Application Scenario Analysis of Web3.0 Personalized Information Aggregation Service

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Abstract

Web3.0 is a new model in the development of the Internet, which aims to solve the problem that users can't quickly obtain useful information from massive scattered information. On the basis of Web2.0, Web3.0 aggregates all kinds of information scattered on the Internet, and connects with users' demand points, so that users can get more personalized, accurate and intelligent services. Based on the study of Web3.0, this paper focuses on the realization of information aggregation and personalized service and its application scenarios.

Keywords

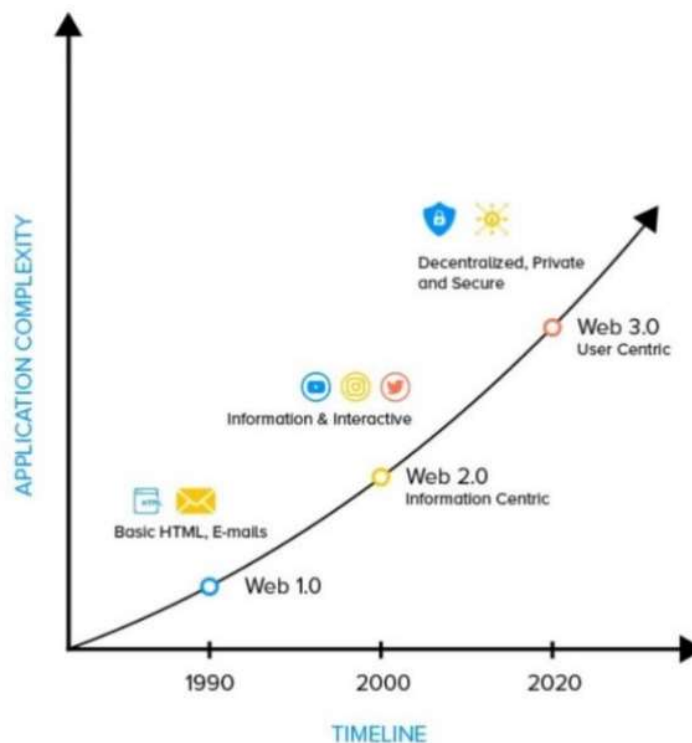**Web3.0; Application Scenario; Personalized Information; Aggregation Service.**

1. Introduction

Figure 1. The Development Course of web 1.0-web 3.0
(Data source: https://appinventiv.com/blog/web-3-0-blockchain-impact-on-businesses/ on 19/04/23)

In the era of Web 2.0, the Internet protocol was redesigned in a decentralized way, and the people-oriented concept was fully considered. The creator of Internet information is also the user of Internet information, which led to the Web 2.0 era being full of all kinds of chaotic information. With the rapid development of the Internet, this information is growing

exponentially, which makes it more and more difficult for users to obtain useful information.[1] The Web 3.0 era is based on the Web 2.0 era, which splits all kinds of chaotic information content on the network into the smallest units, and at the same time realizes the interaction between information units and intelligent connection based on semantics according to the semantic standard and structure. In the era of Web 3.0, we can realize the deep mining of Web information, communicate with each other from the underlying database of the platform, aggregate and integrate all kinds of information points scattered on the Internet according to the needs of users, add relevant data elements through the display page of the website, and quickly analyze the content of the web page intelligently, providing an efficient semantic-based retrieval and distribution method, making information retrieval more intelligent, personalized and accurate.

Web3.0 mainly has the following characteristics:

(1) Free integration and effective aggregation of micro-content (Wfidget). Using Mashup technology, Web3.0 integrates the content information generated by users, which makes the characteristics of content information more obvious, and then facilitates the retrieval and integration of Internet users.[2].

(2) It is suitable for a variety of terminal platforms and realizes the universality of information services. Although Web2.0 allows users to participate in the process of information creation, dissemination and sharing, it is still limited to a single Internet platform. However, Web3.0 has broken through this limitation, and will be compatible with different terminal devices and realize the universality of the converged network.

(3) Good humanized user experience. The design concept of Web3.0 is "people-oriented", and all designs are closely around users' preferences. On the basis of UGC filtering, Web3.0 uses personalization engine and personal preference information processing technology to analyze and summarize users' behavior characteristics, thus helping network users to search their interested information content efficiently and accurately, and improving the efficiency of user information search integration.[3].

Table 1. Comparison of characteristics in different stages of web 1.0-web3.0

Aspect	Web 1.0	Web 2.0	Web 3.0
Content	Static	Dynamic	Intelligent
User Role	Passive	Active	Collaborative
Interaction	One-way	Two-way	Multi-way
Data	HTML	XML, JSON, AJAX	Semantic Web
Focus	Company	Community	Individual

2. Key Technologies of User Personalized Information Aggregation in Web 3.0

User personalized information aggregation based on Web3.0 mainly involves OpenD, open API and Mash-up, which is the core technology of user personalized information aggregation based on Web3.0 environment.

2.1. OpenD

OpenD is a digital identity recognition framework centered on network users, which has the characteristics of openness, decentralization and freedom, and mainly authenticates the identity on the network through URI. According to this principle, authentication and login on multiple websites can be realized through a URI. At present, most websites are authenticated by user name and password, but if OpenD technology is used, the related authentication can be realized by using the user's website address as the user name, which makes it more concise and convenient for users to log in to the website. Users only need to enter their OpenD user name registered through the OpenD server, and they can log on to the OpenD service website. After logging in, the user can log in to the corresponding website directly through the user's URL without entering and verifying the user name again when returning to the corresponding website, and the user does not need to log in and verify when visiting other websites supporting OpenD. Introducing this technology into Web3.0 can effectively improve the user experience. Using a unified URL to log in provides a unified data information access portal for building a personalized information aggregation algorithm for network users based on Web3.0, which can provide users with interesting content and effectively avoid the trouble caused by frequent switching [4].

2.2. Open API

Open API mainly provides a set of application program interfaces, and its earliest design is to provide a unified standard interface for the operating system, which is used to access the relevant resources of the operating system and control the operating system. With the rapid development of Internet technology. Through the open API, an open Internet service structure can be realized, which can provide data and information sharing for various network platforms. In the open API environment, some fragmented data can be perfectly integrated, and these fragmented information data can also be correlated. In the Web3.0 environment, the Internet is an architecture based on open API interface, which can accommodate more third-party application platforms and make data sharing more convenient. By opening API on the Internet, related websites on the Internet can easily exchange data with some cooperative websites, effectively avoiding the repeated development of related data interfaces. This technology provides a reliable network interface for the design of personalized information aggregation algorithm for users, and allows users to freely create applications and aggregate personalized information [5].

2.3. Mash-up

Mash-up is a Web application development mode, through which multiple information contents on the Web can be integrated and delivered to the designated page for display. In Mash-up technology, the server can send a request to each content source, and at the same time analyze the received related information. After the analysis, the results will be integrated and sent to the browser for display through a comprehensive page. The technologies related to Mash-up mainly include Ajax technology, REST technology and screen capture technology. In the user personalized information aggregation algorithm based on Web3.0, the corresponding information service is mainly provided according to the needs of customers. By using Ajax technology, users can access and obtain relevant data on demand in the process of network information interaction, which can effectively reduce the redundant requests in the process of network information interaction and improve the efficiency and performance of user personalized information aggregation.[6] Mash-up, a program and data service that aggregates multiple websites in a single Web page, greatly facilitates the aggregation and display of personalized information of Web users in Web3.0, and is a good algorithm for aggregating personalized information of users.

3. Web3.0 Personalized Information Aggregation Service Application Scenario

3.1. Open Finance (DeFi)

DeFi is a new type of digital finance based on blockchain technology. DeFi aims to achieve the goal of smart contracts and decentralized networks without traditional financial institutions.[7] Safe financial services can still be achieved under the intervention. This new financial ecosystem is built on the public blockchain such as Ethereum, and supports a wide range of financial applications and services, including decentralized exchanges (DEXs), lending platforms, stable coins, and unmanaged wallets. Smart contracts on the blockchain can automatically execute DeFi transactions, and each transaction data is auditable. EFi actually digitalizes the traditional financial system. DeFi can't run completely independently from the traditional financial system at present, and it can't avoid the hidden risks in traditional finance. However, the advantage of DeFi is that it has high transparency and high coverage that traditional finance can't have. At present, the main financial applications realized by DeFi include asset trading, open lending and aggregate income financing.

3.2. Culture and Entertainment

In terms of cultural and entertainment activities, Web3.0 stimulates the output of content and provides a new mode of games. Web3.0 upgrades the content of Web2.0 into an economic aggregate including content, relationships, users and intelligent terminals, realizing the two-way infiltration of the virtual world and the real world, encouraging the generation of high-quality content and maintaining the ecological environment of Internet content. In terms of gamification mechanism, the game has become the entrance of the current meta-universe because of its immersion, virtuality and sociality. Based on the decentralization of Web3.0, it is expected to form a brand-new game mode GameFi, that is, the aggregation mode of DeFi+NFT+Game. This model means that decentralized financial products are presented in the form of games, and the props and derivatives in the games run in NFT mode. The biggest difference between this decentralized game management method and traditional games is that players can fully control their own game assets and decide the direction of game development independently. Players can also vote to participate in the operation and maintenance of the game, and "play to earn" in the game. For example, Defi Kings is not only a game, but also a decentralized asset exchange.

Blockchain technology is rapidly becoming an indispensable part in China games. Around the world, it has given birth to a new sub-type called "encrypted game", which allows players to earn cryptocurrency while playing games. In China, game companies quickly look for other solutions. For example, Alibaba used NFT to reward players in its first blockchain game, Ant Adventure [8].

3.3. Internet Insurance

The benefits of blockchain technology features used by Web3.0 to insurance mainly lie in helping insurance to ensure the accuracy, security, credibility and transparency of information, helping to reduce insurance operating costs and simplifying insurance related processes. The blockchain digital ledger system used by Web3.0 can help insurance companies to automatically process complex data and forms, and store all forms and data in the chain safely, thus saving a lot of paperwork time, avoiding human errors, and effectively solving problems such as waste of resources, low efficiency, high cost and poor communication between parties. For example, an unbreakable database can be created between the insured and the insurance company, and the relevant information can be stored in the database, which can help the insurance company to safely check the information of the insured through the stored data and

make a better risk assessment; It can help to automate the claim function by verifying the coverage between insurance companies and reinsurance companies, enhance risk analysis and process automation in insurance claim payment, thus speeding up the claim settlement and reducing management costs; Based on blockchain data, insurance companies can get reliable data sources and better formulate relevant insurance policies. The smart contract in the blockchain technology used by Web3.0 can automatically execute the complete insurance contract process, reduce the cost in the insurance business process and improve the overall efficiency. For example, it can help insurance companies manage risks and formulate appropriate premiums (and can also calculate corresponding premiums for related enterprises); It can be used for policy writing, and the basic elements of insurance are written into the contract (such as the user's health status, work income and more personal information, and the user agrees to pay a certain premium to the insurance company at a fixed time, and when an event triggers the insurance clause, the smart contract will help the insurance company automatically compensate the user, etc.); It can be used to collect premiums from customers on a regular basis. When customers file insurance claims, smart contracts will immediately review the information submitted by customers, shortening the time for customers to obtain relevant funds; It can be used to track insurance claims and hold both parties responsible. Using blockchain applications, insurance companies can develop different insurance-related applications. For example, the crop insurance application allows farmers to identify and identify land and crops and any losses caused by the weather.

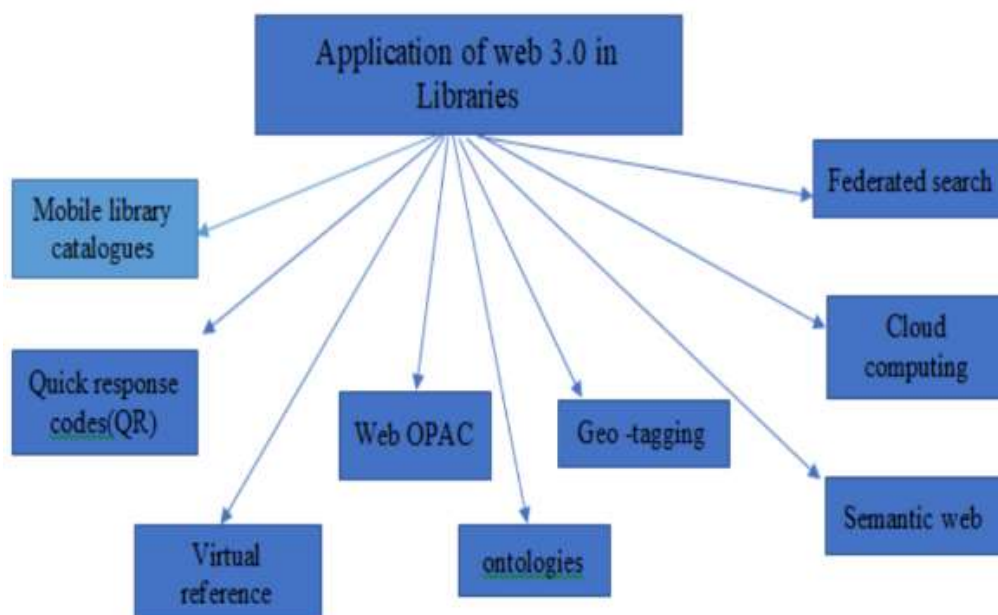## 3.4. Library Service Innovation

Figure 2. Application of web 3.0 inLibraries

Changes in the information age will inevitably bring new service concepts, and the academic library community will also slowly enter a new period. Web3.0 is developed on the basis of Web1.0 and Web2.0, so it also combines the advantages and characteristics of the former two, and shows more personalized, intelligent and compatible characteristics in information aggregation, terminal platform and user experience. In the era of Web3.0, libraries will add more "virtual, intelligent, personalized and mobile" reading modes. As the forefront of library development, university libraries will follow the core concept of Web3.0, take "reader-centered" as the development goal under the new information environment, and focus on strengthening the interaction with readers and enhancing their experience. The

implementation of this concept is not achieved overnight, but needs to be changed step by step from technology to collection resources construction to human resources layout and reader training. At the same time, it is also necessary to strengthen inter-library cooperation and academic exchanges among universities, so as to continuously improve the level of personalized information services of university libraries [9].

4. Conclusion

Compared with Web2.0, Web3.0 can further mine information, aggregate all kinds of information scattered on the Internet, and connect with users' demand points, so that users can get more personalized, accurate and intelligent services. Personalized information aggregation service in the Web 3.0 era must be an Internet information service model based on users' preferences, habits, personalities and perceptions, and must meet the core elements of user experience such as personalized demand setting, humanized design, friendly interface, simplicity and convenience for users' perception. This information aggregation based on users' needs is the trend and future of the Internet.

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