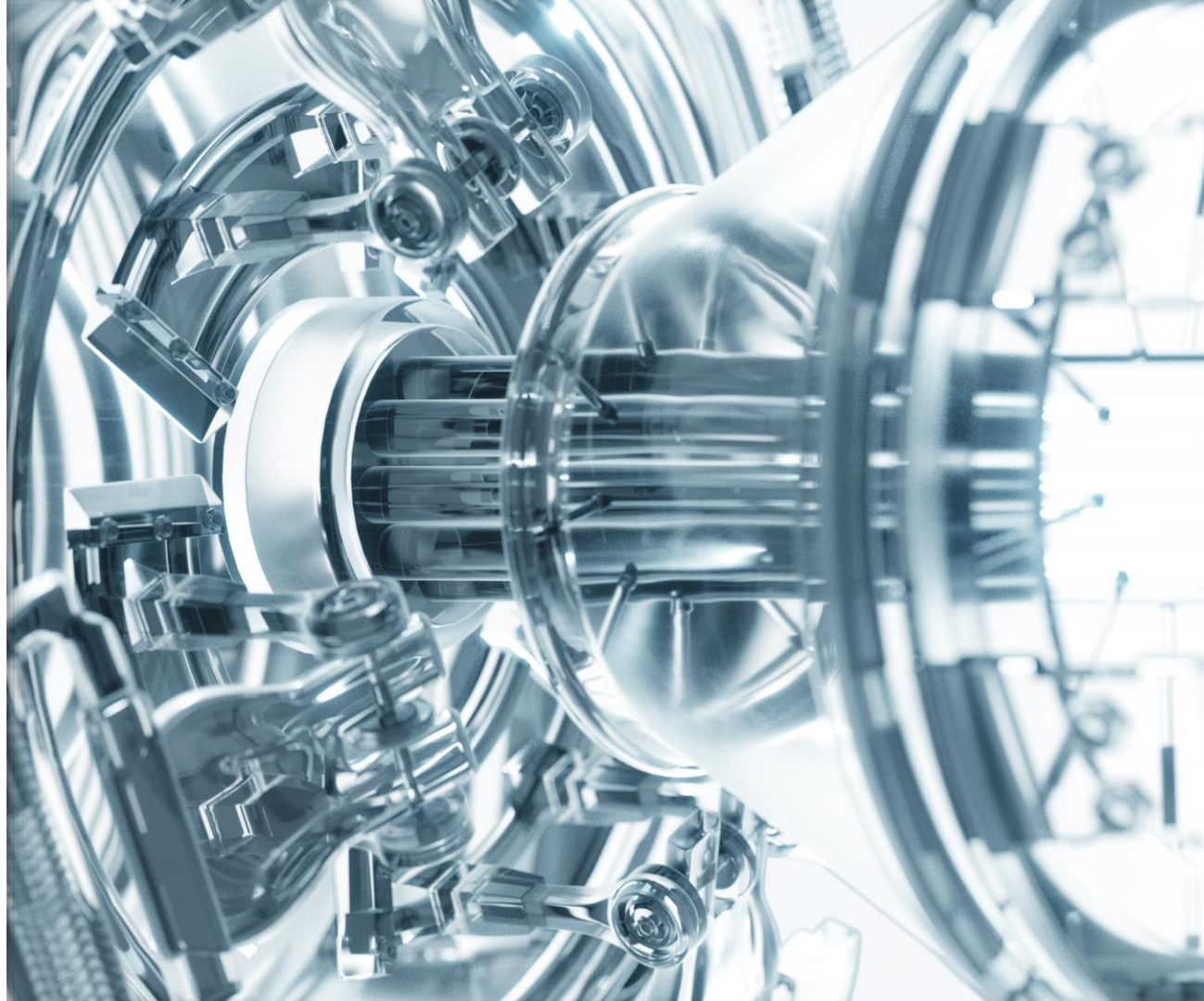


RNDR, Blockchain, and the future of media

By: Kalin Stoyanchev

December 1st, 2017



Introducing RNDR

The first network to transform the power of GPU compute into a decentralized economy of connected 3D assets.

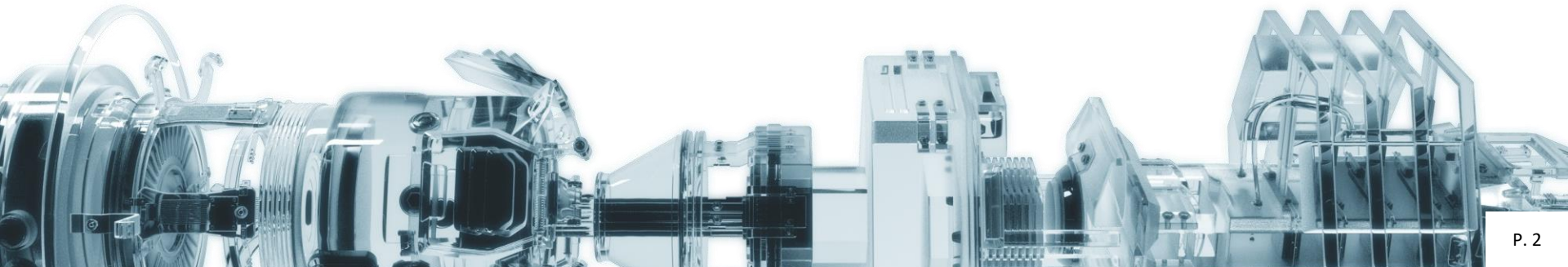
We aim to make it possible for any 3D object or environment to be authored, shared, and monetized through the Ethereum blockchain protocol and eventually RNDR's own blockchain.

The RNDR token is based on a published patent filed 7 years ago ([US 9197642](#)) and powered by breakthrough cloud rendering technology, creating a distributed global network of millions of peer GPU devices.

The future of rendering envisioned.

Sectors transformed by RNDR

- MEDIA / GAMING
- MANUFACTURING
- MEDICAL
- VIRTUAL REALITY
- AUGMENTED REALITY
- MIXED REALITY





THE RNDR TOKEN IS A UTILITY BACKED BY OTOY

Integration is complete with the world's largest end-to-end cloud graphics company now accepting RNDR.

OTOY's industry partnerships:



7 million developers with
OTOY integration



OTOY has been selected to power
the new Facebook holographic
streams to billions of users

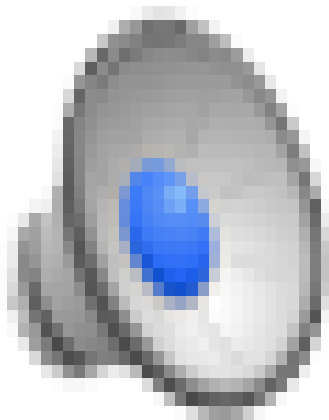


OTOY's largest outside shareholder
with direct integration into the
industry's leading 3D tools

OTOY Key Investors and Highlighted Customers



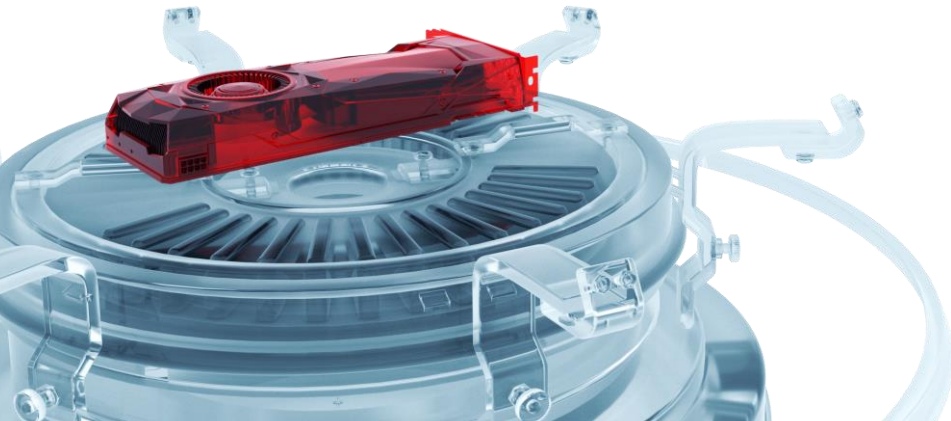
RENDERING IN THE “REAL WORLD”



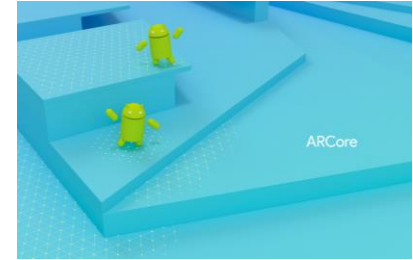
THE OPPORTUNITY: THE MISSING GPU NETWORK

From smartphones to 8K televisions to the latest augmented reality devices, our visual world is evolving at breakneck speed.

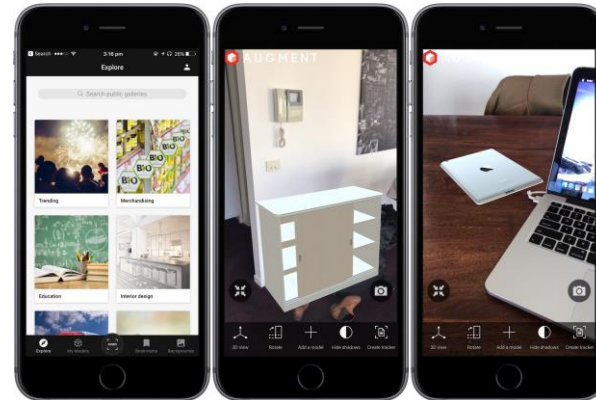
Authoring and publishing state-of-the-art graphics is an immense challenge that is growing each day.



Pokemon GO!



ARKit & ARCore



AR Apps

THE OPPORTUNITY: THE MISSING GPU NETWORK, CONTINUED

GPUs are now a standard component on every phone and PC as the most efficient rendering hardware.

Single GPUs on devices, and even those in the cloud, are unable to individually handle the most intensive image processing demands.

Could all the millions of GPUs in the world be connected and work on distributed tasks for complex rendering?

The answer is **yes**.

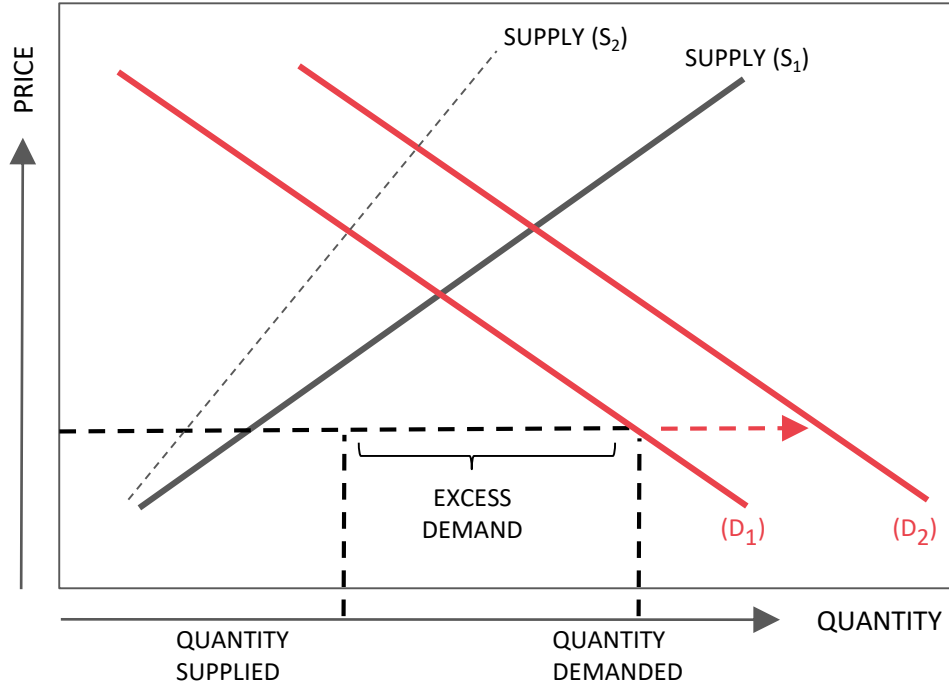
WORLDWIDE - GPU PUBLIC CLOUD GAP

▲ 265 million GPUs in circulation**
Active / performant / discrete

▼ Fewer than 50,000 GPUs in public cloud
Combined across AWS, IBM, Azure etc.

***Source:
John Peddie Research, Market Watch,
GPU Quarterly Market Report, 2nd
Quarter, 2017*

Surging as the GPUs are powering frontier technologies



Demand Curve continues to shift (D_1 , D_2 , etc.) as GPUs grow in their dominance.

Why is there excess demand in the market?

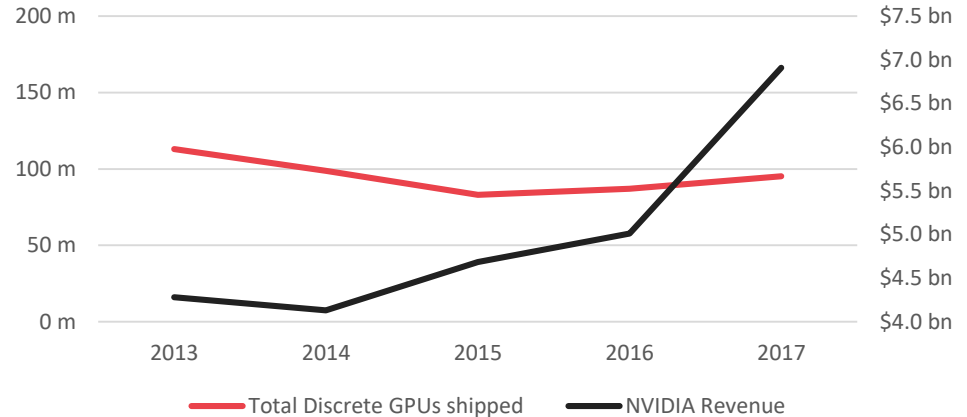
1. GPUs power critical new technologies:
 - Machine learning and AI
 - Cinematic and Game Rendering
 - Mixed Reality Authoring / Playback
2. Multiple market segments compete for limited GPU resources
3. Massive unmet demand, high cost of GPUs
4. Premium pricing with GPUs at 40 - 80% of technology bill of materials (BOM)

Constrained for the last 5 years with soaring prices

Limited shipments from market leaders like NVIDIA have extracted record levels of revenue with high per unit prices but are forsaking long term market expansion.

GPU Supply:

1. Forced supply constraints for over half a decade have kept the industry at bay
2. Enterprise-grade GPU (eg. GP100) are 600% more expensive than consumer GPUs without any major price/performance advantages
3. Public clouds have been unable to expand fast enough to meet the demand nor offer competitive prices because they are barred from using consumer GPUs in the cloud



CONSUMER

\$1,225
(e.g. TitanX GPU)

197
Octane
Benchmark

600%

MORE EXPENSIVE

17%

PERFORMANCE INCREASE

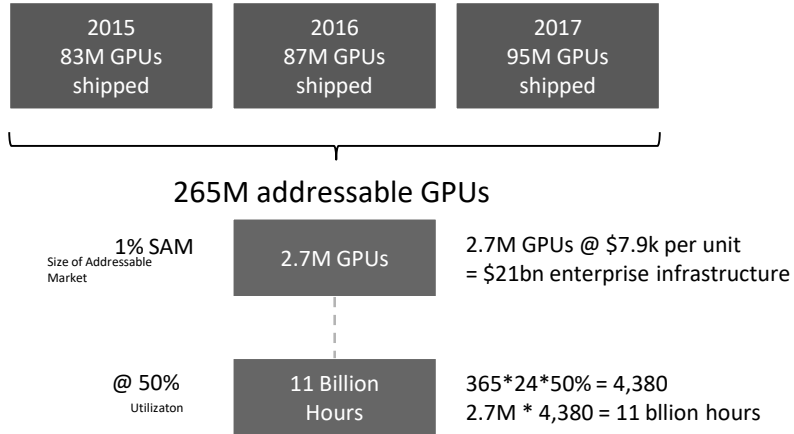
ENTERPRISE

\$7,963
(e.g. GP100 GPU)

230
Octane
Benchmark

**NVIDIA is a US based GPU manufacture with a 20% market share.

A distributed rendering network on the blockchain brings idle GPUs into productivity



Enterprise pricing distortions have not allowed centralized cloud services to invest ahead of demand and limiting the public cloud infrastructure to less than 20-50 thousand discrete performant GPUs available in total and fewer than several thousand available concurrently.

The opportunity is ripe for disruption with decentralization

If the RNDR network could leverage just 1% of idle GPUs in the market it could add the equivalent of:

\$21bn @ **\$0**
GPU infrastructure Capital expenditure

5306%

Increase in capacity vs. public cloud
today

New Formats Require Exponential Rendering Demand: Light Fields

- Next generation holographic rendering with light fields
- All major video technology platforms at Google and Facebook are racing to offer light field publishing solutions. However,
- Major expansions of the current rendering infrastructure are required.
- The current situation appears to be daunting but may not be when compared to the growth of online video over the last 20 years:

20-year Growth of Online Video:

1997

100 GB
per hour total global
Internet traffic

2005

2017

95,760,000 GB
per hour total global
Internet traffic



YouTube launched
February 14th, 2005



300 hours
of video uploaded to
YouTube every
minute.

Tomorrow: Light Field Video



1hr of light field video costs

\$3.6m to render

at current public cloud costs

Creating light fields at YouTube's scale and rate today would take:

347x more GPUs
than exist in the world @ \$47 every month
trillion (10x the GDP of Japan)

WHY BLOCKCHAIN?

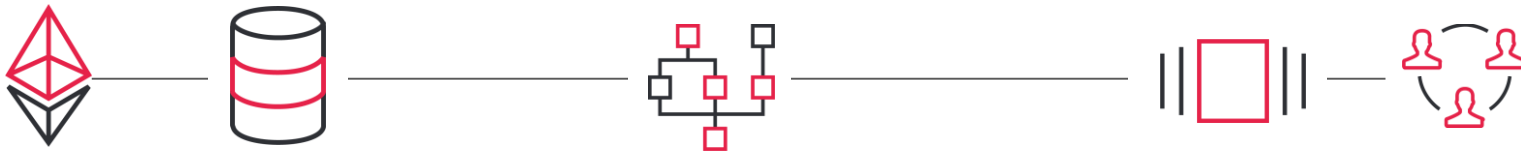
RNDR – USES OF BLOCKCHAIN TECHNOLOGY

CORE FEATURES

- Premium Storage and Transfer
- Indisputable Digital Rights Management
- Streaming and Delivery Capabilities
- Licensing of assets
- No central render server



Sia + RNDR working on
storage & rendering
partnership



RNDR – EVOLUTION OF UTILITY

Current RNDR Utility

Create the Cloud Rendering Market

At current rendering costs, if RNDR were to monetize just 1-2% of that serviceable addressable market, revenue in 2021 would be in excess of \$10 billion.

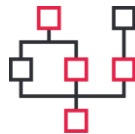


Future RNDR Utility

Establish the first holographic blockchain

RNDR's downstream revenue through the blockchain opens up more revenue through additional added value services:

- Premium Storage and Transfer
- Streaming and Delivery
- Machine Learning
- Physics Simulations



Underwrite the new Rendering Economy

With RNDR's digital rights management solutions, RNDR's transaction revenue from the sale or licensing of assets yields exponential growth from expanded use in media and entertainment, not to mention even larger markets with industrial and commercial applications that all require rendering.



RNDR – EVOLUTION.

A peek into RNDR Applications



Traditional Ad Space
Television screens, physical aspects, lights



The Future, AR Vector Space
Suspended assets, visible through
hardware

RNDR – EVOLUTION OF UTILITY

Current RNDR Utility

Future RNDR Utility



OTOY Unity Integration
Over 7 million
developers
Done!



ORBX for Facebook
Integration into the
new x24 pipeline
Done!



Phase I:
RNDR <> ORC
integration
Done!



Phase III:
Full launch of P2P network,
continuing development of RNDR
protocol and RNDR blockchain

Octane 3.08 20+ plugins
Over 150,000
customers
Done!

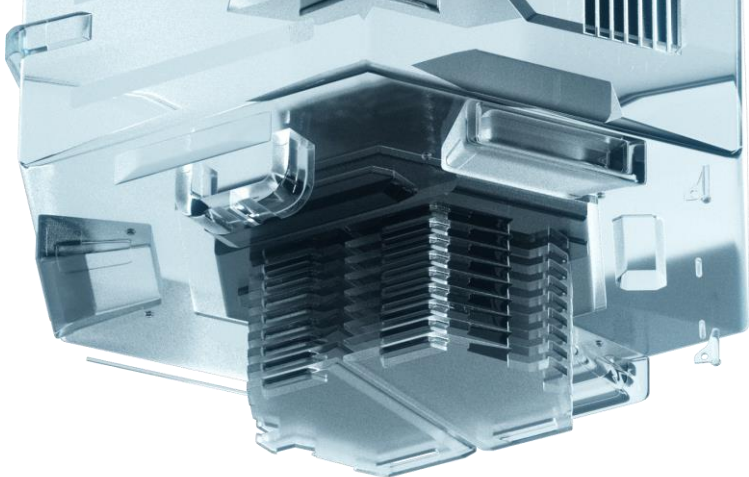


ORC Multi-cloud
OTOY Cloud Services
Done!



Phase II:
Beta testing of
P2P network and
launch
preparation

Phase IV:
Blockchain development and
integration with other token
systems such as BAT



RNDR

For more information please visit:

www.rendertoken.com