Fundamental Report - Metaverse

Prime Rating Report V1.1

Protocol: Render Network
Category: Metaverse Infrastructure
Version: 1
Date: 27/04/2022
Previous Report: None

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Reviewed by: Verto
Season/competition: Metaverse Rate-athon

Scorecard

1. Value Proposition	Points
a) Novelty of the solution	12 / 15
b) Target market size	10 / 15
c) Product-market fit	13 / 15
Total Points - Value Proposition	**35 / 45**
2. Competitive moat	**Points**
a) Integrations & partnerships	8 / 10
b) Intellectual property	10 / 10
c) Infrastructure - security	8 / 10
d) Infrastructure - fees and ancillary infrastructure	5 / 10
e) Treasury management	0 / 10
Total Points - Value Proposition	**31 / 50**
3. Token Economics	**Points**
a) Genesis token distribution	7 / 15
b) Purpose of the token	3 / 10

c) Ongoing token issuance / inflation	**3 / 10**
d) Value capture	**0 / 10**
e) Token liquidity	**3 / 5**
f) Extrinsic productivity	**1 / 5**
Total Points - Tokenomics	**17 / 55**
4. Team	**Points**
a) Credibility and reputation	**9 / 10**
b) Relevant experience	**13 / 15**
c) Thought leadership and public presence	**8 / 10**
d) Ability to foster a community and coordinate resources	**9 / 15**
Total Points - Team	**39 / 50**
5. Governance	**Points**
a) Extent of governance capabilities	**1 / 10**
b) Active governance contributors	**0 / 5**
c) Governance infrastructure robustness	**0 / 10**
d) Process and ease of use	**0 / 5**
Total Points - Governance	**1 / 30**
Total	**123 / 230**

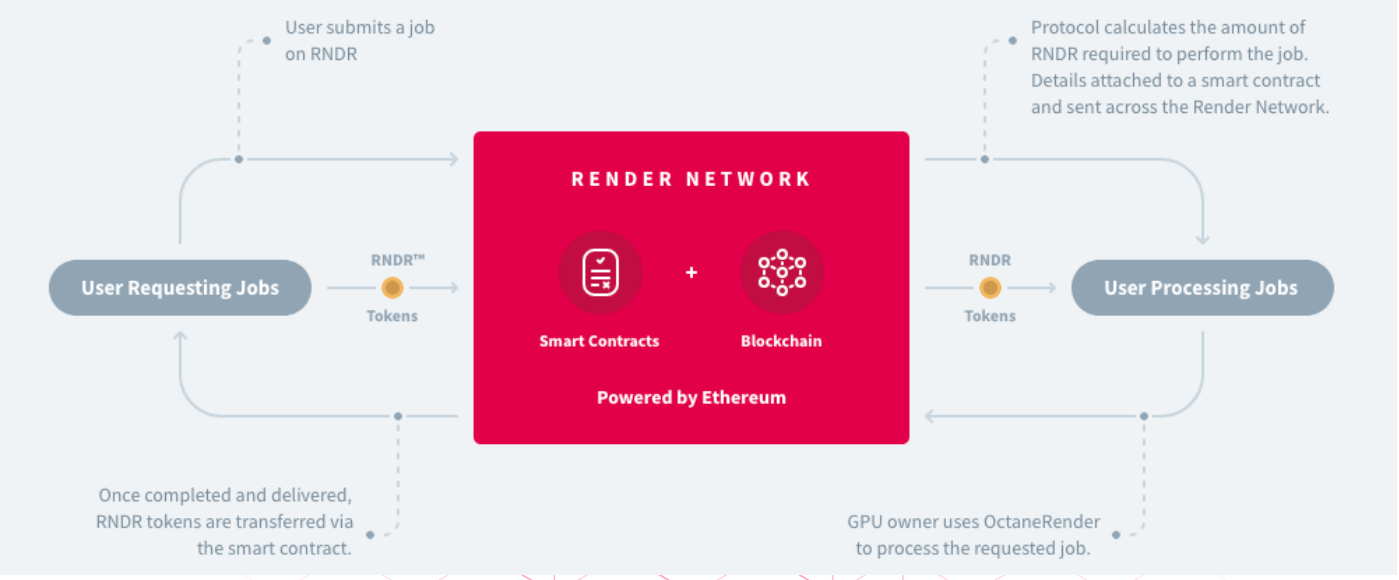
1. Value Proposition

The "Value Proposition" section assesses the value a protocol delivers to its users. The rating is based on the size of the problem a protocol addresses and the product/market fit of the protocol's solution

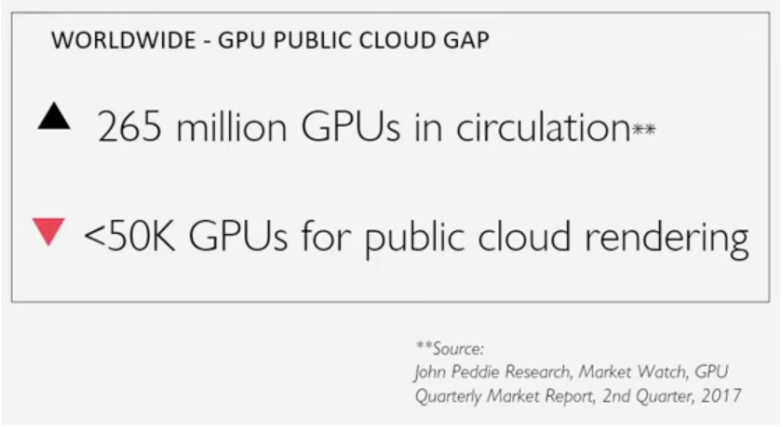
a) Novelty of the solution (15 points)

This score evaluates the novelty (uniqueness) of the protocol. Has the protocol introduced any innovations that help solve users' problems, either technical or organisational? Or has it just forked someone else's code?

Answer: The Render Network is a blockchain-enabled distributed computing platform that matches creators and computing power suppliers (node operators) in order to complete image rendering workflows.



Generally speaking, rendering is the process by which raw 2D or 3D models are given photorealistic qualities and is a critical step in producing all computer generated imagery. Because rendering requires significant computing power and is highly complex, many content creators have historically relied on dedicated hardware or centralized cloud-based solutions to provide rendering capacity. However, this approach is limiting due to scarce availability of GPU capacity. There are less than 50,000 cloud-based GPUs available for use and yet the global supply of GPUs stands at more than 200 million. The Render Network's aims to unlock untapped computing capacity by creating a decentralized platform for crowd-sourced rendering.



The introduction of the Render Network in 2017 was the first attempt at providing scaled rendering capacity through a distributed computing platform and remains the only solution tackling this issue. Other projects like Livepeer, are addressing tangential areas like video transcoding, but none are directly competing in the market for blockchain-based rendering.

OTOY, Inc., a well-known and long-tenured visual graphics company, is the parent organization managing the Render Network and handles all governance and administration for the project. OTOY is registered in Delaware, USA and is subject to the same governance considerations as any other privately-owned, incorporated entity in this jurisdiction.

The Render Network's decentralized rendering platform is wholly novel; however, its governance and organizational structure is not. Thus a score of 12 is given for this section.

Score: 12

b) Target market size (15 points)

The target market size evaluates the current and future size of the problem a protocol aims to solve. While the term Metaverse is all-encompassing, what is the target market size for the relevant sector? For example, NFT games are trying to disrupt the traditional gaming industry, which is reported to be worth roughly $175 billion.

Answer: The specific market for image rendering services is modest, but on track to quadruple in the next 6 years as a result of the explosive expansion of extended reality and gaming (see below graphic for additional detail). Rendering is one of the final and most crucial steps in computer graphics workflows. It is also a necessary component of multiple broader sectors including, 3D animation (an $18 billion industry) and gaming (a $200 billion industry). For additional anecdotal comparison, NVIDIA and Unity Software–two well-known players in the GPU and game software industries–each account for $500 billion and $23 billion in market capitalization respectively.

Because the Render Network's addressable market is relatively small, but growing significantly, a score of 10 is given for this section.

	Insight Partners	VMR	KBV Research	Average
Current Market Size (Year)	$2.3 billion (2021)	$1.3 billion (2020)	$1.5 billion (2019)	**$1.7 billion**
Forecasted Market Size (Year)	$7.4 billion (2028)	$9.8 billion (2028)	$8.6 billion (2028)	**$8.6 billion**
Forecasted Annual Growth Rate	18.2%	28.9%	24.5%	**23.9%**
Link to Source	Click here	Click here	Click here	

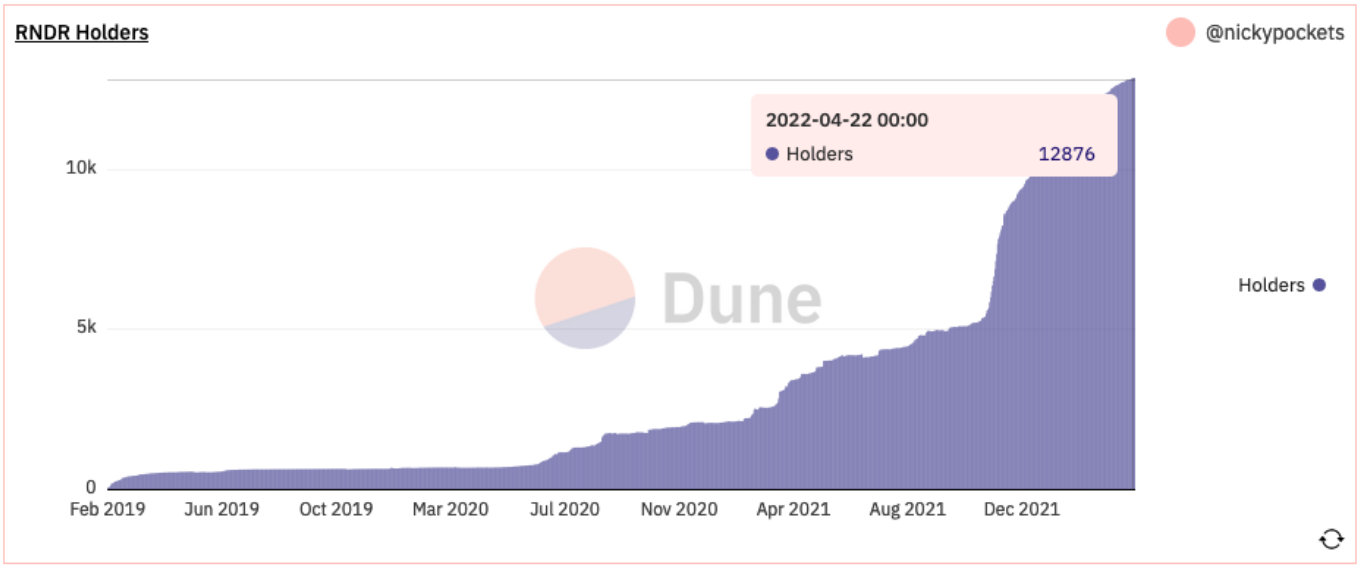
Score: 10

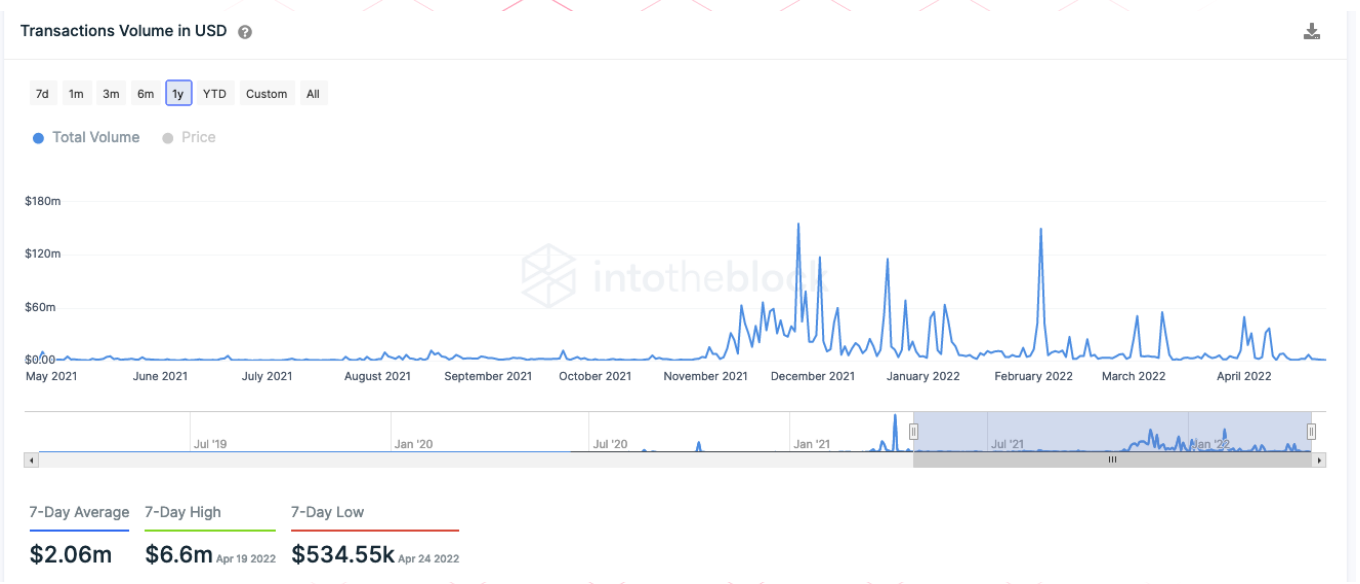
c) Product-market fit (15 points)

Product-market fit evaluates the degree to which a protocol satisfies market demand in their specific sector. How many users does a protocol have? What is the trading or transaction volume on a platform? Is there growth on both the buy and sell side of the market? Is the protocol targeting the right product segment at all?

Answer: As mentioned previously, total GPU compute capacity available on all public clouds was estimated at less than 50,000 in 2017. In its first year of testing in 2018, the Render Network had 14,000 GPU capacity on its platform. In 2020, Render Network reported that the platform had 6,000 active users (i.e. creators submitting rendering jobs on the network) and 50,000 GPU capacity. In 2020, Render Network reported that several large public cloud operators including Google and Microsoft had also registered as node operators. Render Network's solution is currently designed to compete at the same cost levels as other rendering options, but can significantly outperform in time to job completion. Typical public cloud rendering occurs on a relatively few number of GPUs where with Render Network's decentralized approach, rendering jobs can utilize hundreds of GPUs depending on the complexity. For example, Render Network's first commercial job was a rendering request by Adobe Photoshop co-creator, John Knoll that used 100 GPUs.

In terms of token holders, there are approximately 13,000 addresses holding RNDR. This figure has grown exponentially over the past several months since the project's fully public launch in early 2020 (see Section 3 for more details on tokenomics). On-chain activity is also robust with $8 million in average daily activity across 156 transactions during the past 30-days. Because Render Network has attracted GPU capacity that rivals the entire public cloud and has established sufficient market share to entice large incumbents to join their platform, a score of 13 is given in this category.





Score: 13

2. Competitive Moat

The "Competitiveness" section looks at a protocol's competitive moat in the space and its unforkable assets. This includes integrations and partnerships, intellectual property, the underlying infrastructure being used, and treasury management.

a) Integrations & partnerships (10 points)

Due to crypto's open-source nature, the code of most protocols can easily be forked. This score represents one piece of unforkable value. Some indicators are the number of applications built on top of the protocol (vertical integration) and other entities integrating the protocol's services (horizontal integration).

Answer: All computer generated imagery needs to be rendered, including all visual and animated content being created for use in the Metaverse. The most significant incentive to utilize Render Network's platform is the sheer size of the computing resources it can deliver. Relative to local or public cloud solutions, Render Network's compute capacity is highly attractive. Although Render Network's parent company, OTOY, also sells access to a proprietary rendering engine (OctaneRender), the project has integrated with other third-party software like AutoDesk's ARNOLD, and Maxon's Redshift. For the past several years, OTOY has adopted a friendly stance towards other rendering software and includes plug-in capabilities to many other cloud services including Unity and Unreal Engine.

From a crypto perspective, Render Network announced an integration with Metaplex as the project's solution was increasingly being used to create high-quality NFT collections including those by Alex Ross and Beeple.

Render Network's key product offering represents essential infrastructure for visual content in and out of the Metaverse and the project has a demonstrated track record of integrating with related products, including those of its competitors. That said, Render Network is not a fully open-sourced protocol and will not benefit from the same level of innovation seen in public projects with larger numbers of contributors. Thus a score of 8 is given in this section.

Score: 8

b) Intellectual property (10 points)

Intellectual property is and will continue to be a crucial part of the metaverse. This score considers if a project, for example, developed a unique IP that creates a sustainable competitive moat around it or, as an alternative, secured IP through agreements with outside parties.

Answer: Otoy, Inc., parent company and operator of the Render Network, owns significant intellectual property and maintains several patents in the United States for technologies relating to the operation of the Render Network including patents for a crowd-sourced video rendering system and a token-based billing model. Additionally, the Render Network is the only decentralized rendering service in the market and has commercial partnerships with many established firms (Microsoft, Google, Unity, Unreal Engine, etc). Furthermore, Render Network is gaining a growing following among crypto-native artists including Deadmou5 (example image on right) and Fvckrender. A score of 10 is given in this section.

Score: 10

c) Infrastructure - security (10 points)

Metaverse projects make all kinds of choices when it comes to infrastructure. Some build their own solutions, whether Ethereum side-chains or a new blockchain entirely, and some deploy to an existing sidechain or a level 1 blockchain. These decisions have significant trade-offs across security, maintenance, ease of use, costs and scalability, etc. This score assesses specifically the security of the chosen infrastructure solution.

Answer: The RNDR token is currently an ERC20 token that inherits the security of the Ethereum blockchain. In 2021, Render Network announced that it will be transitioning to Solana, but as of the time or writing no migration has yet begun. Both Ethereum and Solana represent secure blockchains with thousands of nodes, though it can be argued

that Solana is modestly less secure relative to Ethereum. In 2018, Render Network's smart contracts were audited and noted findings were addressed by OTOY developers.

Outside of blockchain specific security, Render Network employs additional security practices for rendering jobs performed on its platform. All rendering files transmitted as part of the platform's functionality are encrypted in-transit and at rest. Furthermore, Render Network operates a "secure" pricing tier that routes rendering jobs only to credentialized compute providers. Render Network also utilizes a reputation scoring system to prioritize traffic on the network and limit potentially malicious activity. Little additional details are known about Render Network's off-chain security practices.

Because of the usage of well-known blockchains, audited smart contracts, and additional security measures implemented by Render Network, a score of 8 is given in this section.

Score: 8

d) Infrastructure - fees and ancillary infrastructure (10 points)

The section above assessed specifically the security of the chosen infrastructure solution. This score, however, looks at the other side of the scalability trilemma - fees and the ancillary infrastructure like bridges, wallets, etc.

Answer: As mentioned previously, Render Network currently operates on Ethereum which the company has noted results in a deteriorated user experience given high transaction fees. However, the project plans to transition to Solana, which should mitigate these concerns once complete. In the meantime, to combat high gas fees and attract users unfamiliar with the crypto ecosystem, Render Network has included fiat rails and a credit system into its platform. RNDR credits can be purchased via PayPal or Stripe, are non-transferrable, and are only usable to pay for rendering services on the Render network. RNDR tokens are obtained through purchase from an exchange or can be issued directly to users requiring large rendering jobs. A single RNDR token is mapped to 4 RNDR credits and can be withdrawn to any compatible crypto wallet. It is unclear what other off-chain infrastructure Render Network may use to support their operations.

Because gas fees are high on RNDR's current blockchain and transparency into other off-chain infrastructure is low, a lower score is warranted; however, the project has implemented innovative ways to reduce fees and improve the experience for users. A score of 5 is given in this section.

Score: 5

e) Treasury management (10 points)

Treasury management refers to the project's management of its assets and balance sheet. How diversified is its treasury? If diversified, are the assets productive? For example, does the project own its liquidity? Are there procedures and plans in place for managing the treasury?

Answer: No information on treasury management is published in the project's documents. However, the following details are provided in the project docs on how Render Network/OTOY, Inc. profit from network usage: "The costs to run and maintain the RNDR Network will be covered by a variable network transaction fee on every job ranging from 0.5–5% of the total RNDR needed to process the job (adjusted against GPU supply and Creator demand)." As stated earlier, no other information about the usage of this compensation is provided. The current score for this section could be improved if additional transparency was shared in the future.

Score: 0

3. Token Economics

The "Token Economics" section assesses the function of a protocol's token. This includes the token distribution, its functionality, the ability of the token to incentivise desired behaviours and value capture potential.

a) Genesis token distribution (15 points)

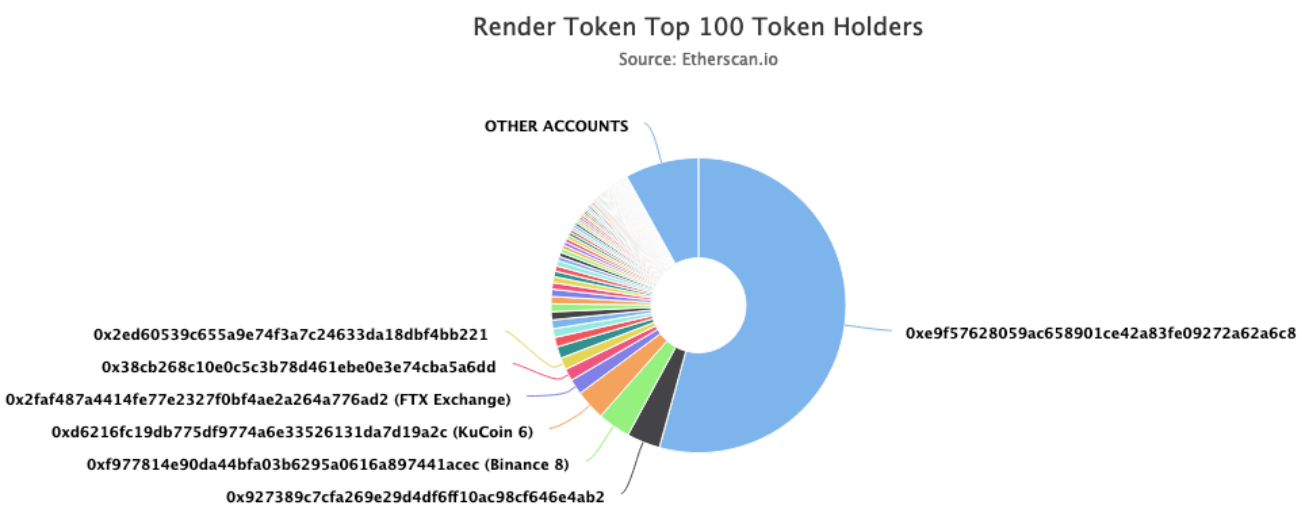
Token distribution can be an indicator of a healthy protocol and, if done well, can improve coordination and alignment among different stakeholders. Was the initial distribution fair and balanced? Are the tokens distributed widely or is the ownership concentrated?

Answer: RNDR initially launched via ICO in October 2017 but held multiple subsequent token sales to early RNDR adopters and other parties as the project was testing its solution on the Ropsten test network. Prior to migration to the Ethereum mainnet, upgrades were made to the RNDR token smart contract and existing holders were asked to migrate their holdings to the new contract. Currently, more than 98% of max supply has migrated to the new contract. At final launch in early 2020, a max supply of 536,870,912 RNDR was fixed.

In terms of token allocation, 25% of the final RNDR supply was sold as part of the ICO and subsequent sale events, 10% was kept in a reserve with an unclear purpose, and the remaining 65% was allocated to facilitate future token supply/demand considerations. This 65% allocation is held in a third-party escrow account controlled by Render Network and was made based on an undisclosed analysis of how much supply the project team estimated would be needed to facilitate activity for the foreseeable future. According to the project's documentation, "a significant number of tokens were not issued to the company or the team" as part of the RNDR token allocation. There are no known vesting limits for any token holder.

The total circulating supply of RNDR tokens is 242,706,715 according to CoinGecko (or roughly 45% of max supply). The top 100 holders of RNDR collectively own 91% of max supply. The largest single holder of RNDR is the escrow account mentioned previously and currently owns more than 50% of max supply.

Because the project's documentation is not clear about the final uses of each allocation and large portions of total token supply are solely controlled by a centralized authority (Render Network/OTOY, Inc.), a score of 7 is justified in this section.



Score: 7

b) Purpose of the token (10 points)

This score evaluates the purpose of a token in the project's ecosystem. For example, does it provide utility? Does it have governance rights attached to it or a built-in value capture mechanism?

Answer: RNDR tokens are required in order for creators to pay for rendering jobs on the network. RNDR tokens do not grant holders any governance rights, revenue sharing utility, or any other value capture mechanism.

Score: 3

c) Ongoing token issuance / inflation (10 points)

Most tokens have built-in inflation. This section evaluates the purpose of that inflation. Is it justifiable? Does it help improve the coordination and alignment of incentives for the protocol? Does it incentivise positive-sum behaviour? Are the benefits flowing to all relevant stakeholders or just select groups?

Answer: No specific inflation model is specified by Render Network, but the project envisions the 65% allocation to produce inflationary characteristics over time. According to Messari, RNDR has exhibited a 15% inflation rate over the past 12-months. Because little transparency exists about the mechanism for token inflation, a score of 3 is given in this section.

Score: 3

d) Value capture (10 points)

The ability to accrue value and consequently distribute it to stakeholders can be an effective coordination mechanism and deliver long-term benefits to a project.

Answer: The following details are provided in the project docs on how Render Network/OTOY, Inc. profit from network usage: “The costs to run and maintain the RNDR Network will be covered by a variable network transaction fee on every job ranging from 0.5–5% of the total RNDR needed to process the job (adjusted against GPU supply and Creator demand).” Although Render Network/OTOY, Inc. appear to have a means to accrue value through the usage of the network, this value does not flow to all RNDR token holders. Because the RNDR token itself does not have a value accrual or distribution mechanism, a score of 0 is given in this section.

Score: 0

e) Token liquidity (5 points)

Is the token widely available and is there sufficient liquidity to facilitate all protocol functionalities?

Answer: RNDR is available on both centralized and decentralized trading platforms including large listed exchanges like Coinbase, Binance, and Kraken. On CEX venues, liquidity is moderate with 24-hour volume ranging from a few hundred thousand dollars to $5 million. The most liquid market, in volume terms, is the RNDR/USDT pair on Binance, according to data from Coinmarketcap. On DEX venues, liquidity is much more limited with the RNDR/ETH pair only generating approximately $200k in total liquidity on Uniswap V2. Because RNDR tokens are present at both CEX and DEX venues, albeit with modest liquidity, a score of 3 is given in this section.

Score: 3

f) Extrinsic productivity (5 points)

Can the token be used outside of the project's ecosystem? For example, can it be used as collateral elsewhere, be staked for yield or rewards, etc.

Answer: Currently, there is very limited usage of the RNDR token outside of the Render Network. Balancer has a small pool for wETH and RNDR, but size and liquidity are very constrained. Staking RNDR tokens is not currently allowed, though recent activity in the project's official Telegram chat suggests the team may be exploring allowing staking in the future (no ETA or details have been released). Because of limited extrinsic use cases for RNDR outside of the Render Network, a score of 1 is given in this section.

Score: 1

4. Team

The "Team" section describes the quality of the team behind the protocol. The current version of Prime Rating favours teams that are publicly identifiable. In the case of an anon team, the track record of the specific anons involved can be taken into account.

a) Credibility and reputation (10 points)

Are the identities of the core team public? In the case of anon team members, do they have a track record or reputation in the crypto space?

Answer: The OTOY, Inc./Render Network team is public and highly credible. Jules Urbach and OTOY are established experts in the image rendering space and were early pioneers in experimenting with blockchain applications in distributed computing networks (the initial patents for crowd-sourced rendering were filed in 2011). In addition to the core team, Render Network has a strong advisory board including film director JJ Abrams, Mozilla creator and Brave Browser CEO Brendan Eich, Beeple, and others. Because of the Render Network team's backgrounds and reputation, a score of 9 is given in this section.

Score: 9

b) Relevant experience? (15 points)

Does the team have a track record of execution? Have individual team members built a product or a business before? Does the team have the necessary skills? For example, if a project is making a game, do they have a game developer?

Answer: Jules Urbach founded OTOY, Inc. in 2008 and has stayed at the helm of the company since that time. OTOY's flagship products are OctaneRender, a widely used image rendering tool, and Render Network. The building blocks for Render Network were initially contemplated soon after the establishment of Bitcoin in 2009/2010 and as of early 2020, Jules Urbach and the 11 member OTOY team have grown Render Network, demonstrating the team's commitment and ability to successfully ship product. A score of 13 is justified for this section.

Score: 13

c) Thought leadership and public presence (10 points)

To what extent do the protocol contributors participate in the public debate around the metaverse? Are the team members giving presentations, sharing their thoughts and opinions, and do they help raise the industry's collective intelligence?

Answer: Jules Urbach is the public presence for Render Network and frequently attends rendering industry events as a thought leader. For example, he has presented every year at the NVIDIA GTC conference since 2010. Additionally, Urbach gave a keynote presentation on rendering the Metaverse at Solana's Breakpoint 2021 conference in Portugal. Because of Urbach's frequent media appearances, a score of 8 is given in this section.

Score: 8

d) Ability to foster a community and coordinate resources (15 points)

How effective is the team at attracting and coordinating resources for the benefit of the protocol? Do they manage the community well, fostering a welcoming and positive environment? Does the community represent the project well externally?

Answer: The team at Render Network has significant subject matter expertise and is currently expanding headcount for the group. Additionally, earlier this year Render Network announced a $30 million investment from Multicoin. From a community engagement perspective, Render Network has an active Telegram chat with more than 9,000 followers. The project's Medium account actively publishes content and has 1,200 followers. On Twitter, Render Network has 58,000 followers. As explained later on in Section 5, governance is handled internally by the project, not the community. Although Render Network regularly publishes content and maintains active social media channels, the community does not directly contribute resources for the benefit of the protocol. However, community members do appear to be active, thus a score of 9 is given in this section.

Score: 9

5. Governance

The "Governance" section evaluates all aspects of the protocol's governance, from infrastructure to processes and distribution of governance power.

a) Extent of governance capabilities (10 points)

Distributed governance should allow token holders to participate in the governance process. How much influence does the current governance process have when everything works as intended? What parts of the protocol does governance touch? Who can put forward a vote, and are there any limits or requirements (number of tokens, only the team can queue votes up, etc.)?

Answer: Governance for Render Network is almost exclusively handled by the core team and parent organization. Render Network does operate support channels where user feedback is processed and the project has responded to customer requests (e.g. integration with other competing rendering software) in the past. Because there is no formal community governance framework for Render Network, a score of 1 is given in this section.

Score: 1

b) Active governance contributors (5 points)

Governance is time-consuming, and governance apathy is a common problem in most democratic systems, including crypto. Therefore, it's essential to have a sufficient number of community members allocate resources to the governance process of the protocol. How many individuals participate in the debate around the protocol? How active are voters? Is delegation enabled?

Answer: There is no community governance framework for Render Network; internal contributors are not public and their processes are unobservable.

Score: 0

c) Governance infrastructure robustness (10 points)

Robust infrastructure relates to how well the technology, software, and models used by the protocol's governance withstand actual use cases. Does the protocol have a reliable voting mechanism? How robust is the governance process, and does it facilitate good governance? Are the votes binding, or do they function solely as signals to the team?

Answer: There is no community governance framework for Render Network; internal contributors are not public and their processes are unobservable.

Score: 0

d) Process and ease of use (5 points)

This score is based on the documentation and process for governance. More specifically, how easy it is to participate in governance. Does the protocol have a formal governance process? Is sufficient documentation available? Is there a basic framework to establish social consensus? Are there channels dedicated to governance debate?

Answer: There is no community governance framework for Render Network; internal contributors are not public and their processes are unobservable.

Score: 0

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