rest predominantly with the issuer or a small group of contributors, which may affect the transparency of future changes, reduce alignment with user interests, and expose the project to operational or reputational risks if those central parties encounter difficulties or act in a manner contrary to the expectations of the broader community.

### 3. Crypto-Assets-Related Risks

**Market Volatility:** The RAY token may be subject to significant volatility and could lose value rapidly, either due to market conditions or otherwise (issuer-related/technology/project implementation risks)

**Utility Risk:** The RAY tokens utility depends on access to certain services, and any modification or discontinuation of those services could reduce the associated utility of the

token.

**Smart Contract Risk:** The RAY token may operate through smart contracts that may contain vulnerabilities, even if audited, and upgrades to the protocol or governance changes may affect functionality.

**Liquidity Risk:** Periods of low/limited liquidity may occur, particularly if the demand for the token or its use case decreases, which could have adverse effects on the RAY tokens price and future use cases.

**Holding Concentration Risk:** A small number of holders controlling a large portion of the circulating supply may create risks of security concerns, price manipulation, sudden sell-offs, or influence of key governance decisions.

#### 4. Project Implementation-Related Risks

**Scalability Issues:** There is a risk that the project may not be implemented or scaled as intended. Technical limitations or infrastructure bottlenecks could hinder the expected scalability of the project, especially if user demand exceeds network or protocol capacity.

**Governance Risk:** The project may be subject to governance processes that involve on-chain voting or community proposals. Misaligned incentives, low participation, or malicious actors may affect the outcome of governance decisions and disrupt the project's roadmap.

**Centralisation Risk:** Similar to governance risks outlined above, centralisation within the governance process, or validator centralisation could lead to a lack of decentralization within the network, which carries future risks in terms of trust within the project, and also in regards to future roadmaps where plans may not reflect the interests of the broader user base.

#### 5. Technology-Related Risks

**Blockchain Performance Risk:** The Solana and BNB Smart Chain blockchains, on which the token is issued, may experience downtime or congestion, which could delay or prevent token transfer or utility usage.

**Consensus Failure Risk:** A failure in the blockchains' consensus mechanism could result in halted transactions, unexpected behavior, or loss in network integrity.

**Smart Contract Vulnerabilities:** Although the token uses audited or standard smart contract makeups (SPL and BEP-20 standards), undetected bugs, exploits, or implementation errors could compromise functionality or security.

**Upgradeability Risk:** If the token or related contracts are upgradeable and have designated "owner" addresses, this introduces a central point of failure, and could be misused by malicious actors.

**Third-party Infrastructure Dependency:** Interaction with the token or project may rely on external infrastructure (APIs, wallet services, off-chain governance voting). Outages or attacks may interrupt access to token-related services.

**Interoperability Risk:** If the token interacts with other chains, bridges, or oracles, failures or exploits in those systems could affect the tokens operations.

**Protocol-level Risk:** Upgrades or forks of the protocol itself may affect the token, which could lead to compatibility issues and/or unexpected token behaviour.

**Emerging Technology Risk:** Advances in computing or undiscovered vulnerabilities in cryptographic algorithms may pose long-term security risks to the blockchain or associated smart contracts.

## 6. Mitigation Measures

**Blockchain Performance Risk:** The underlying blockchains mitigate performance risks in several ways. The Solana network is designed for high performance, operating on a Proof-of-History (PoH) combined with Proof-of-Stake (PoS) consensus mechanism. It mitigates congestion through a localized priority fee market. The BNB Smart Chain operates on a Proof-of-Staked Authority (PoSA) consensus mechanism, which uses a set of active validators to achieve high throughput and low transaction fees, managing congestion through its own gas fee market.

**Consensus Failure Risk:** Both networks have mechanisms to ensure network integrity. Solana's PoS consensus relies on a large, globally distributed set of validators who stake SOL as collateral. Malicious behaviour is deterred by "slashing" penalties, and network integrity is secured by the continuous validation of the Proof-of-History sequence. BNB Smart Chain's PoSA consensus relies on a limited set of elected validators who stake BNB. Network integrity is maintained by this validator set, which is responsible for confirming transactions and producing blocks.

**Smart Contract Vulnerabilities:** This token is deployed using widely adopted standards: the SPL (Solana Program Library) token standard on Solana and BEP-20 on BNB Smart Chain. The security of these token standards is bolstered by their extensive use, open-source nature, and continuous community review. On Solana, developers mitigate risks by using the audited Solana Program Library and frameworks like Anchor. On BNB Smart Chain, developers utilize battle-tested libraries like OpenZeppelin. While this reduces the risk of token-level bugs, vulnerabilities could still exist in other smart contracts that interact with the token.

**Upgradeability Risk:** The risk associated with upgradeable contracts is mitigated by on-chain governance and security practices. On Solana and BNB Smart Chain, the primary mitigation for contracts with "owner" addresses is to secure those addresses. This is typically achieved

by requiring multiple signatures (a "multisig") for any change, implementing mandatory time-delays that allow users to review and react to pending upgrades, or by setting program/contract authority to an immutable address. In many cases, this control is transitioned to a token-holders' DAO.

**Third-party Infrastructure Dependency:** To mitigate reliance on single, centralised service providers, the ecosystems of both chains support a diverse set of infrastructure. For Solana and BNB Smart Chain, decentralised indexing protocols (e.g., The Graph) and multiple independent RPC providers are available, allowing applications to avoid a single point of failure and ensuring high availability and censorship resistance.

**Interoperability Risk:** This token relies on bridges to move between Solana and BNB Smart Chain. This risk is mitigated by the use of established and audited bridging technologies. Transfers between these networks rely on various third-party bridges, which have their own security models (often involving multisig contracts, on-chain light clients, or external validator sets) and are subject to their own extensive audits.

**Protocol-level Risk:** Both blockchains manage protocol upgrades through public and transparent processes. Solana's roadmap and upgrades (SIMDs - Solana Improvement Documents) are subject to public research, developer discussion, and extensive testing before being recommended for mainnet adoption by the validator community. BNB Smart Chain's protocol development (BEPs) is managed by its core development community and validator set, with network upgrades publicly discussed, validated on testnets, and progressively rolled out to the mainnet.

**Emerging Technology Risk:** Long-term threats, such as advancements in quantum computing, are actively monitored by the core development communities of both networks.

Solana Labs and the Solana developer community are actively researching and developing solutions to ensure long-term network security. The BNB Smart Chain, being EVM-compatible, also benefits from the extensive research and development within the wider Ethereum ecosystem regarding quantum-resistant cryptography. The modular architectures of both networks are designed to allow for future cryptographic upgrades if a threat becomes viable.

## **V. GENERAL INFORMATION**

### **A. Information of the Offeror or the Person Seeking Admission to Trading**

**A.1 Name:** N/A

**A.2 Legal Entity Identifier (LEI):** N/A

**A.3 Legal Form, if applicable:** N/A

**A.4 Registered Office, if applicable:** N/A

**A.5 Head Office, if applicable:** N/A

**A.6 Date of Registration [YYYY-MM-DD]:** N/A

**A.7 Legal Entity Number:** N/A

**A.8 Contact Telephone Number:** N/A

**A.9 E-Mail Address:** N/A

**A.10 Response Time (days):** N/A

**A.11 Members of Management Body:** N/A

**A.12 Business Activity:** N/A

**A.13 Newly Established:** N/A

**A.14 Financial Condition for the past Three Years:** N/A

**A.15 Financial Condition since Registration:** N/A

**A.16 Parent Company, if applicable:** N/A

**A.17 Parent Company Business Activity, if applicable:** N/A

## **B. Information of the Issuer**

*This section shall ONLY be completed if the information is different to that listed in section 1, above.*

**B.1 Is the Issuer different from an offeror or person seeking admission to trading?:** TRUE

**B.2 Name:** Raydium Holding Foundation

**B.3 Legal Entity Identifier (LEI):** No information could be identified in regards to this field at the time of drafting this whitepaper.

**B.4 Legal Form, if applicable:** Foundation

**B.5 Registered Office, if applicable:** Singapore

**B.6 Head Office, if applicable:** Singapore

**B.7 Date of Registration [YYYY-MM-DD]:** No information could be identified in regards to this field at the time of drafting this whitepaper.

**B.8 Legal Entity Number:** No information could be identified in regards to this field at the time of drafting this whitepaper.

**B.9 Members of the Management Body:**

Line ID 1: No information could be identified in regards to this field at the time of drafting this whitepaper.

**B.10 Business Activity:** The issuer is a foundation that supports the ongoing development, maintenance, and promotion of the Raydium protocol. Raydium is a decentralized finance (DeFi) application that functions as an automated market maker (AMM) and decentralized exchange (DEX) on the Solana blockchain.

**B.11 Parent Company:** No information could be identified in regards to this field at the time of drafting this whitepaper.

**B.12 Parent Company Business Activity:** No information could be identified in regards to this field at the time of drafting this whitepaper.

**C. Information about OKX Europe Limited ("OKX")**

*This section shall ONLY be completed if OKX draws up the Crypto-Asset White Paper.*

**C.1 Name:** OKX Europe Limited

**C.2 Legal Entity Identifier:** 54930069NLWEIGLHXU42

**C.3 Legal Form, if applicable:** Private Limited Company

**C.4 Registered Office, if applicable:** Piazzetta Business Plaza, Office Number 4, Floor 2, Triq Ghar il-Lembi, Sliema SLM1562, Malta

**C.5 Head Office, if applicable:** See C.4

**C.6 Date of Registration:** 2018-09-07

**C.7 Legal Entity Registration Number:** C 88193**C.8 Members of Management Body:**

Line ID 1: Erald Henri J. Ghooos (Belgian, See C.4, Director)

Line ID 2: Fang Hong (American, See C.4, Director)

Line ID 3: Joseph Portelli (Maltese, See C.4, Director)

Line ID 4: Wei Man Cheung (Dutch, See C.4, Director)

**C.9 Business Activity:** OKX Europe Limited is licensed as a Crypto-Asset Service Provider by the Malta Financial Services Authority, bearing licence number OEUR-24352, to provide crypto services under the Markets in Crypto-Assets Act, Chapter 647, Laws of Malta and is the operator of a Trading Platform for Crypto Assets, in accordance with Article 3(1)(18) of Regulation (EU) 2023/1114 (MiCA).

**C.10 Reason for Crypto-Asset White Paper Preparation:** This crypto-asset whitepaper has been prepared in accordance with Regulation (EU) 2023/1114 (MiCA) for the purpose of: The admission to trading of RAY on regulated platforms, starting with the OKX Exchange. OKX Europe Limited as a result of being a licenced CASP endeavours to fulfill the obligations established under MiCA and the respective MFSA guidelines to: Notify this whitepaper to the MFSA; Publish the whitepaper publicly; And ensure its registration in the MiCA register maintained by the European Securities and Markets Authority (ESMA). This whitepaper has been prepared to provide transparent, accurate, and fair information to prospective token holders and regulatory authorities in line with the principles of MiCA.

**C.11 Parent Company:** OKC International Holding Company Limited

**C.12 Parent Company Business Activity:** The primary business activity of the parent company is holding of investments.

### **Other Information**

\*This section shall ONLY be completed if someone, other those referenced in Section 1 to 3, compile and complete the Crypto-Asset White Paper.\*

**C.13 Other Persons drawing up the Crypto-Asset White Paper:** N/A

**C.14 Reason for Crypto-Asset White Paper Preparation:** N/A

## **VI. INFORMATION ABOUT THE CRYPTO-ASSET**

### **D. Information about the Crypto-Asset Project**

**D.1 Project Name:** Raydium

**D.2 Crypto-Assets Name:** See F.14

**D.3 Abbreviation:** See F.14

**D.4 Crypto-Asset Project Description:** Raydium is a decentralized finance (DeFi) protocol operating as an automated market maker (AMM) and decentralized exchange (DEX) on the Solana blockchain. Launched in February 2021, the platform enables permissionless trading and liquidity provision for SPL standard tokens. Raydium utilizes a concentrated liquidity market maker (CLMM) model, allowing liquidity providers to allocate capital within specific price ranges to improve capital efficiency. The protocol also features LaunchLab, a community-driven launchpad that facilitates the creation and initial liquidity offering of new SPL tokens.

## **D.5 Details of all natural or legal persons involved in the implementation of the Crypto-Asset Project:**

Name: Timon Peng (Role: Co-founder, Business Address: United States)

Name: Nasir Sheikh (Role: Technical Lead, Business Address: Ihringshausen, Hesse, Germany)

Name: Ben Ungvari (Role: Chief Marketing Officer, Business Address: Miami Beach, Florida, United States)

## **D.6 Utility Token Classification: TRUE**

**D.7 Key Features of Goods/Services for Utility Token Projects, if applicable:** The RAY token provides access to specific services within the Raydium ecosystem. Holders can stake RAY tokens on the platform to earn a share of protocol-generated trading fees. Additionally, liquidity providers can stake Liquidity Provider (LP) tokens in designated "Farms" to earn RAY emissions as a reward for contributing liquidity. While not mandatory, holding RAY is associated with participation in the ecosystem, and the token is planned to be used for a future governance system that will allow holders to vote on community proposals.

## **D.8 Plans for the Token:**

**Past Milestones:** The project has achieved several key milestones since its inception. These include the mainnet launch in February 2021, the full deprecation of its integration with the Serum order book in December 2022 to operate on its own CLMM architecture, the release of its AMM v4 in Q2 2023 to enhance liquidity tools, the launch of its permissionless LaunchLab platform, and the open-sourcing of its full code repository in March 2024.

**Future Milestones:** The primary future milestone for the project is the implementation of a formal, on-chain governance system. This system is intended to utilize the RAY token to allow holders to participate in protocol decisions. This feature has been announced but is still under development, with no confirmed rollout date as of October 2025.

**D.9 Resource Allocation, if applicable:** The total maximum supply of 555,000,000 RAY tokens is allocated as follows:

Mining Reserve: 34% (188,700,000 RAY)

Partnership and Ecosystem: 30% (166,500,000 RAY)

Team: 20% (111,000,000 RAY), subject to a vesting schedule of a 12-month lock followed by a linear unlock over 24 months

Liquidity: 8% (44,400,000 RAY)

Community and Seed: 6% (33,300,000 RAY), subject to the same vesting schedule as the Team allocation

Advisors: 2% (11,100,000 RAY), subject to a vesting schedule of a 12-month lock followed by a linear unlock over 24 months

**D.10 Planned Use of Collected Funds or Crypto-Assets, if applicable:** The 20% of the total RAY supply allocated to the "Team" is intended to compensate founders, core contributors, and future employees. Long-Term Incentive: The tokens are subject to a multi-year vesting schedule. This is a standard practice in the industry designed to ensure the team remains committed to the project's long-term development and success. By locking the tokens, it prevents the team from selling their entire allocation at once, which could negatively impact the token's market value. Lack of Specifics: The Raydium team, which operates largely pseudonymously, has not publicly disclosed a more detailed breakdown of how these funds

will be used once they are vested. It is common for such funds to cover operational costs, salaries, and other expenses related to the ongoing development and maintenance of the protocol, but Raydium has not provided specific details.

## **E. Information about the Offer to the Public of the Crypto-Asset or Its Admission to Trading**

**E.1 Public Offering or Admission to Trading:** ATTR

**E.2 Reasons for Public Offer or Admission to Trade:** Facilitating secondary trading for users on the OKX Trading platform in compliance with the MiCA regulatory framework.

**E.3 Fundraising Target, if applicable:** N/A

**E.4 Minimum Subscription Goals, if applicable:** N/A

**E.5 Maximum Subscription Goals, if applicable:** N/A

**E.6 Oversubscription Acceptance:** N/A

**E.7 Oversubscription Allocation, if applicable:** N/A

**E.8 Issue Price:** N/A

**E.9 Official Currency or Any Other Crypto-Assets determining the Issue Price:** N/A

**E.10 Subscription Fee:** N/A

**E.11 Offer Price Determination Method:** N/A

**E.12 Total Number of Offered/Traded Crypto-Assets, if applicable:** Ray has a a fixed maximum supply of 555,000,000 units.

**E.13 Targeted Holders:** N/A

**E.14 Holder Restrictions:** N/A

**E.15 Reimbursement Notice:** N/A

**E.16 Refund Mechanism:** N/A

**E.17 Refund Timeline:** N/A

**E.18 Offer Phases:** N/A

**E.19 Early Purchase Discount:** N/A

**E.20 Time-Limited Offer:** N/A

**E.21 Subscription Period, beginning [YYYY-MM-DD]:** N/A

**E.22 Subscription Period, end [YYYY-MM-DD]:** N/A

**E.23 Safeguarding Arrangement for Offered Funds/Crypto-Assets:** N/A

**E.24 Payment Methods for Crypto-Asset Purchase:** In line with OKX current payment method offering.

**E.25 Value Transfer Methods for Reimbursement:** N/A

**E.26 Right of Withdrawal, if applicable:** N/A

**E.27 Transfer of Purchased Crypto-Assets:** In line with OKX current Terms of Service.

**E.28 Transfer Time Schedule [YYYY-MM-DD]:** N/A

**E.29 Purchaser's Technical Requirements:** In line with OKX current Terms of Service.

**E.30 Crypto-Asset Service Provider (CASP) name, if applicable:** OKX Europe Limited

**E.31 CASP identifier, if applicable:** 54930069NLWEIGLHXU42

**E.32 Placement Form:** NTAV

**E.33 Trading Platforms Name, if applicable:** OKX

**E.34 Trading Platforms Market Identifier Code (MIC):** N/A

**E.35 Trading Platforms Access, if applicable:** Users may access RAY through the OKX Trading Platform via the Application Program Interface ("API"), the Application Software ("OKX App"), as well as the official OKX website as follows; [www.okx.com](https://www.okx.com).

**E.36 Involved Costs, if applicable:** In line with the OKX current Terms of Service.

**E.37 Offer Expenses:** N/A

**E.38 Conflicts of Interest:** A crypto-asset is listed following a decision rendered independently by the Listing Committee in line with the internal policies of OKX Europe Limited. Any potential disclosures that may arise of conflicts of interest are published on the OKX website.

**E.39 Applicable Law:** Malta

**E.40 Competent Court:** Malta

## **F. Information about the Crypto-Assets**

**F.1 Crypto-Asset Type:** Other Crypto-Asset

**F.2 Crypto-Asset Functionality:** The RAY token has several functions within the Raydium ecosystem. Its primary utility is staking, where holders can lock their tokens on the Raydium platform to receive a portion of the trading fees generated by the protocol. It is also used as a reward mechanism, distributed as emissions to users who provide liquidity to specific pools (yield farming). In the future, the RAY token is intended to grant holders governance rights, allowing them to vote on proposals related to the protocol's development and parameters.

**F.3 Planned Application of Functionalities:** All core functionalities, such as staking for protocol fees and yield farming rewards, are currently available. The governance functionality remains in development, and its full application is planned for a future update, though no specific timeline has been provided.

**F.4 Type of White Paper:** OTHR

**F.5 Type of Submission:** NEWT

**F.6 Crypto-Asset Characteristics:** The RAY token is a fungible crypto-asset issued on the Solana blockchain, compliant with the SPL (Solana Program Library) token standard. It is designed to be the utility token of the Raydium protocol. The token has a fixed maximum supply of 555,000,000 units. The RAY token is also available as a wrapped asset on other blockchain networks, including the BNB Smart Chain (BSC). The RAY token is freely and instantly transferable, utilising the underlying blockchain network's standard processes.

**F.7 Commercial Name or Trading Name, if applicable:** See F.14

**F.8 Website of the Issuer:** <https://raydium.io>

**F.9 Starting Date of Offer to the Public or Admission to Trading [YYYY-MM-DD]:** 2025-02-20

**F.10 Publication Date [YYYY-MM-DD]:** [To be filled]

**F.11 Any Other Services Provided by the Issuer:** N/A

**F.12 Identifier of Operator of the Trading Platform:** N/A

**F.13 Language/s of the White Paper:** English

**F.14 Digital Token Identifier Code used to uniquely identify the Crypto-Asset or each of the several Crypto-Assets to which the White Paper relates, where available:**

BL6GMJNDW, ZVN4X2WTS

**F.15 Functionally Fungible Group Digital Token Identifier, where available:** HQ7NNGC6R,  
7HFXRDFHH

**F.16 Voluntary Data Flag:** FALSE

**F.17 Personal Data Flag:** TRUE

**F.18 LEI Eligibility:** N/A

**F.19 Home Member State:** Malta

**F.20 Host Member States:** Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden

## **G. Information about the Rights and Obligations Attached to the Crypto-Asset**

**G.1 Purchaser Rights and Obligations:** There are no obligations attached to holding the RAY token. Holders have the right to use the token to access services within the Raydium protocol. These rights include: the right to stake RAY tokens to earn a share of protocol-generated trading fees; the right to provide liquidity to designated pools and earn RAY token emissions as rewards; and the right to participate in any future governance system, which is expected to include voting on protocol proposals. Ownership of the token does not grant any claim to profits, dividends, or assets of the issuer.

**G.2 Exercise of Rights and Obligations:** The rights attached to the RAY token are exercised by the holder by connecting a compatible self-custodial wallet to the Raydium decentralized application (dApp). From there, the holder can interact with the relevant on-chain smart contracts to perform actions such as staking or providing liquidity. As there are no obligations, no actions are required of the holder.

**G.3 Conditions for Modifications of Rights and Obligations:** The rights and obligations associated with the RAY token are defined by the protocol's smart contracts. Currently, these rights can be modified by the project's development team through the deployment of new or updated smart contracts. The planned implementation of a decentralized governance system is intended to transfer the right to modify the protocol to the token holders, who would be able to vote on proposed changes.

**G.4 Future Public Offers, if applicable:** N/A

**G.5 Issuer Retained Crypto-Assets, if applicable:** The "Team" allocation consists of 20% of the total supply (111,000,000 RAY) and is subject to a three-year vesting schedule that began after the Token Generation Event.

**G.6 Utility Token Classification:** TRUE

**G.7 Key Features of Goods/Services of Utility Tokens:** The RAY token grants access to decentralized financial services on the Raydium platform. Specifically, it enables holders to earn a share of the platform's revenue by staking their tokens to receive trading fees. It also serves as a reward token for users who provide liquidity to the platform's AMM pools. Finally, it is intended to function as a governance token, allowing holders to influence the protocol's future direction.

**G.8 Utility Tokens Redemption, if applicable:** The RAY token is not redeemable for any specific good or service from the issuer. Its value is derived from its utility within the Raydium protocol and is determined by market dynamics.

**G.9 Non-Trading Request:** TRUE

**G.10 Crypto-Assets Purchase or Sale Modalities:** N/A

**G.11 Crypto-Assets Transfer Restrictions:** In line with OKX current Terms of Service.

**G.12 Supply Adjustment Protocols:** N/A

**G.13 Supply Adjustments Mechanisms:** N/A

**G.14 Token Value Protection Schemes:** FALSE

**G.15 Token Value Protection Schemes Description:** N/A

**G.16 Compensation Schemes:** FALSE

**G.17 Compensation Schemes Description, if applicable:** N/A

**G.18 Applicable Law:** Malta

**G.19 Competent Court:** Malta

## **H. Information about the Underlying Technology**

**H.1 Distributed Ledger Technology, if applicable:** See F.14

**H.2 Protocols and Technical Standards:** The RAY token is implemented across multiple blockchains, adhering to the native token standards of each respective network to ensure interoperability and functionality.

**Solana (SPL):** On the Solana network, the RAY token is implemented using the Solana Program Library (SPL) token standard. SPL is the native standard for fungible and non-fungible tokens on Solana. Unlike its EVM counterparts, the SPL standard is specifically designed to leverage Solana's high-throughput architecture, which relies on a Proof-of-History (PoH) consensus mechanism to facilitate rapid and low-cost transactions.

**BNB Smart Chain (BEP-20):** The token also exists as a BEP-20 token on the BNB Smart Chain (BSC). The BEP-20 standard is designed to be fully compatible with Ethereum's ERC-20, which allows for seamless asset transfers and dApp interactions across both EVM-compatible networks. This deployment provides users with an alternative environment that typically offers lower transaction fees and faster confirmation times.

**H.3 Technology Used, if relevant:** The token's deployment on the EVM-compatible BNB Smart Chain utilizes a Solidity-based smart contract and RPC-clients to interact with that network's ecosystem. On the Solana network, which is not EVM-compatible, the token is implemented as a program written in Rust that leverages Solana's high-performance architecture and interacts with the network via Solana-specific clients.

**H.4 Consensus Mechanism, if applicable:** The BNB Smart Chain operates on a Proof-of-Staked-Authority (PoSA) consensus model, which uses a limited set of validators selected based on their staked BNB. This hybrid approach enables faster block times and higher transaction throughput. This model ensures the integrity of the blockchain and the execution of all RAY token transactions on the BNB Smart Chain. The Solana network employs a hybrid consensus model combining Proof-of-Stake (PoS) with a Proof-of-History (PoH) timing mechanism. PoH creates a verifiable, cryptographic sequence of events that allows validators to process transactions with high throughput. This model ensures the integrity of the blockchain and the high-speed execution of all RAY token transactions on Solana.

**H.5 Incentive Mechanisms and Applicable Fees:** On the Solana network, validators are incentivized with rewards in SOL for securing the network. Transactions involving RAY on Solana incur network fees paid in SOL. On the BNB Smart Chain, validators are incentivized with BNB rewards, and transactions involving the wrapped RAY token incur gas fees paid in BNB. Additionally, the Raydium protocol itself provides incentives where holders can stake RAY to earn protocol fees.

**H.6 Use of Distributed Ledger Technology:** FALSE

**H.7 DLT Functionality Description:** N/A

**H.8 Audit of the Technology Used:** TRUE

**H.9 Audit Outcome, if applicable:** The Raydium protocol has undergone multiple third-party security audits. The key findings are summarized below. The reports can be found here:

<https://docs.raydium.io/raydium/protocol/security>

## **I. Information on the Principal Adverse Impacts on the Climate and Other Environmental-Related Adverse Impacts of the Consensus Mechanism Used to Issue the Crypto-Asset.**

**I.1 Name:** OKX Europe Limited

**I.2 Relevant legal entity identifier:** 54930069NLWEIGLHXU42

**I.3 Name of the crypto-asset:** Raydium

**I.4 Consensus Mechanism:** Solana uses a unique combination of Proof of History (PoH) and Proof of Stake (PoS) to achieve high throughput, low latency, and robust security. Here's a detailed explanation of how these mechanisms work: Core Concepts 1. Proof of History (PoH): Time-Stamped Transactions: PoH is a cryptographic technique that timestamps transactions, creating a historical record that proves that an event has occurred at a specific

moment in time. Verifiable Delay Function: PoH uses a Verifiable Delay Function (VDF) to generate a unique hash that includes the transaction and the time it was processed. This sequence of hashes provides a verifiable order of events, enabling the network to efficiently agree on the sequence of transactions.

2. Proof of Stake (PoS): Validator Selection: Validators are chosen to produce new blocks based on the number of SOL tokens they have staked. The more tokens staked, the higher the chance of being selected to validate transactions and produce new blocks. Delegation: Token holders can delegate their SOL tokens to validators, earning rewards proportional to their stake while enhancing the network's security.

Consensus Process

1. Transaction Validation: Transactions are broadcast to the network and collected by validators. Each transaction is validated to ensure it meets the network's criteria, such as having correct signatures and sufficient funds.
2. PoH Sequence Generation: A validator generates a sequence of hashes using PoH, each containing a timestamp and the previous hash. This process creates a historical record of transactions, establishing a cryptographic clock for the network.
3. Block Production: The network uses PoS to select a leader validator based on their stake. The leader is responsible for bundling the validated transactions into a block. The leader validator uses the PoH sequence to order transactions within the block, ensuring that all transactions are processed in the correct order.
4. Consensus and Finalization: Other validators verify the block produced by the leader validator. They check the correctness of the PoH sequence and validate the transactions within the block. Once the block is verified, it is added to the blockchain. Validators sign off on the block, and it is considered finalized.

Security and Economic Incentives

1. Incentives for Validators:
  - Block Rewards: Validators earn rewards for producing and validating blocks. These rewards are distributed in SOL tokens and are proportional to the validator's stake and performance.
  - Transaction Fees: Validators also earn transaction fees from the transactions included in the

blocks they produce. These fees provide an additional incentive for validators to process transactions efficiently. 2. Security: Staking: Validators must stake SOL tokens to participate in the consensus process. This staking acts as collateral, incentivizing validators to act honestly. If a validator behaves maliciously or fails to perform, they risk losing their staked tokens. Delegated Staking: Token holders can delegate their SOL tokens to validators, enhancing network security and decentralization. Delegators share in the rewards and are incentivized to choose reliable validators. 3. Economic Penalties: Slashing: Validators can be penalized for malicious behavior, such as double-signing or producing invalid blocks. This penalty, known as slashing, results in the loss of a portion of the staked tokens, discouraging dishonest actions.

**I.5 Incentive Mechanisms and Applicable Fees:** Solana uses a combination of Proof of History (PoH) and Proof of Stake (PoS) to secure its network and validate transactions. Here's a detailed explanation of the incentive mechanisms and applicable fees: Incentive Mechanisms 4. Validators: Staking Rewards: Validators are chosen based on the number of SOL tokens they have staked. They earn rewards for producing and validating blocks, which are distributed in SOL. The more tokens staked, the higher the chances of being selected to validate transactions and produce new blocks. Transaction Fees: Validators earn a portion of the transaction fees paid by users for the transactions they include in the blocks. This provides an additional financial incentive for validators to process transactions efficiently and maintain the network's integrity. 5. Delegators: Delegated Staking: Token holders who do not wish to run a validator node can delegate their SOL tokens to a validator. In return, delegators share in the rewards earned by the validators. This encourages widespread participation in securing the network and ensures decentralization. 6. Economic Security: Slashing: Validators can be penalized for malicious behavior, such as producing invalid blocks or being frequently

offline. This penalty, known as slashing, involves the loss of a portion of their staked tokens. Slashing deters dishonest actions and ensures that validators act in the best interest of the network. Opportunity Cost: By staking SOL tokens, validators and delegators lock up their tokens, which could otherwise be used or sold. This opportunity cost incentivizes participants to act honestly to earn rewards and avoid penalties. Fees Applicable on the Solana Blockchain

7. Transaction Fees: Low and Predictable Fees: Solana is designed to handle a high throughput of transactions, which helps keep fees low and predictable. The average transaction fee on Solana is significantly lower compared to other blockchains like Ethereum. Fee Structure: Fees are paid in SOL and are used to compensate validators for the resources they expend to process transactions. This includes computational power and network bandwidth.

8. Rent Fees: State Storage: Solana charges rent fees for storing data on the blockchain. These fees are designed to discourage inefficient use of state storage and encourage developers to clean up unused state. Rent fees help maintain the efficiency and performance of the network.

9. Smart Contract Fees: Execution Costs: Similar to transaction fees, fees for deploying and interacting with smart contracts on Solana are based on the computational resources required. This ensures that users are charged proportionally for the resources they consume.

**I.6 Beginning of the period to which the disclosure relates:** 2024-10-23

**I.7 End of the period to which the disclosure relates:** 2025-10-23

**I.8 Energy consumption:** 502.38993 (kWh/a)

**I.9 Energy consumption sources and methodologies:** The energy consumption of this asset is aggregated across multiple components: To determine the energy consumption of a token, the energy consumption of the network(s) solana is calculated first. For the energy

consumption of the token, a fraction of the energy consumption of the network is attributed to the token, which is determined based on the activity of the crypto-asset within the network. When calculating the energy consumption, the Functionally Fungible Group Digital Token Identifier (FFG DTI) is used - if available - to determine all implementations of the asset in scope. The mappings are updated regularly, based on data of the Digital Token Identifier Foundation. The information regarding the hardware used and the number of participants in the network is based on assumptions that are verified with best effort using empirical data. In general, participants are assumed to be largely economically rational. As a precautionary principle, we make assumptions on the conservative side when in doubt, i.e. making higher estimates for the adverse impacts.

## VII. GLOSSARY

**Consensus Mechanism:** Shall mean the rules and procedures by which an agreement is reached, among the DLT network nodes, that a transaction is validated.

**Crypto-Asset:** Shall mean a digital representation of a value or of a right that is able to be transferred and stored electronically using distributed ledger technology or similar technology.

**Distributed Ledger Technology or DLT:** shall mean the technology that enables the operation and use of distributed ledgers.

**Home Member State:** Shall mean either (a) where the offeror or person seeking admission to trading of crypto-assets other than asset-referenced tokens or e-money tokens has its registered office in the Union, the Member State where that offeror or person has its registered office; or (b) where the offeror or person seeking admission to trading of crypto-assets other than asset-referenced tokens or e-money tokens has no registered office in the Union but does have one or more branches in the Union, the Member State chosen by that

offeror or person from among the Member States where it has branches; or (c) where the offeror or person seeking admission to trading of crypto-assets other than asset-referenced tokens or e-money tokens is established in a third country and has no branch in the Union, either the Member State where the crypto-assets are intended to be offered to the public for the first time or, at the choice of the offeror or person seeking admission to trading, the Member State where the first application for admission to trading of those crypto-assets is made; or (d) in the case of an Issuer of asset-referenced tokens, the Member State where the Issuer of asset-referenced tokens has its registered office; or (e) in the case of an Issuer of e-money tokens, the Member State where the Issuer of e-money tokens is authorised as a credit institution under Directive 2013/36/EU or as an electronic money institution under Directive 2009/110/EC; or (f) in the case of crypto-asset service providers, the Member State where the crypto-asset service provider has its registered office.

**Host Member State:** Shall mean the Member State where an Offeror or Person Seeking Admission to Trading has made an offer to the Public of Crypto-Assets or is seeking admission to trading, or where a Crypto-Asset Service Provider provides crypto-asset services, where different from the Home Member State.

**Issuer:** Shall mean a natural or legal person, or other undertaking, who issues crypto-assets.

**Management Body:** Shall mean the body or bodies of an Issuer, Offeror, Person Seeking Admission to Trading, or of a Crypto-Asset Service Provider, which are appointed in accordance with National Law, which are empowered to set the entity's strategy, objectives and overall direction, and which oversee and monitor management decision-making in the entity and include the persons who effectively direct the business of the entity.

**Offer to the Public:** Shall mean a communication to persons in any form, and by any means, presenting sufficient information on the terms of the offer and the crypto-assets to be offered so as to enable prospective holders to decide whether to purchase those crypto-assets.

**Offeror:** Shall mean a natural or legal person, or other undertaking, or the Issuer, who offers crypto-assets to the public.

**Operator:** Shall mean the entity that runs a trading platform for crypto-assets.

**Qualified Investors:** Shall mean persons or entities that are listed in Section I, points (1) to (4), of Annex II to Directive 2014/65/EU.

**Retail Investor/Holder:** Shall mean any natural person who is acting for purposes which are outside that person's trade, business, craft or profession.

**Utility Token:** Shall mean a type of crypto-asset that is only intended to provide access to a good or a service supplied by its Issuer.

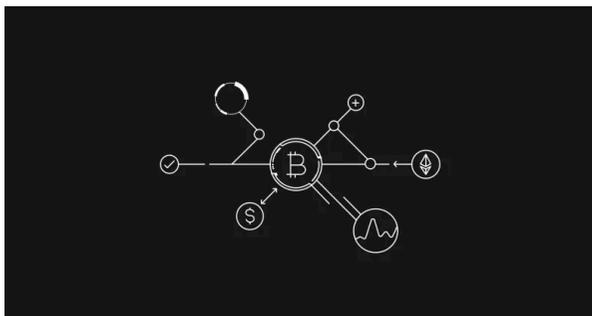
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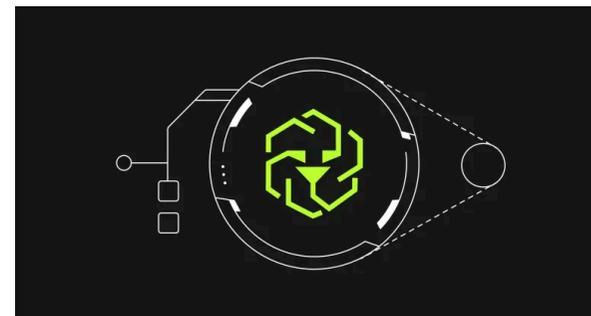
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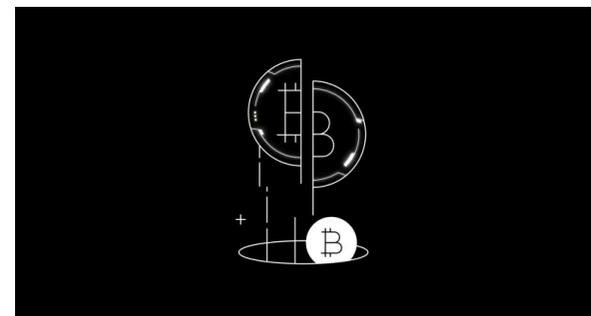
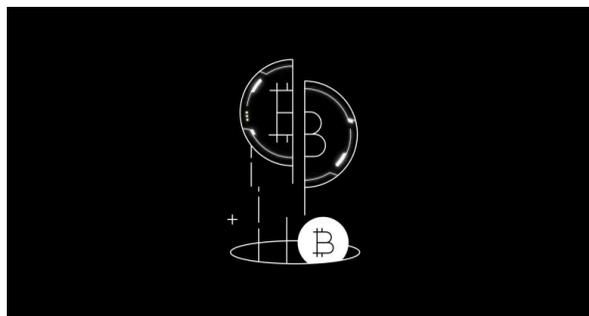
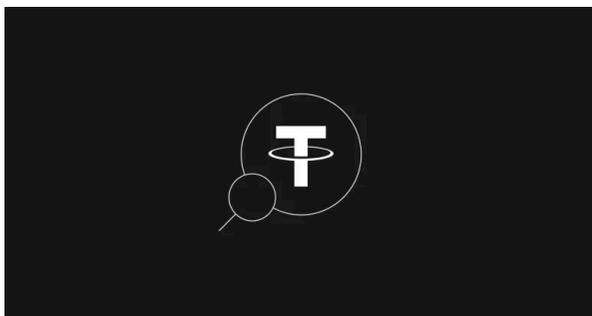
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