



UNIVERSITY *of* NICOSIA

Session 12

Metaverse 2030

META-511: Non-Fungible Tokens (NFTs) and the Metaverse

We are here

1. What is an NFT?
2. Copyright and Provenance in NFTs
3. PFPs
4. Art NFTs
5. Generative Art
6. Key Considerations in the NFT Space
7. Gaming NFTs
8. What is a Metaverse?
9. Trends in Visualization Technology
10. Financing Models for NFTs and the Metaverse
11. Representing Off-chain Objects with NFTs

Week 12 → 12. Metaverse 2030

Metaverse 2030

- Discuss initial principles of the intern
- We will explain conventional off-Chain and permissioned chain technology stacks how these are influencing different industries (currently and in the near future)
- We will talk about the open standards and their potential in shaping the future of the metaverse
- We will discuss how NFTs and Web3 applications will drive the growth and evolvement of the metaverse

This is an educational course only

- We will discuss various projects, individuals or NFTs in this course
- These projects, tokens or the individuals associated with them, are only referenced for educational purposes
- Nothing in this course should be taken as a recommendation to buy or sell an NFT or token or any other financial instrument or security
- More generally, cryptoassets are extraordinarily volatile investments. Please take care if you are buying cryptoassets
- The information provided during this session does not, and is not intended to, constitute legal advice.
- Instead, all information, content, and materials made available is intended for general educational purposes only.

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1. A Progressively Centralizing Internet

The internet was not designed as a top-down centralized entity

**The Internet was designed as
a "network of networks"**

DARPA (Kahn – 1972)

Original Internet Concepts

- Each distinct network had to stand on its own, and no internal changes could be required of any such network before being connected to the Internet.
- Communications would be on a best-effort basis. If a packet didn't make it to the final destination, it would quickly be retransmitted from the source.
- Black boxes (later called gateways and routers) would be used to connect the networks. No information would be retained by the gateways about individual flows of packets passing through them, keeping them simple and avoiding complicated adaptation and recovery from various failure modes.
- There would be no global control at the operations level.

The internet is currently centralizing at many levels

- Internet Service Providers
- Cloud Hosting
- Content Delivery Networks
- Discovery (Search)
- Communication (Social Media, Communication Apps)
- E-Commerce
- Payments (Payment Processors)

Why is centralization bad?

"Centralization is undesirable because it is counter to the Internet's nature."

"First, the Internet's very nature is incompatible with centralization of its functions. As a "large, heterogeneous collection of interconnected systems" [BCP95] the Internet is often characterised as a "network of networks". These networks relate as peers who agree to facilitate communication, rather than having a relationship of subservience to others' requirements or coercion by them. This focus on independence of action carries through the way the network is architected -- for example, in the concept of an "autonomous system".

Second, as the Internet's first duty is to the end user [RFC8890], allowing such power to be concentrated into few hands is counter to the IETF's mission of creating an Internet that "will help us to build a better human society." [BCP95] When a third party has unavoidable access to communications, the "informational and positional advantages" [INTERMEDIARY-INFLUENCE] gained can be used to observe behavior (the "panopticon effect") and shape or even deny behaviour (the "chokepoint effect") -- which can be used by those parties (or the states that have authority over them) for coercive ends. [WEAPONIZED-INTERDEPENDENCE]"

Source: Centralization and Internet Standards, Network Working Group, IETF

Why is centralization bad?

"Concentration of power has deleterious effects on the Internet itself"

- Limiting Innovation
- Constraining Competition
- Reducing Availability
- Creating Monoculture
- Self-reinforcement

Source: Centralization and Internet Standards, Network Working Group, IETF

Why is centralization bad?

Concentration of power is anti-democratic

My greatest worry?

Democracy itself

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2. The Long Night

Internetworked Corporations and Governments

"Disruption, although potentially painful in the short term, doesn't last, nor is it truly damaging over the long term. In fact, the true danger posed by an internetworked world is just the opposite of disruption.

This danger is an all-encompassing online orthodoxy. A sameness of thought and approach enforced by hundreds of millions of socially internetworked corporations.

A global orthodoxy that ruthlessly narrows public thought down to a single, barren, ideological framework.

A ruling network that prevents dissent and locks us into stagnation and inevitable failure as it runs afoul of reality and human nature. This ruling network already exists."

- John Robb

The "4th industrial revolution" will be seductive and centralizing

Incredible Sci-Fi Level Features and Functionality



AI + CBDCs + XR + Big Data + Metaverse



*Permanent Holistic Surveillance (including Biometric)
+ Subconscious Social Construction / Behavior Modification
+ Automated Compliance*

Control: A difference in degree becomes a difference in kind

"Heaven is high and the emperor is far away"
- Chinese Proverb

Constitutional democracy is hard-won.

"Quis custodiet ipsos custodes"

Source: Latin phrase "Who will guard the guards themselves" or "who watches the watchmen"?

What can be done?

Internet + Democracy

Constitutional Rights

+

Freedom To Transact

+

NFTs as an interoperable layer for digital objects

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4. Conclusions

What did we learn?

Takeaways from week 12

- The internet was designed as an interoperable decentralized network of autonomous networks
- The internet has been progressively centralizing over the last 50 years at the network and application layer
- 4th industrial revolution technologies will be very seductive and default centralizing
- A fully centralized digital stack could usher in "A Long Night"
- There is possibly a window to implement decentralized technologies into the Web 3 stack

Where can I find out more?

Further reading

- [The past and future history of the Internet](#): 1997 post by Vince Cerf and others about the architectural designs of the internet
- [The Centralization of the Internet](#) Centralization of the basic internet architecture
- [Centralization and Internet Standards](#) IETF Network Working Group draft note on centralization
- [NFTs and the Metaverse Revolution – Research Perspectives and Open Challenges](#): An article that contributes an analysis of the current status of virtual worlds with a focus on the emerging blockchain-based metaverse and articulates the open challenges and research perspectives for the emerging space of blockchain-based metaverses.



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Questions?

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