ANALYSES THE INFORMATION TECHNOLOGY DEVELOPMENT TRENDS AND THE ENLIGHTENMENT OF THE LIBRARY CONSTRUCTION

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ABSTRACT

The library construction level is an important indicator of society civilization improve degree, is an important position for building a learning society, is the hall for people cultivate sentiments and increase learning knowledge, is an important basis for the construction of public cultural service system facilities, is an important way for all levels of government to protect their cultural rights and interests of the masses of the people. Network technology and computer technology, such modern information technology progress makes network dissemination of information began to reach unprecedented depth and breadth. As the spread of information resources and the storage institution, the library should play their own characteristics and functions effectively in the dissemination of information process, constantly keeping pace with the times, constantly to speed up the pace of information transmission, which can better service to the society and the reader, enhance their the competitiveness in the information age. With the rapid development of modern science and technology, more and more attention has been paid to the humane care and people-oriented concept, advanced technology influence and effect in library services and process in good performance. In the library work practice process that reflects the people-oriented design concept can satisfy people's demand, realize the value of people, pay attention to the humanistic care, the efficient implementation of the users, librarians and library, is the important development of modern society library construction requirements. This paper mainly discusses the development of information technology, dynamic and library construction related enlightenment, etc.

Keywords: *Information Technology; Development Trends; Library Construction*

1. INTRODUCTION

The rapid development of the Internet and information technology makes great changes in people's daily lives, and had a greater impact on people's lives, learning, and living space, traditional libraries to digital libraries continuous development are closely linked to the whole information environment changes and advances in information technology, in the current environment, digital technology, communication technology, network technology, and computer technology is fundamentally changing the library construction technology, methods, thinking and ideas, and provides unprecedented opportunities for the development of the library future development. In this development background, the library must be able to adjust their own in time, and advance foresee the future development of the model itself, can make full use of the development opportunity which brought by the development background of informationize, inject fresh vitality to the rapid development of our country libraries. The rapid development of information technology is one of

the great achievements of the twentieth century, and mainly due to the continuous advancement of information technology, our country libraries began to show its new look in the 1960s, continues development of modern information technology, network technology and computer technology, that make the network information spreading reached unprecedented depth and breadth of dissemination. With the increasing demand for information, for people begin to put forward higher requirement for accessing information space, time, channel, means, and way. As the spread of information resources and the storage mechanism, the library should play its own characteristics effectively in the dissemination of information, along with the times, continue to accelerate the pace of information dissemination, which can better service to the society and the reader, and enhance the competitive in the environment of information age[1-3].

The application of modem information technology type library can fully meet the social development needs and user information demand and improve the core competitiveness of the

information service of the effective technical title, is an important means for the library construction realize network and information, health, sustained and rapid development. Contemporary information technology and library management are mutual promotion and mutual influence, how to apply the advanced computer technology and information technology to library services and management process, rapid promote the information and library resources effective combination, its deeper mining has gradually become an important issue worth the relevant experts and scholars seriously researching. Modern information technology continues development provide effective opportunities for library information construction, as well as it produce some challenges, constitutes a certain pressure on the library's existing technical force and technical equipment, making scholars at home and abroad have started research, and raise effective solutions, which promote the library's information construction process. Figure 1 for electronic library frame analysis[4-7].
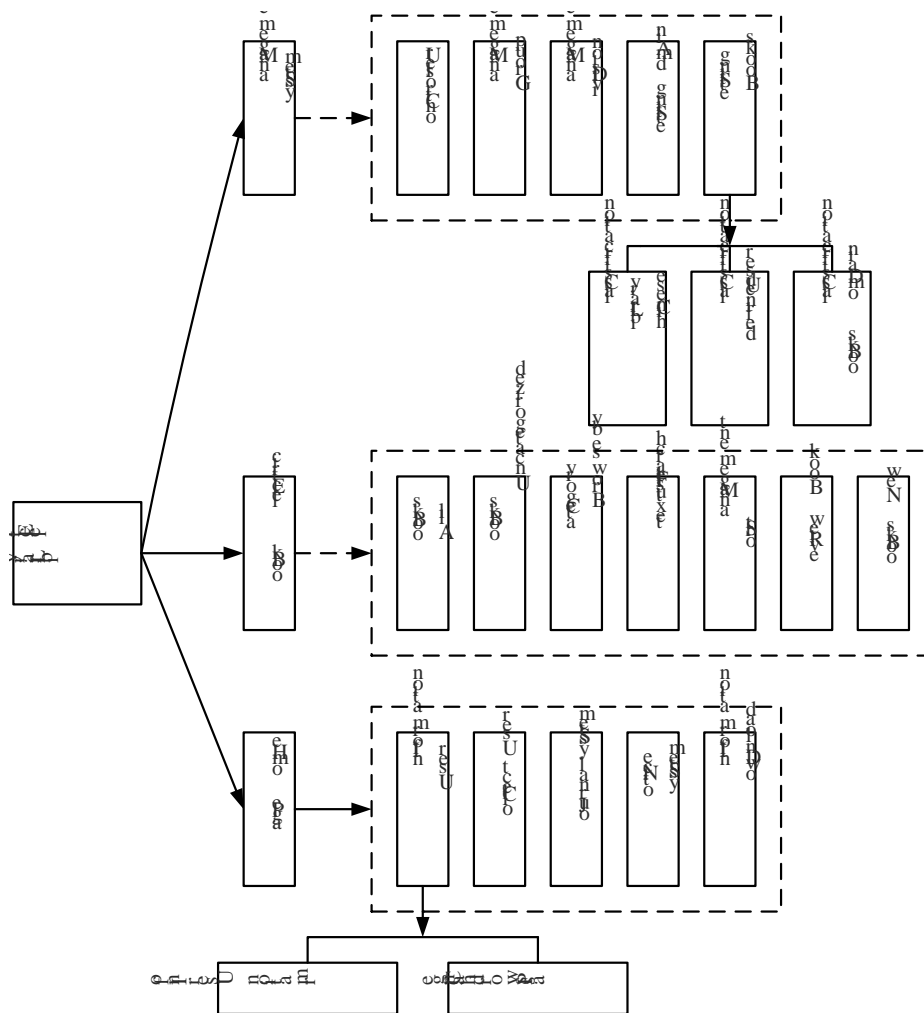

Figure 1: Electronic Library Frame Analysis

The rapid development of the Internet and information technology has a tremendous impact on people's daily lives, sustained and rapid development will further change the way of people live, work and study space, at the same time bring a huge impact on the library functional orientation, management, resource reserves, construction planning. The library building important goal are how use modern information technology as a platform, fast-changing services and ideas, speed up the construction of its ranks, effectively raising the overall level of the library planning and layout, and constantly enrich the quality and content of the services, effectively increasing the reserves of the resources to accelerate the development of a modern library to study the interaction between the

modern information technology, fully release the energy of the library, play an important role in the rich cultural life of the masses, and to participate in social education, the development of information resources, the protection of the cultural heritage of mankind. The library construction level is an important indicator of society civilization improve degree, is an important position for building a learning society, is the hall for people cultivate sentiments and increase learning knowledge, is an important basis for the construction of public cultural service system facilities, is an important

way for all levels of government to protect their cultural rights and interests of the masses of the people. In recent years, with the development of display technology, control technology, sensor technology, network technology, communication technology, photonics technology and microelectronic technology, which produce a very important the impact on the library function positioning, management, construction, and planning, and the library building facing unprecedented development opportunities and challenges[8].
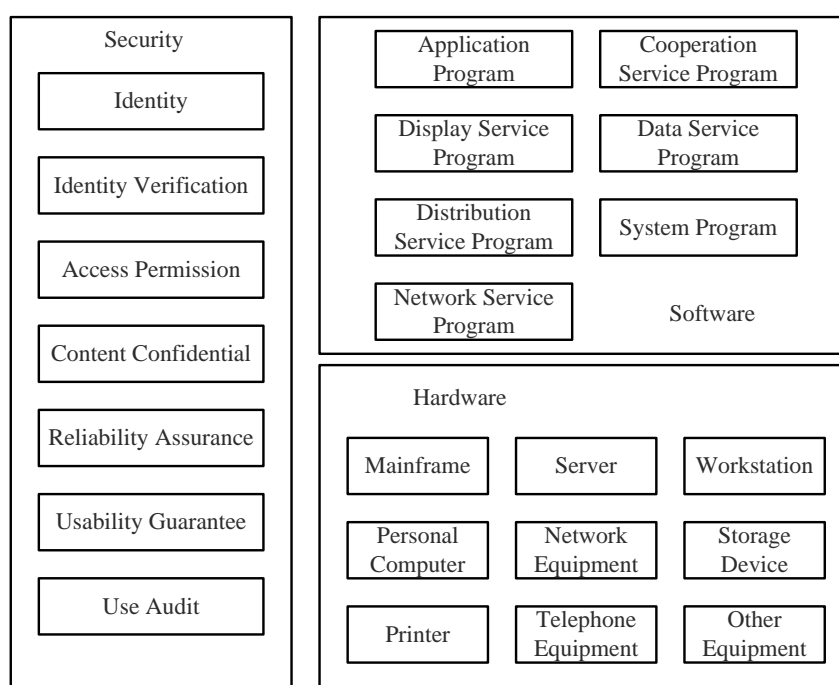

Figure2: The Information Technology Development Technical Architecture

2. THE DYNAMIC DEVELOPMENT OF INFORMATION TECHNOLOGY

2.1. Mass Storage, System Chip and Microprocessor

In the past forty years, the application of the microprocessor has been rapid development, and also makes Moore's law to the witness, the integrated circuit chip which integrated transistors will double every eighteen months, professional generally believe that this situation will continue until 2020, in this period, the chip itself costs about 30% per year declining, computer devices has gradually spread to all aspects of life, each computer have hundreds of microprocessors

embedded in the environment where people are items constantly, and in the next five to ten years, this ratio is also increased, Figure 2 shows the IT development of basic structure. CMOS technology (complementary metal oxide semiconductor) will still be in a dominant position in digitized world in the next decade, and combined with biological systems, analysis of arrangement, nanotechnology and quantum devices and other new pattern technologies, and its function will become more strengthen. In the near future, the new design system will have a self-correcting and detection architecture, also enhance the extent of its ongoing integration, producing a more powerful system-on-chip, the establishment of micro-network on the chip is considered one of the most promising

designs. The chip technology of the system can embed processing capability to the electronic chip, and bundle the processing capabilities in a variety of items and equipment, effectively increasing the degree of convenience and simple. Data storage devices has been tremendous progress in recent years, its costs are declining at the rate of 35% to 40% annually, and its storage capacity will also be enhanced, for example, SONY developed a new generation of Tape technology Super Advanced Intelligent tape in 2002, which only half inches high and the data transmission speed is 30 MB/s, can store 500 GB is not compressed data, SONY plan the future of the product function in each generation will be doubled, continuously improve its product data storage capacity and data transfer speed.

2.2. Intelligent Sensor

In recent years, computer and related equipment gradually spread to people's daily life, " intelligent " gradually into people usually contact living environment, in this process, the sensor has an important role, it can be accelerated, the analog signal of the distance, position, motion, force, pressure, velocity, temperature and light, etc. continuously transformed into a digital signal and be processed or stored, become effective communication bridge between the digitized world and the material world, intelligent sensor has self-diagnosis, self-adaptation and self-calibration capabilities, MEMS play a very important role, now have developed a prototype of a MEMS-based products, is called smart dust, integrate communication systems, computing systems, and automatic sensing system into is a 3 cubic millimeter particle. For example, the European university cooperation initiated research projects on intelligent information technology, intelligent sensor effectively implanted into a variety of items which make these items to be able to accurately recognize its surrounding environment, and be able to enjoy them together with other items in the environment which related observations. Intelligent sensor structure diagram is shown in Figure 3.
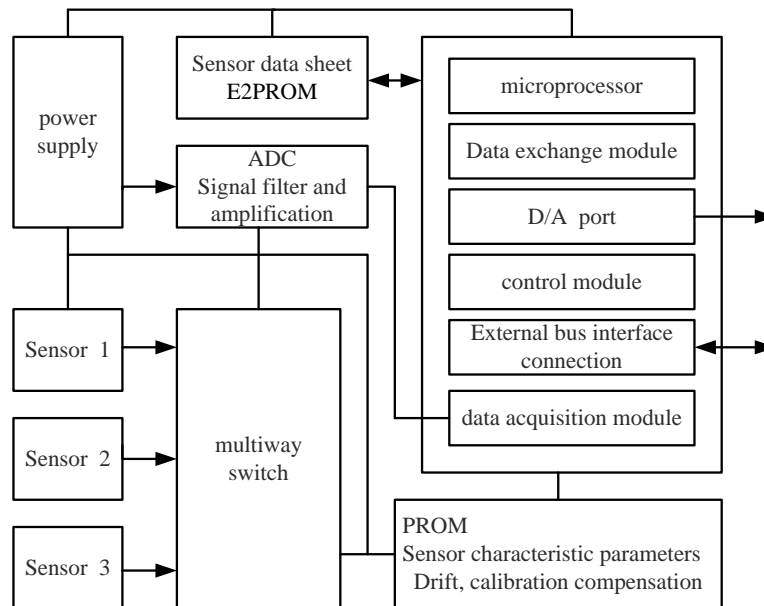

Figure 3: Intelligent Sensor Structure Schematic Diagram

2.3. Interface, Display Technology, Wearable Equipment and Mobile Equipment

Mobile devices with Internet connectivity, the costs will continue to decline, the function will become more powerful, collaborative and seamless will get better and effectively promote the continuous progress of the PC era, mobile devices in the future will have more powerful multimedia storage capacity, dynamic storage capacity, and powerful processing capabilities, makes it more rich and vivid experience, comparing the introduction of the current injection technology - "smart hand off" technology effective support for intelligent phones automatically select their most effective line telephone network as well as WiFi. Following the processing of personal digital and handheld mobile devices, wearable devices will continue to develop,

the more numerous species of this melee equipment, both sides can be embedded with smart glasses headphones and lens configuration information display, mainly combines mobile phone, MP3 player and other functions related entertainment sporting goods, wearable devices constitute a personal network of centers of critical equipment to individuals and the environment to adapt to the intelligent connection, and has a huge market potential. As shown in Figure 4.
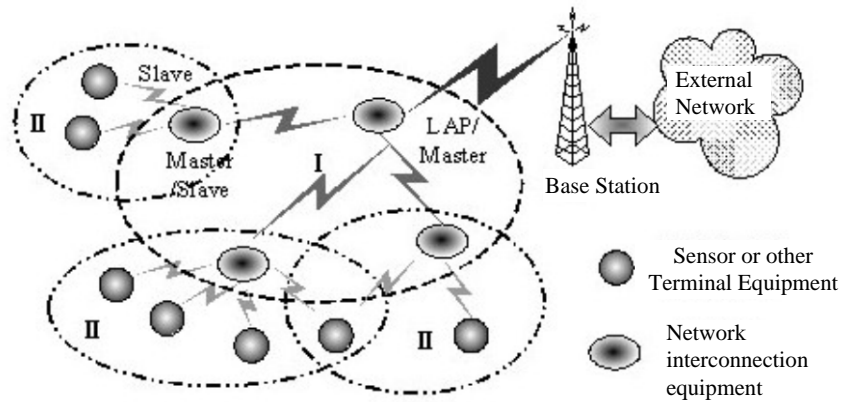

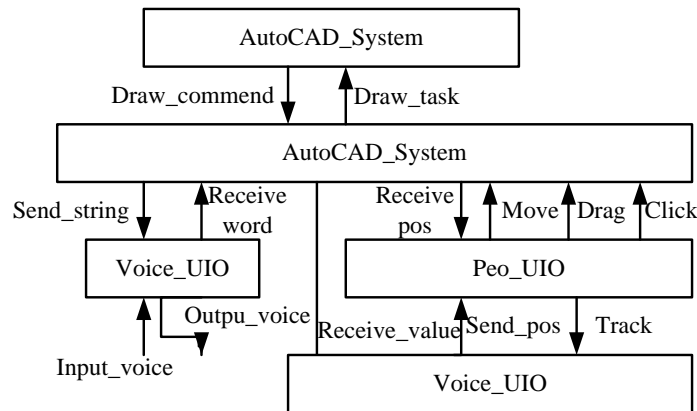*Figure 4: Wearable Wireless Network Equipment Diagram*

Figure5: Multi-Channel User Interface System

In the next ten years, display technology will have a more comprehensive and diversified development, many related technologies can provide many new methods to text information and visual display, for instance, the intelligent display lightweight and can be folded, as well as through the associated overlapping fine screen, the three-dimensional display of dynamic information there will be more widely used, In the next few years, a variety of innovative video interface also greatly enhance the entertainment, learning, access to information, as well as the convenience and practicality of digital communication[9].

2.4. Intelligent Interactive and Multimodal Interaction

Multi-channel interface to a large extent makes it personalized and more natural way to control a variety of media and environment in the near future, and interact with it. Multi-channel interaction include the eyes, gestures, instructions, touch and sounds and facial expressions hint to the needs and demands of the people, be able to use the computer effectively identify the needs of the people, to judge a person needs to do through self-learning behavior its reasonable feedback, people no longer need special training and learning that can be more relaxed with each other exchanges. Figure 5 for a multimodal user interface system schematic diagram.

In the new information environment, the user, the environment, technology and information can form a dynamic system and residents in the environment can't stay outside the environment, but should be at the center position, and use these technologies can make some related reaction to people needs, in this environment, sensor data analysis, and analysis of survey on user preferences and behavior will not cause interference impact on people's daily life, the contrary is able to self-adjust to the current environment as well as provide services and resources to help them complete the relevant tasks. Storage, collection and re-use user preferences and environment need to be able to establish a long-term stable relationship, privacy, insurance and security issues have gradually penetrated into all aspects of people's lives, which become public domain and personal issues of common concern.

2.5. The Semantic Web and Agent Technology

Intelligent agent technology is an ongoing development concept, is the hotspot in the field of artificial intelligence, the main representative front direction of the development of information technology, its main role is to reflect and promote people's collaborative learning. At present there are many application research of intelligent agent, such as JNB developed by Beijing Normal University and based WebCL the e-tutor system, agent technology has been developed rapidly, until about 2010, may appear the broadened, completely open, cross-cutting and more agent system. The semantic web system element schematic diagram is shown in Figure 6.
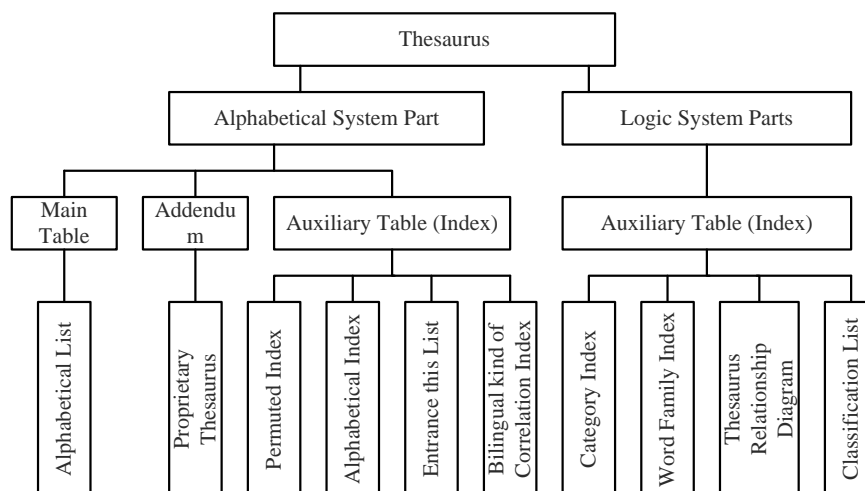

Figure 6: The Semantic Web System Element Schematic Diagram

The rapid development of Internet technology gradually penetrated into every aspect of people's lives, the Semantic Web is an important extension of Internet in current, the resources of which are no longer just various information connected, but also include the true meaning of its information, which can effectively promote the computer and effective cooperation, the Semantic Web and its related technologies continuous development, makes software agents to understand the information relevant reasoning, realize the re-use and automatic interpretation of network information resources effectively, promote awareness of retrieval and effective access network resources, helps to effectively solve the problem of information silos in the network and information tsunami.

3. THE INFORMATION TECHNOLOGY DEVELOPMENT TRENDS OF LIBRARY CONSTRUCTION RELATED ENLIGHTENMENT

3.1. Strengthen the Infrastructure of the Information Resources

The rapid development of digital technology, network technology and computer technology, coupled with high density storage equipment emerge make people into an orderly, rapid information development space, the library should effectively use its practice of activities by the formation of the effective communication, reveals, organization, the collection and use of the advantages of literature and complete system in the long-term, combining advanced technology for

effective co-ordination of the various types of information resources, especially for the digitization of information resources, need to further strengthen the construction of library information resources, make the library construction become the world library can contain all human knowledge and internal information, so that the user can move away from traditional library services limited, no matter what the users to take method, when and where, can get what they want services and information, every piece of literature in the library, every book is not isolated, its content will become a flow flexible organization through a series of interconnected concepts together constitute.

3.2. Strengthen the Library Humanistic Management

With the rapid development of modern science and technology, more and more attention has been paid to the humane care and people-oriented concept, advanced technology influence and effect in library services and process performance very well, in library work practice process which reflects the people-oriented design concept to meet the needs of people, and realize human value effectively, emphasis on the humane care and effective to achieve the harmonious development between users, librarians and library. The library humanistic management philosophy is mainly reflected in the following aspects, user-oriented, always pay attention to the needs of users, take the initiative to listen to the views of users actively create the environment of human services, giving managers a full range of care, focused on meeting the workers material needs, encourage management innovative, combine the construction of the library system and target with values, the Code of Conduct and Code of Ethics, promote librarians conscious act effectively, strive to construct library harmonious organizational order, through the interaction between the librarian and knowledge complementary can maximum mobilize the enthusiasm of the staff work effectively enhance the management level and work efficiency. In the network environment, the public libraries in order to obtain the rapid development of their own, must constantly improve their own innovative development and good construction, adhere to the people-oriented concept, establish the times of the era of the development of philosophy, strong emphasis on service functions, insist on the importance of the concept of the supremacy of the readers, clear work purposes. Readers can be more convenient to obtain the necessary information and

documents in library services, personnel management and library building must strictly adhere to the people-oriented concept to provide a convenience comfortable reading environment for the majority of readers.

3.3. Strengthen the Interaction among Users

The continuous advancement of the next generation Internet will change information exchange, sharing and generation mode, and pay more attention to the exchange between users, showing the open, free, personalized, convenient and simple feature. The library should actively seize the development opportunity to explore their independent innovation effective ways, in the independent innovation at the same time build transparent, flexible and interactive information system and platform, the user is encouraged to proposed comments or discussion the information has been get, or has access to the services and information resources, in order to improve and develop library services.

3.4. Provide Personalized Service

The fundamental driving force of library development is the user demand for information, library personalized services based on the needs of users, at home and abroad around personalized service began to carry out many of the research work, and developed many personalized service prototype system and a variety of techniques and means can be used to achieve its personalized service effectively and personalized services are divided into two categories depending on the recommended methods, that is information filtration technology and rule-based techniques. With the development of display technology, wearable equipment and intelligent sensor devices, libraries are able to use these technologies to create an ideal environment and atmosphere, makes the user came to the library as a full exchange of information and ideas, and according to the user's facial expressions, voice and gestures to understand their intentions and needs in order to effectively promote the library provide personalized and targeted services, enabling users to improve the satisfaction library[10].

3.5. Give full Play to the Role of the Public Library Reading Navigation

The rapid development of network technology provides a lot of information for the readers, but the reader often does not quickly find the information they want through the network, which requires the library to provide readers with effective navigation

services, accurate play library reading navigation role to ensure that site classification accurate and scientific, it is easier for the reader to retrieve material and evaluate edited features of the site, and the content and function, and facilitate the reader trade-offs while reading. Libraries in the process of building can timely exchange information through the network with readers, establish relevant book reviews on the web, so that the reader can make the appropriate evaluation and recommended to their works, which makes different readers from different perspective to evaluate and analyze the work, allows readers to increase interest in the reading of the material. On this basis, the library can play a great advantage of its information integration, rapidly collect the book reviews and carry out effective practice of book reviews, and then sent out through the network navigation, so that the reader can retrieve information while in the first time find effective information, facilitate communication between the reader and can also increase the attention of the readers of information.

4. CONCLUSION

The rapid development of information technology brings strong shock and profound influence for the development of library. The library must be fully aware of the huge role and significance of the application of information technology in the construction process, effective use information technology and means accelerating the pace of the library building. At the same time clear technology is only a means of delivering content, does not the key to solve the problem. To create effective opportunities for the development of the library, the library building must change roads with an open mind and a positive attitude, positive reform and innovation, and constantly adapt to social changes in the situation, and make positive efforts for the development of the library.

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