Chapter 2

Web 3.0

Contents

- What is Web 3.0 ?
- Features of Web 3.0
- Web 3.0 Technologies and Applications
- Web 1.0, web 2.0 web 3.0
- What are Challenges to Web 3.0?

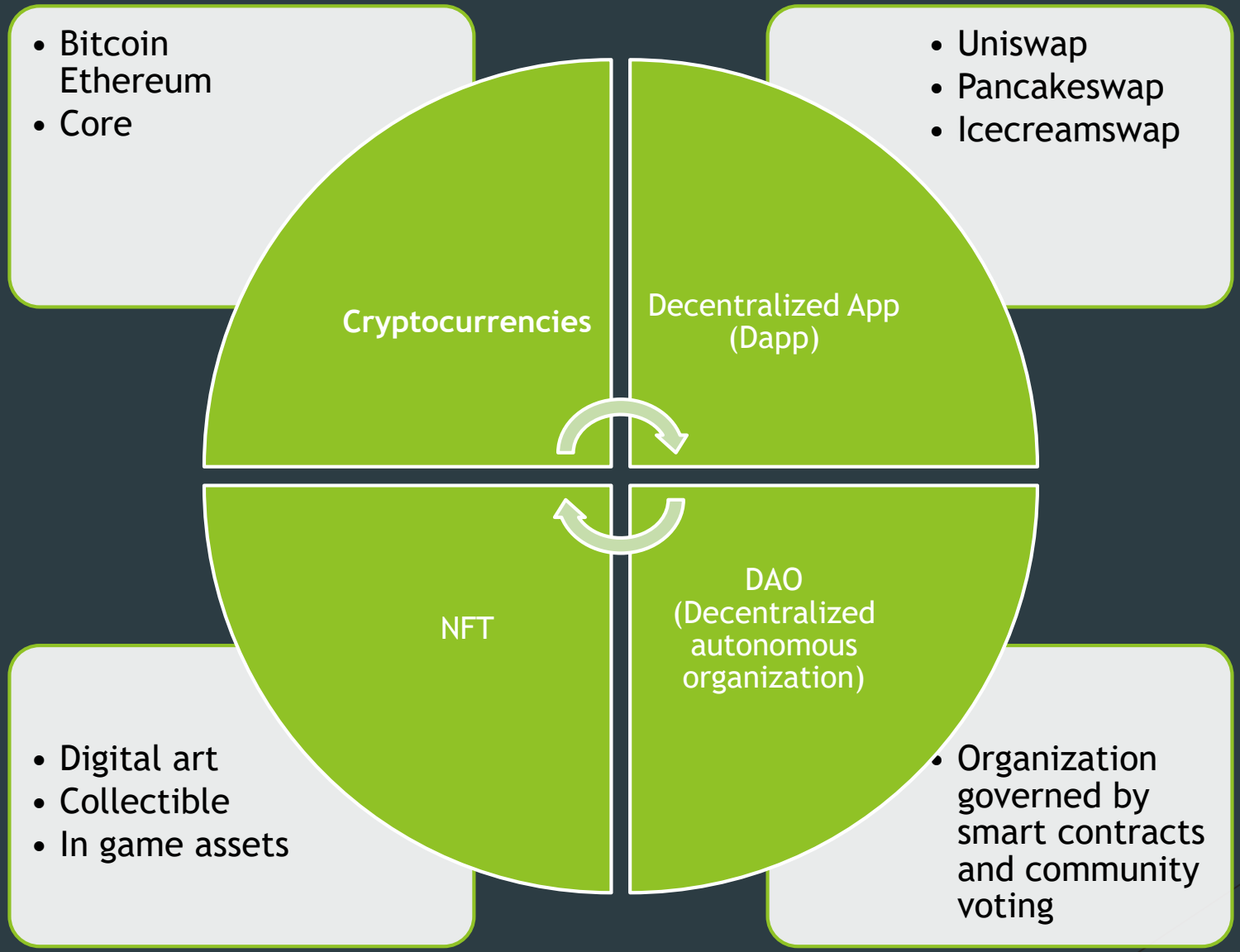
What is Web 3.0

- Web 3.0, often referred to as the "decentralized web" or "semantic web," represents the next evolution of the internet, aiming to create a more intelligent, secure, and user-centric online environment.

Key Features of Web 3.0

- Decentralization
- Blockchain Technology
- Semantic Web
- User empowerment and ownership
- Interoperability
- Tokenization and Digital Assets
- Artificial intelligence and machine learning
- Enhanced privacy and security
- DeFi
- Community Governance

Web 3.0 Technologies and Applications



Web 1.0, web 2.0 web 3.0

Feature	Web 1.0	Web 2.0	Web 3.0
Definition	The first generation of the internet focused on static content and read-only web pages.	Second generation of the internet focused on user-generated content and interactivity.	Decentralized web that emphasizes user privacy, data ownership, and interoperability.
Key Characteristics	- Static pages	- User-generated content	- Decentralization
	- Limited user interaction	- Social networking	- Semantic web
	- Content mainly created by a few developers	- Rich user experiences	- User ownership
		- Centralization	- Interoperability
Technologies	HTML, CGI scripts, basic web browsers	AJAX, HTML5, CSS3, social media platforms	Blockchain, AI, smart contracts, decentralized applications (dApps)
User Interaction	Users primarily read content with minimal interaction.	Users create, share, and engage with content on centralized platforms.	Users have more control over their data and digital identities in a decentralized environment.
Examples	Early websites, personal homepages, and online directories	Facebook, YouTube, Wikipedia, Twitter	Ethereum, DeFi platforms, DAOs, NFTs
Business Models	Limited monetization, primarily through advertising on static pages.	Primarily ad-driven, relying on advertising and data collection.	Focus on tokenization and decentralized finance, prioritizing user control and ownership.
Data Control	Centralized control by content providers	Centralized control by few large companies	User ownership and control over personal data
Interoperability	Very limited interoperability between websites	Limited interoperability between platforms	Enhanced interoperability across different systems and applications

Challenges to Web 3.0

- **Scalability:** Current blockchain and decentralized technologies struggle with scaling to accommodate a larger number of users and transactions, leading to slower speeds and higher costs.
- Interoperability: Connecting different blockchain networks, platforms, and decentralized applications (dApps) seamlessly is still a complex issue, hindering user adoption and utility.
- Security Risks: Web 3.0, being decentralized, faces unique security challenges such as smart contract vulnerabilities and the irreversible nature of blockchain transactions.
- Regulatory Uncertainty: Governments around the world are still working on creating appropriate regulations for decentralized technologies, leading to legal ambiguities and potential restrictions.
- User Experience: The complexity of Web 3.0 interfaces and the technical knowledge required for its use can act as a barrier to widespread adoption among non-technical users.

Any Queries?