NFTs, Digital Property Rights, Gaming and the Metaverse
What Is the Metaverse? The Future Vision for the Internet

Tech leaders describe the online world as an extensive place where people and their avatars can work, shop, attend classes and even walk on the moon.

Meghan Bobrowsky and Sarah E. Needleman

UPDATED NOV. 6, 2021
5.3 BILLION INTERNET USERS

Internet Users in the World by Geographic Regions - 2022

- Asia: 2,917 million
- Europe: 747 million
- Africa: 602 million
- Latin America / the Caribbean: 534 million
- North America: 348 million
- Middle East: 206 million
- Oceania / Australia: 31 million

Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 5,385,798,406 Internet users estimated in June 30, 2022
Copyright © 2022, Miniwatts Marketing Group
More than eight-in-ten U.S. adults go online at least daily

% of U.S. adults who say they go online ...

Note: Respondents who did not give an answer are not shown. Source: Survey of U.S. adults conducted Jan. 25-Feb. 8, 2021. PEW RESEARCH CENTER
## Daily Time Spent Using the Internet

Average amount of time (in hours and minutes) that internet users aged 16 to 64 spend using the internet each day.

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<td>20</td>
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WHAT IS THE METAVERSE?
DATA AND THE NEW RULES OF COMPETITION
Data Gravity

- Non-dependent Applications (e.g. smart home devices)
- New apps and services enable by greater data segmentation
- Applications (e.g. streaming)
- Services (e.g. Cloud computing)
- Non-dependent Services (e.g. voice call)
- Analytics
- Low Latency & High Throughput
- Dependent Zone

New apps and services enable by existing apps and services

As of Oct 29, 2020
Source: Messari, Dave McCrory
DATA AND THE NETWORK EFFECT (AND YOU DON’T OWN)
T’was the year 2017, and across the land of Busy-ness the four mighty powerhouses did constantly wage war upon each other...
The gaps in wealth between upper-income and middle- and lower-income families are rising, and the share held by middle-income families is falling.

Median family wealth, in 2018 dollars, and share of U.S. aggregate family wealth, by income tier.

The richest families are the only group to have gained wealth since the Great Recession.

% change in median family wealth, by wealth quintile and for the top 5%

Note: Data for families in the first quintile (bottom 20%) are not shown. Their median wealth was as follows: 1989 – $0; 1998 – $0; 2007 – $36, and 2016 – negative $1,099 (figures in 2018 dollars).

Source: Pew Research Center analysis of the Survey of Consumer Finances.

*Most Americans Say There Is Too Much Economic Inequality in the U.S., but Fewer Than Half Call It a Top Priority*

PEW RESEARCH CENTER
The cats you see on this page are from CryptoKitties, an app by Dapper Labs that is built on blockchain, similarly to Bitcoin and Ethereum - but CryptoKitties uses NFTs and is not a cryptocurrency.

NFTs allow CryptoKitties to be traded as unique items. Ownership is tracked securely thanks to blockchain.
Open digital assets is a kind of open source of assets that users can add layers on top, e.g. their own story, value, asset to it.

NFTs have been growing significantly in popularity in recent years as it:
- provides a certificate of authenticity.
- registered it’s transaction on the blockchain and provides a permanent and transparent record of each purchase and proof of ownership.

Several emerging platforms including OpenSea and WAX have been providing marketplaces on which digital goods can be offered and sold. Anyone can go online and verify who owns a specific NFT, that can be a specific piece of digital art from e.g. Beeple.
Open digital assets can be central to the experience. For example, different services can be added to a car regardless of its manufacturer. In this manner, the content becomes the platform.

**WHAT ARE OPEN DIGITAL ASSETS**

Open digital assets are a type of open source assets to which users can add their own layers, e.g. their personal story or customization.

**UNIQUE FEATURES**

NFTs have been growing significantly in popularity in recent years:
- They serve as a certificate of authenticity
- They require registered transactions on blockchain providing permanent and transparent records of each purchase and proof of ownership

**PLATFORMS**

Several emerging platforms including **Opensea** and **Wax** have started providing marketplaces for digital goods. Due to their open nature, anyone is able to verify who owns a specific NFT.
Unbundling The Automobile

DiDi

ARGUS

Karamba Security

Veniam

Savari

JTech

RoboCV

Kymeta

Autotalks

Oxbotica

(MCOT)

MR. Clean CarWash

MICHELIN

Power

YAN

ACAT

Pinnacle Engines

Agility

achates:POWER

LDL

Aperia

INRIX

BirdsEye

Navdus

PathSense

MapmyIndia

Navmii

Ampius

headsUP!

UBER

QUANERGY

Leddar'Tech

TRILLUMINA

Phantom Intelligence

Battery Storage

Solid Energy Envia

SMART Drive

Augment Drive

Exploride

Lytx

Unbundling The Automobile

Connected Car

Remote

Mighty Kibob

AutoBot

Autonomous

Truvelo

Automatic

Zebot

Driver Safety

Zendrive

Navdy

AUGMENT

Navmii

Pioneer

Lytx

HeadsUP!

Battery Storage

Solid Energy Envia

SMART Drive

Augment Drive

Exploride

Lytx

HeadsUP!
Cross-application interoperability refers to the capacity of games to utilize a shared asset.

**Problems:**

- **As long as assets are bound to one server, their value hinges on a single use case - the original game. The traditional centralized game model traps players by forcing them to sink costs in the platform.**

- **User transactions are merely license agreements: a right to use items within, (and only within) the context of the original game. This forms a closed loop between player and developer.**

**Solutions:**

- **Players are able to leverage assets that are stored on blockchain in multiple games. Decentralized networks foster an open economy in which assets are able to have uses cases from one game to another.**

- **If a blockchain game shuts down, player assets are not lost. Players can still use assets in other games and can continue to trade them on decentralized marketplaces.**

**Siolated databases confine assets to their native ecosystem.**

**Separate asset records and regulations.**

**NFTs promise to set this bold new standard for cross-application support.**

**A decentralized model facilitates XCH. Between game ecosystems.**
EXAMPLE OF NFTS
NFTs ARE A STORE OF CULTURE

NFTs capture the imagination, ideas and creativity that shape a digital collective born through human achievement which has recently been best expressed with art nfts.

BITCOIN IS A STORE OF VALUE, NFTS IS A STORE OF CULTURE

There are so many people from different backgrounds and genres coming in to share their art, connect with people and potentially build a career.

The street art and counter cultural styles are being used in NFTs. Some finance-crypto people are may be considered as ‘punks’.

Young artists of color are not left out, even though they may long been marginalized in the “traditional” art world.

Time: https://time.com/5947720/nft-art/ (March 22, 2021)
SERVICES FOR MERCHANTS (NFT’s)

Introducing Rocket NFT Loans

Rocket Loans

DeFi Rate

Yield Racing: F1 Delta Time Players Can Now Stake Their NFTs

Yieldl Announces Marketplace for NFT Rentals and Mortgages

The NFT Game That Makes Cents for Filipinos During COVID
NFTs/GAMING MOST FUNDED IN 2022

Blockchain/Crypto Venture Funding ($4,799)

Sep-21: $3,256
  - NFTs/Gaming: $271
  - Infrastructure: $711
  - DeFi: $1,177
  - Web3: $1,155
  - Trading/Brokerage: $671
  - Crypto Financial Services: $194
  - Data/Analytics/Information: $365
  - Enterprise: $1,551

Oct-21: $3,238
  - NFTs/Gaming: $252
  - Infrastructure: $671
  - DeFi: $1,105
  - Web3: $1,155
  - Trading/Brokerage: $651
  - Crypto Financial Services: $194
  - Data/Analytics/Information: $366
  - Enterprise: $1,551

Nov-21: $3,937
  - NFTs/Gaming: $920
  - Infrastructure: $582
  - DeFi: $1,169
  - Web3: $1,551
  - Trading/Brokerage: $204
  - Crypto Financial Services: $505
  - Data/Analytics/Information: $366
  - Enterprise: $1,551

Dec-21: $3,596
  - NFTs/Gaming: $156
  - Infrastructure: $1,191
  - DeFi: $505
  - Web3: $665
  - Trading/Brokerage: $1,230
  - Crypto Financial Services: $296
  - Data/Analytics/Information: $171
  - Enterprise: $567

Jan-22: $1,227
  - NFTs/Gaming: $1,144
  - Infrastructure: $1,408
  - DeFi: $1,191
  - Web3: $1,191
  - Trading/Brokerage: $1,191
  - Crypto Financial Services: $1,191
  - Data/Analytics/Information: $1,191
  - Enterprise: $1,191

Feb-22: $4,113
  - NFTs/Gaming: $217
  - Infrastructure: $338
  - DeFi: $1,114
  - Web3: $1,293
  - Trading/Brokerage: $1,191
  - Crypto Financial Services: $1,191
  - Data/Analytics/Information: $1,191
  - Enterprise: $1,191

Mar-22: $3,549
  - NFTs/Gaming: $378
  - Infrastructure: $372
  - DeFi: $1,144
  - Web3: $1,378
  - Trading/Brokerage: $1,191
  - Crypto Financial Services: $1,191
  - Data/Analytics/Information: $1,191
  - Enterprise: $1,191

Apr-22: $4,072
  - NFTs/Gaming: $483
  - Infrastructure: $483
  - DeFi: $1,269
  - Web3: $1,378
  - Trading/Brokerage: $1,191
  - Crypto Financial Services: $1,191
  - Data/Analytics/Information: $1,191
  - Enterprise: $1,191

May-22: $3,486
  - NFTs/Gaming: $363
  - Infrastructure: $341
  - DeFi: $1,542
  - Web3: $1,353
  - Trading/Brokerage: $1,191
  - Crypto Financial Services: $1,191
  - Data/Analytics/Information: $1,191
  - Enterprise: $1,191

Jun-22: $2,218
  - NFTs/Gaming: $376
  - Infrastructure: $243
  - DeFi: $940
  - Web3: $827
  - Trading/Brokerage: $195
  - Crypto Financial Services: $379
  - Data/Analytics/Information: $195
  - Enterprise: $842

Jul-22: $2,048
  - NFTs/Gaming: $231
  - Infrastructure: $243
  - DeFi: $595
  - Web3: $827
  - Trading/Brokerage: $195
  - Crypto Financial Services: $379
  - Data/Analytics/Information: $195
  - Enterprise: $842

Aug-22: $1,852
  - NFTs/Gaming: $231
  - Infrastructure: $243
  - DeFi: $595
  - Web3: $827
  - Trading/Brokerage: $195
  - Crypto Financial Services: $379
  - Data/Analytics/Information: $195
  - Enterprise: $842

Source: The Block Research
Note: U.S. dollars in millions; Missing numerical values indicate investment value <$150 million for visual clarity.
The video gaming industry is huge and shows no signs of slowing down. While there were about 2.3 billion video gamers across the world in 2019, this figure has now exceed 3.2 billion gamers.

The world

- **3.24 b gamers**
- Gamers accounted for 66% of the general U.S. population, up from 58% just 5 years earlier
- Female gamers made up 45% of the U.S. gaming population in 2018, up from 38% in 2007

Asia Pacific

- **1.48 b gamers**
- $71.4B revenue
- This represents more than double the revenue generated in the second largest region, North America (2018)

North America

- **X2**

United States

- **66%** of population
- Female gamers made up 45% of the U.S. gaming population in 2018, up from 38% in 2007

The video gaming industry is huge and shows no signs of slowing down.
The average gamer is 34 years old.

**AVERAGE GAMERS BY AGE GROUP**

**MALE**
- Under 18 years old: 17%
  - 18-35: 16%
  - 36-49: 12%
  - Age 50+: 11%

**FEMALE**
- Under 18 years old: 11%
  - 18-35: 13%
  - 36-49: 8%
  - Age 50+: 12%

The average female video game player is **36**, and the average male video game player is **32**.

45% of US gamers are women.

**WHY WE PLAY**

Games are uniquely able to connect us, to entertain while inspiring teamwork, cooperation, and sometimes a little competition. It’s not about who you are, but how you play—and anyone can play.

- **65%** of video game players play with others
- **17%** team/guild/clanmates/“online only” friends of all types
- **7%** parents
- **42%** friends
- **24%** other family members
- **27%** spouse/partner

Adult video game players spend...

- 6.6 hours a week playing with others online
- 4.3 hours a week playing with others in person
13m+ are full time, 50m+ are part time
Monetization

Payer Conversion

MUUs and MUPs exclude NaturalMotion as the necessary data is not yet available.
The global virtual goods market size was valued over USD 50 billion in 2019. The rising popularity of free-to-play games have encouraged the purchase of virtual goods, thereby, resulting in a rapid forward momentum of the market.

The market size was forecasted to reach a value over USD 100 billion by 2022. The emerging popularity of MMOG facilitated by social networking websites has led to gamers spending a considerable amount of their time in the game worlds.

Source: Adroit Market research
2022 Global Games Market
Per Region With Year-on-Year Growth Rates

- **Europe**: $36.3Bn, +6.3% YoY
- **Latin America**: $8.9Bn, +10.0% YoY
- **North America**: $54.3Bn, +6.6% YoY
- **Middle East & Africa**: $7.2Bn, +12.9% YoY
- **Asia-Pacific**: $96.3Bn, +3.4% YoY

**2022 Total**: $203.1Bn, +5.4% YoY

50% of all consumer spending on games in 2022 will come from the U.S. and China

- **U.S. Total**: $50.5Bn
- **China Total**: $50.2Bn

Our revenues encompass consumer spending on games: physical and digital full-game copies, in-game spending, and subscription services like Xbox Game Pass. Mobile revenues exclude advertising. Our estimates exclude taxes, secondhand trade or secondary markets, advertising revenues earned in and around games, console and peripheral hardware, B2B services, and the online gambling and betting industry.

Source: ©Newzoo | Global Games Market Report | April 2022
newzoo.com/globalgamesreport
Bartle's taxonomy of player types provides a handy way to look at the different motivations that drive engagement on gamified systems. In the 1990s, Dr Richard Bartle outlined 4 basic types of game players. These are the Achievers, the Socializers, the Explorers and the Killers.

**KILLERS**
harass, hack, cheat, heckle, troll
They see only one goal – victory at all costs. They seek to utilize power-up items to cause distress and assert their dominance over other players.

**ACHIEVERS**
win, challenge, show off, compare
They want to share their successes with everyone. They want other people to be awe at their vast collection of trophies.

**SOCIALIZERS**
help, share, comment, gift, greet
They seek a social experience. Socializers are happy give various social treasures that extend their friends lives, help to complete a puzzle or beat a tricky boss.

**EXPLORERS**
explore, rate, review, vote, curate
They are obsessed with Easter eggs (special items) and exposing hidden areas. Explorers love to play as different characters with different gear.

As players advance in power and prestige in these environments, they accumulate virtual items that are valuable to other players, particularly new or lower level players. This is why gamers need blockchain:

OUR ASSETS ARE SOCIAL IDENTIFIERS
INVESTORS BUYING UP VIRTUAL REAL ESTATE IN METAVERSE
SECOND LIFE

Connect with a Global Community

Meet and chat with real people from around the world!

Get Started
Figure 19: Average *per capita* Income by IPRI Quintiles

- **Top 20%**: $56,398.64
- **2nd Quintile**: $28,519.57
- **3rd Quintile**: $14,128.06
- **4th Quintile**: $6,989.56
- **Bottom 20%**: $2,717.59
MIRACLE ON THE HAN RIVER

Miracle on the Han River, 70 Years Later
Gross National Income (GNI) Per Capita

North Korea

South Korea

June 29 Declaration
Democratic reforms; Roh Tae-woo elected president
Hyundai Motor Co. Founded
LG Electronics founded

1987 Constitution protecting Property Rights

Source: Maddison Historical Statistics Project, U.S. Global Investors
Freedom and Property Rights are inseparable. You can't have one without the other.

~ George Washington
MEET THE METAHUMANS
“IT’S FOOD ON THE TABLE, IT’S MONEY FOR THEIR FAMILIES AND IT’S SAVING THEM WHEN THEY CANNOT EVEN LEAVE THE HOUSE.”

PLAY-TO-EARN

NFT GAMING IN THE PHILIPPINES
FREE NFT CLAIM

PLAY TO OWN

USER ACQUISITION AS AIRDROP

90% FIRST TIME NFT HOLDERS
Korea's gaming industry turns to blockchain, unwavered by Seoul’s policy

Play-to-earn and NFT games expected to dominate the market in 2022

Come next year, Korea’s online game developers are poised to release a number of games on blockchain platforms.

The companies have lined up the so-called Play-To-Earn (P2E) games or those using NFTs, despite the Korean government’s hesitance towards recognizing these games as legitimate products. Seoul is concerned about the speculative nature of some of the P2E games.

Microsoft’s Minecraft to Ban NFTs on Game Servers, Derivative NFT Projects

Minecraft will change its usage guidelines to prohibit NFT use on its servers, as well as prohibit NFTs that use the game’s assets.

By Andrew Hayward

GAMING GIANTS BULLISH ON BLOCKCHAIN
Public Blockchains Are the New National Economies of the Metaverse

The “fiscal” and “monetary” policy tools of smart contract blockchain platforms may work even better than the economic policy tools of governments.
George Land and Beth Jarman, Breaking Point and Beyond. Results from 1968
AI will create 'useless class' of human, predicts bestselling historian

Smarter artificial intelligence is one of 21st century’s most dire threats, writes Yuval Noah Harari in follow-up to Sapiens

Ian Sample
Science editor
@iansample
Fri 20 May 2016 13.20 BST

It is hard to miss the warnings. In the race to make computers more intelligent than us, humanity will summon a demon, bring forth the end of days, and code itself into oblivion. Instead of silicon assistants we’ll build silicon assassins.

The doomsday story of an evil AI has been told a thousand times. But our fate at the hand of clever clogs robots may in fact be worse - to summon a class of eternally useless human beings.

At least that is the future predicted by Yuval Noah Harari, a lecturer at the Hebrew University in Jerusalem, whose new book says more of us will be pushed out of employment by intelligent robots and on to the economic scrap heap.

"The robots have taken over almost all jobs, but we still need Jenkins to cheat on our taxes"
AI will create 'useless class' of human, predicts bestselling historian

Ian Sample Science editor

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"The robots have taken over almost all jobs, but we still need Jenkins to cheat on our taxes."
One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man.

— Elbert Hubbard —
A GLOBAL COMPANY THAT IS CHANGING THE FUTURE OF HOW WE LIVE, PLAY AND WORK