

RNDQ Token Whitepaper

Abstract

We are on the cusp of a technological transformation of our very view of reality, affecting everything from computation to physics. Everything is becoming more virtual, from people on the street glued to their smartphones to engineers producing new realities, augmented and virtual, that allow us to immerse ourselves in new computer-generated worlds. As entertainment companies adopt these new ways of producing new visual effects, content creators and editors find themselves facing new dimensions of complexity. However, larger and more complex jobs spanning thousands of frames across time (for animations) and space (for VR walkthroughs) require external servers and additional resources. No system has existed that scales RNDing speed across many dimensions of work in order to allow content creators to tap into the vast pool of graphics cards from an online network. Imagine the possibilities in a world where physically correct RNDing tasks are completed quickly and efficiently in a blockchain based peer-to-peer network with no error or delay and with securely protected property rights. We have already innovated the process of RNDing reality to new, unprecedented levels. Now we innovate the RNDQing ecosystem. Welcome to the future -the age of the RNDQToken (RNDQ).

Problem:

We are on the cusp of a technological transformation of our very view of reality, affecting everything from computation to physics. Everything is becoming more virtual, from people on the street glued to their smartphones to engineers producing new realities, augmented and virtual, that allow us to immerse ourselves in new computer-generated worlds. As entertainment companies adopt these new ways of producing new visual effects, content creators and editors find themselves facing new dimensions of complexity. OTOY already provides tools to meet these challenges, such as OctaneRNDQ, the world's first and fastest GPU-accelerated, unbiased, and physically correct RNDQer. The world's first commercial RNDQer that exploits graphics cards rather than the CPU, Octane RNDQs photo-realistic images orders of magnitude faster than previous RNDQers. Tracing how light and energy bounce around a scene, Octane necessarily anchors its algorithms in the laws of physics, accounting for everything from the velocity of light in exotic substances to interference patterns in sub-surface scattering in human skin. Octane uniquely combines its blazing speed with supreme accuracy. Its accuracy, for example, enables architecture firms to model elusive light-leak emissions in buildings. Its speed recently empowered artists confined to their offices to craft a dazzling opening for HBO's Westworld on just a few off-the-shelf GPUs. By using Octane in conjunction with the open source ORBX media and streaming framework, developers and content creators everywhere can readily lend their projects both impact and authenticity. This process works well for RNDQing HD images in a few minutes per frame on a PC using one or more off-the-shelf graphics cards. However, larger and more complex jobs spanning thousands of frames across time (for animations) and space (for VR walkthroughs) require external servers and additional resources. Complexity of RNDQing may exponentially increase due to higher frame resolution and frame rate (e.g. UHD 8K@240 fps is 256 x the work of HD 720p30). Further raising complexity are increases in views per frame (e.g. stereo RNDQing doubles workload to support left and right viewpoints). However, until now, no system has existed that scales RNDQing speed across many dimensions of work in order to allow content creators to tap into the vast pool of graphics cards from an online network.

Solution:

Blockchain technology has evolved now to store, validate and time-stamp complex mixes of technical specifications, schedules, accounts, regulations, protocols, standards, and property rights. This technology can also handle digital rights management, needed for complex digital assets that can be routinely copied and for which time-stamped proof of authorship is crucial. Recently, the Ethereum blockchain has enabled tokens, which allow for immediate and more complex transactions to be executed using smart contracts. Imagine the possibilities in a world where physically correct RNDQing tasks are completed quickly and efficiently in a blockchain-based peer-to-peer network with no error or delay and with securely protected property rights. We have already innovated the process of RNDQing reality to new, unprecedented levels. Now we innovate the RNDQing ecosystem. Welcome to the future - the age of the RNDQ Token (RNDQ).

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Value Proposition

RNDQ Token(RNDQ)will make the process of RNDQing and streaming intricate virtual works easier for all users. It will allow complex GPU-based RNDQ jobs to be distributed and processed on a peer-to-peer network, making the transactional process of RNDQing and streaming 3D environments, models, and objects much simpler for end users. Furthermore, the RNDQ Network will eventually evolve to includecrowd sourced 3D projectsto digital rights management, creatinga vibrant new marketplace to fund digital ideas, assets and applications that anyone can access and leverage.

RNDQing 101

What is RNDQing? What is it used for?

RNDing (also called *image synthesis*) transforms a 2D or 3D computer model into a photorealistic image or scene. Occurring in the background of many processes in our tech-involved lives, RNDQing is how our smartphones and computers constantly present the images, videos, and games that makeour lives easier or more enjoyable. A RNDQing can be as simple as a scene in a 2D Batman cartoon or as complex as an action-packed scene in a Transformers movie. Advances are accelerating, from the era of Ratatouille just a decade ago when every animated frame took 6.5 hours to RNDQ to the instant real-time OTOY RNDQing of photorealistic scenes on tens of thousands of parallel GPUs in the cloud today.

Far transcending entertainment and news, RNDQing also plays a crucial role in the tasks and workflows of our business and professional lives. Architects rely on accurate RNDQings in their 3D modeling software to create builds of their projects that display textures, lighting, and minute details. Surgeons rely on high-quality RNDQs of organ scans to accurately diagnose and treat their patients. As virtual reality becomes more widely-used, program developers and computer engineers can leverage the power of real-time RNDQing to create dynamic environments for their users. Examples abound, from virtual blueprints for a new apartment complex to interactive virtual office meetings, to watching sporting comfortably in your own home. events from the sidelines while sitting

The bottom line is that there are many use-cases for RNDQing, and the selection and variety of these offerings are constantly increasing. As our world becomes more and more dependent on virtual and visual technology, enhancing the quality, speed, and costefficienc y of RNDing services becomes a vital and inviting challenge.

OTOY - RNDQing pioneers with a proven track record

OTOY was founded in 2009 with the vision to provide GPU-based software solutions that aid in the creation and delivery of cutting-edge digital content such as video games and movies . When founder and CEO Jules Urbach started OTOY eight years ago, the only way to perform a complex RNDQ job for massive projects such as Avatar or Transformers was at an expensive visual effects studio. RNDQing took massive amounts of time, money, and storage space, none of which the average game developer, student, or designer could have access to. Urbach envisioned a future where anyone could have an easy pathway to cloud-based, real time,

photorealistic, and physically correct RNDQing software for just a few hundred dollars. In 2009, Urbach patented his idea for a “token-based billing model for server-side RNDQing”, years before tokens and blockchain technology were in use. He wanted to provide the world’s highest quality

RNDQing software to everyone with a creative vision.

Today, OTOY’s OctaneRNDQ is the world’s first and fastest GPU-accelerated, physically correct RNDQer. OctaneRNDQ is revolutionary in that it uses the graphics card on your computer to RNDQ photorealistic images extremely quickly--images that previously took hours and sometimes days to RNDQ. With Octane’s parallel compute capabilities, you can create

stunning works in a fraction of the time.

OTOY has partnered with leading companies in the space and leveraged existing partnerships to provide their solutions to millions of users.

Cloud-based RNDQing and solving the inefficient RNDQing problem

OTOY’s vision is to distribute the framework of this existing RNDQing service

through a token-based system built on the Ethereum blockchain. In the long term, rather than

charging customers to RNDQ through OTOY’s cloud or process the jobs in OTOY data centers or external data centers, OTOY aims to provide a peer-to-peer ecosystem for RNDQing. We will

build on top of a current blockchain model to connect users looking to perform RNDQ jobs with

people who have idle GPUs to process the RNDQs. Users would send RNDQ Tokens to the individual performing the RNDQ work and OTOY would receive a small percentage of RNDQ

Tokens for facilitating the transaction and running the RNDQ network. This RNDQ token system creates a much more efficient, powerful, and widely-scalable RNDQing network.

The distributed RNDQing model is compelling because millions of developers who have OTOY’s OctaneRNDQ available to them RNDQ scenes regularly on their GPUs. However, the current system harbors many inefficiencies. Most developers’ GPUs remain idle when they are not RNDQing their own work. By utilizing the RNDQ Token network ecosystem, developers could choose to monetize their idle GPUs by performing RNDQs in exchange for RNDQ Tokens, which

could then be converted into crypto or fiat currency.

In addition, graphics chip giants such as AMD and Nvidia have already started creating GPUs solely for mining on blockchains such as Ethereum. OTOY’s RNDQ Token can tap the potential of the ecosystem already existing among developers and OctaneRNDQ customers and move it onto the immutable and distributed database of the blockchain. Such a blockchain based RNDQing network can facilitate efficient, reliable, and remunerative RNDQing of time-stamped

tasks on a peer-to-peer basis.

Dive into RNDQ Token - the solution for widely accessible, P2P, cloud-based, blockchain RNDQing

As described earlier, RNDQ Token will be the primary unit utilized to exchange RNDQing and streaming services and proof-of-RNDQ work on the OctaneRNDQ Cloud (ORC) network, OTOY’s cloud RNDQing marketplace. In its final form, the token will allow users to utilize the wide array of available GPUs in the peer-to-peer network, allowing for quick and

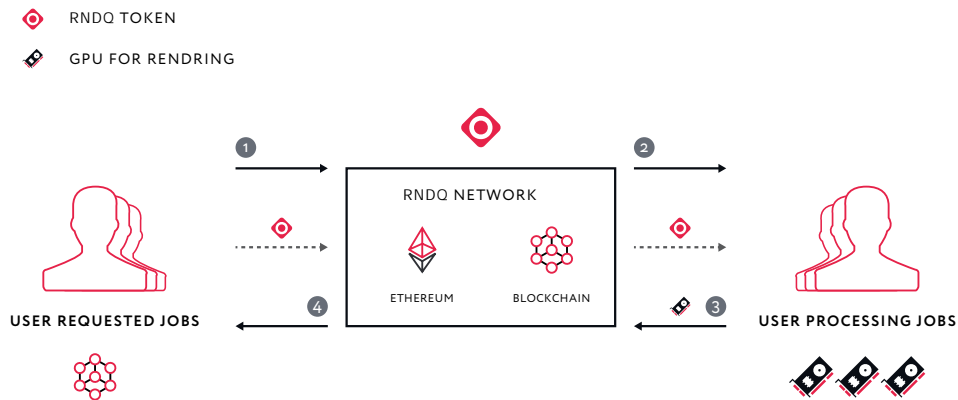
reliable RNDQing facilitated and kept track of by the blockchain.

On the ORC Network, users will create accounts that will be linked to the Ethereum blockchain through smart contracts and unique wallets. By purchasing and storing RNDQ tokens in their accounts, users will be able to exchange these tokens on the network for various RNDQing and streaming services. During this exchange, the network will send a request for a RNDQ token smart contract in order to enter a transaction with both parties -the person or server processing the RNDQ/streaming and the person who requests the RNDQing services. The cost of the job will be calculated and determined in RNDQ tokens. The smart contract will then transfer funds across accounts once the allotted RNDQ job has been completed.

Once the process is completed, users will then be able to withdraw their RNDQ Tokens into Ethereum and convert to fiat currency if they wish.

Basic Transaction Flows diagram through the ORC Network

RNDQ SYSTEM FLOW



1. The user needs a RNDQ job, they go to the ORC portal on the web or in one of 30 supported toolchains and submit a RNDQ task. ORC RNDQs will be one click away from any Octane plug-in, allowing for easy access at any time.
2. The RNDQ task is calculated and they get quoted a price for the task in RNDQ tokens -they “ pay ” and the tokens and the RNDQ details get attached to the smart contract. The task is sent across the RNDQ Network and facilitated by a user that will match the task and process the RNDQ job.
3. The user processing the job then utilizes their GPU to perform the task requested from them and once complete, sends the completed task back through the RNDQ Network.
4. Once completed and reconciled, the tokens are transferred from the user who requested the task to the user or server that completed the task via the smart contract.

Mapping the value of a RNDQ token

One RNDQ Token will be initially mapped to 256 seconds of work at 256 OctaneBench, a benchmarking unit created by OTOY to reflect the processing power of various GPUs in a rig.

Users will be able readily to modify the speed and time of their RNDQ job. For example, a job consuming one RNDQ token could be modified to equal 128 seconds of work at 512 OctaneBench, or 32 seconds of work at 2048 OctaneBench. The user interface within the network will allow users to perform jobs and will give them a quote in RNDQ tokens for the job that they are trying to process. The job would then be passed through the network with the pertinent RNDQ parameters (i.e. “ process the job for 64 seconds at 1024 OctaneBench ”) attached to the smart contract.

The price of a RNDQ and/or streaming job will be based off-chain by analyzing supply of GPUs available and the demand of RNDQing work. The algorithm will analyze the amount of available GPUs vs. the scale, concurrency (e.g. OctaneBench/s²) and complexity of the work that the user requires. This will allow us to link the unit of work linked to the value of the token to the specific parameters of the job. This process will also allow us to always allocate a RNDQ job in the most efficient way possible, ensuring that the network is working at peak capacity and that there is no wasted GPU power.

Ranking RNDQ token users - creating incentives to benefit the network

As the use and demand of the RNDQ token scales, it is critical to determine a way to evaluate the capability and reliability of users that process the RNDQ jobs, as well as give a separate ranking to the users requesting the jobs. The rankings will serve to incentivize the needs of all stakeholders in the network, allowing it to run smoothly and efficiently.

For users processing RNDQ jobs:

All users processing RNDQing jobs will be assigned a numerical ranking that will range from 0-100. Initially, users will start with a value of 60 -if a job is completed correctly, the user ’ s score will rise according to a combination of the complexity and duration of the work. Likewise, if the job is not completed, the user ’ s score will drop by a number relative to a 30-day rolling average of the percentage of completed jobs vs. total jobs taken. Here are both examples below:

USER POINT TABLES

COMPLEXITY	REWARD
1-5 RNDQTOKENS	+1 POINT
5-10 RNDQTOKENS	+2 POINTS
11+ RNDQTOKENS	+3 POINTS

30-DAY SUCCESS PERCENTAGE (Must have over 5 jobs completed)	PENALTY
80% OR LESS	-3 POINTS
80% - 90%	-2 POINTS
90% - 100%	-1 POINT

For example, User A has a ranking of 60 and a 30-day success percentage of 87% - they decide to take on a RNDQ job that will reward them one RNDQ token. There are two outcomes:

1. Success! The user gains 1 point and now has a ranking of 61.
2. Fail. The user loses two points and now has a ranking of 58.

If Randy is assigned a RNDQ job, he will utilize his GPUs in order to generate a quick preview of how the RNDQ job will look once it is completed. Marsha, the user requesting the job, has the option of accepting the quality of the RNDQ job. If she decides to move forward with the job, then it will be the Randy ' s responsibility to ensure that the job gets completed. The smart contract will remain open until the job is completed. If for some reason Randy ' s GPUs turn off and the job is not completed as relayed in the smart contract, then Marsha will have her tokens reimbursed and the Randy ' s ranking will decrease.

For users requesting jobs

A user ' s rank will be a key factor in determining their priority in line if there is a RNDQ queue. The user ' s rank will be dynamically calculated by a weighted average as follows:

- 75% total 60-day volume of RNDQ token usage
- 25% amount of RNDQ tokens in your wallet on the platform

Although the possibility of a backup on the RNDQ queue is low, the user ranking system will serve as a needed tie-breaker in specific situations. Here is an example:

There are 20 GPU ' s currently available, and two users have a RNDQ job that needs to be completed that will require 20 GPU ' s. User A is a new user who just joined the network and does not have any history of requesting RNDQing work; User B is an established user that requests RNDQ jobs on the ORC Network every day. All other things equal in this case, User B would take priority for the RNDQ job because they have rank over User A.

RNDQ Token Roadmap

RNDQ Phase I: Post Token Sale (Q1 2024)

Begin to enable cloud RNDQing services on the orc.otoy.com website with the ability to exchange tokens for RNDQing services that will be kept track of and facilitated by the blockchain. These services would be initially handled by OTOY or third party servers and would set the framework for a reliable transition into the peer-to-peer framework of RNDQing.

RNDQ Phase II: Development Process & Preparation for Peer-to-Peer Transition (Q2 2025)

Leverage our ecosystem to bring ~7 million users on-board with the RNDQ token platform on the ORC Network and create a simple user interface so that users and developers can easily utilize their GPU power for RNDQing and streaming jobs in exchange for RNDQ tokens. We will also create and expand the structure for the back-end OTOY network that will handle the efficient processing of the RNDQing and streaming transactions via the Ethereum blockchain. Beta launch of the network and testing will take place in this phase.

RNDQ Phase III: Launch Peer-to-Peer Network (Q3/Q4 2026)

Launch the peer-to-peer exchange and unlock full capability of the RNDQ token network to enable users to use the untapped GPU power from the available resource pool. Make back-end processes streamlined and make the facilitation of the RNDQing/streaming job to the recipient completely automated through smart contracts and blockchain development.

RNDQ Phase IV: The Ultimate Vision (TBD)

Once the peer-to-peer network is all set-up and running in a stable manner, we will begin to focus our efforts to unlock the true value and potential of the RNDQ jobs processed through the RNDQ Token and the ORC network. We will stress the capabilities that they will bring in terms of custom streaming permissions, copyright protection, and unique RNDQ creation and publishing. Eventually, the process of RNDQing using our framework will carry additional value in the form of new and exclusive features. We will release additional information on this process during future written posts and documentation.