

The National Digital Library

: The Portal Site of the Digital Information Resource!

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1. Introduction

As the representative national library with the vast collection of every published material in Korea, the National Library of Korea is the comprehensive depository of the nation's books and documents. As such, it carries out the responsibility as a cultural messenger that would comprehensively and systematically collect and preserve the intellectual cultural heritage of the nation and pass on to the future generations.

In order to be the subject of the 21st century, new information age and to connect the analogue resources and digital information based on the hybrid type paradigm, the National Library of Korea provides various databases from our collection. The databases of the National Library of Korea include full text DB, national table of contents DB, article index and abstract DB, government collection DB, materials for visually impaired DB, DB purchase and online publication. Those databases are currently in service nationwide to the public, and also they can be utilized by public libraries and administrative research rooms.

The National Library of Korea has opened the Cyber National Digital Library (<http://www.dlibrary.go.kr>) operating as a portal site of digital libraries in Korea with the liaison of eight major organizations in Korea. The Cyber National Digital Library offers those compiled databases to the public online, and further expands and develops the system of connecting and sharing the national resources. Also, with the construction of the National Digital Library (<http://ndl.go.kr>) collecting, processing, and preserving the digital information resources, we have established the operating strategies to build the contents, information technology, and information services as a new paradigm of the library.

2. Database Status Report of the National Library of Korea

1) Full Text DB

The National Library of Korea constructs the full text DB through the careful selection process of the materials, and tries to enhance the usage of information and reduces the accessibility gap to the information among different regions and classes by promptly providing the user-friendly full text databases. For DB construction, we are

targeting the valuable materials both in academic and informational aspects that are published more than five years ago.

Full text DB contents include old and rare books and documents, old maps, old novels in Korean, major novels in new literature movement, major monographs, government daily report, publication by Ministry of Culture and Tourism, academic journal articles, newspapers, doctoral dissertations in humanities, foreign materials about Korea, foreign collections, and publications on Korean studies and materials published by other intelligence agencies. We first started DB construction in the year of 1995. Up until the end of 2006, there are 357,775 books or 100,451,259 pages of full text DB.

2) National Table of Contents DB

In order to increase the usage rate of the collection of the library, the National Library of Korea provides the national table of contents. The targeted materials of the table of contents are those that we can maximize the utilization and application of the materials when provided. The DB construction processes sort out previously owned materials and new materials, and in the case of newly deposited materials, there constructed the catalogue information and the table of contents to be provided to users. The entire collection of the National Library of Korea is the object for DB construction. However, a single piece of work, such as reference materials, for instance, encyclopedia or directory, and full length novel or drama, is excluded from the DB construction. For those with short contents with several titles included, such as short stories or essays, there constructed the table of contents DB. The construction started in the year of 2000, and up until the end of 2006, one hundred and twenty eight items have been constructed. The DB construction of the table of contents made it possible to provide the service of searching the titles of short stories and poems, which was difficult to offer previously. Also, as for those materials which were difficult to find out the availability of a material with the only information of bibliography, now, it is possible to provide more complete and substantial information resources. Moreover, by making it possible to search only with a word from the table of contents, we now provide users even the information that was previously impossible to search because it was not on the title of a material but included in the contents only. In addition, once the constructed table of contents could

be offered on the web to many libraries nationwide, and even to bookstores so that the DB could be utilized in order to find out the information for purchasing the newly published books. Other libraries could also utilize KORMARC: Korea Machine Readable Cataloguing information and table of contents information through the site about newly arrived books. By doing so, it could prevent many libraries from over-investing budget on purchasing same item and further achieve the construction of better quality union cataloguing and more complete DB construction.

3) Article Index and Abstract DB

Among periodicals, the National Library selects major academic journals published by academic institutions or universities and constructs DBs of article index, abstract, and the table of contents in order to maximize the efficiency of searching information and to promote the foundation for academic research fields. The subject of construction is academic journals among the National Library periodicals collection and the construction process started from the year of 2003; there have been 580,000 numbers of records by the end of 2006.

4) Government Collection DB

Government collection database is constructed from comprehensive collection of data pertinent to the nationwide public libraries and the administrative resource centers. These collections of databases have been built and reflected into the table of contents. These characteristics allow nationwide libraries to connect and share the standard table of contents data and prevent any possible duplication of data. The assembly of data results from participation of public libraries and the administration's 564 resource centers (417 public libraries, 31 government ministries and offices, as of December 31st of 2006). By the end of March, 2007, 18,310,000 of databases are in service.

The Korea Education and Research Information Service (KERIS) has been established for the efficient dissemination of information throughout college libraries in Korea and this organization are in charge of university library's a general catalog. Also, this organization constructs the comprehensive list from the table of content DB in the nationwide libraries and offers table of contents DB and MARC on its homepage

(<http://www.nl.go.kr/kolisnet>) in cooperation with the National Library of Korea's KOLIS-NET: Korean Library Information System Network and Government Collection DB system.

5) Databases for the Visually Impaired

Now the nation realizes its unwavering support for the alienated classes or groups and the disabled by offering opportunities to access information. Also, another objective is to raise social awareness and the caring toward the visually impaired.

The major target of the construction of the databases for the visually impaired is basic universities textbooks for their visually impaired students in order to foster the visually impaired students into professionals in their own fields. The construction of data includes various titles, bar, picture, and pages, and these are all converted into caption mode text DBs. The assembly of data began in 2003 and currently, 3,416 books and 1,300,000 pages of data are in service as of the end of 2006.

The Cyber National Digital Library offers information for the visually impaired through its homepage by utilizing synthesized voice. The users can print information in Braille by using Braille converters. The full text DB for the visually impaired is only available to those certified by the library to protect copyrights.

6) Online Publication Purchase and Service

In order to enhance the national competitiveness, the National Library of Korea purchases commercially produced databases while keeping the principle of only constructing DBs for those resources that are with high efficiency for research purpose but showing low commercial application. According as this principle, the National Library of Korea has purchased valuable resources from the commercially constructed DBs and offered users 3,064 sorts of Korean Studies related resources, academic information and more.

3. Status Report of the Cyber National Digital Library

With the participation of the major organizations, the Cyber National Digital Library began its electronic library services and developed standard model. Additionally,

based on the unique resources from each organization, the project is to provide services by constructing DBs without overlapping budget spend.

The National Library of Korea leads the project of the Cyber National Digital Library with the cooperation of Korea's seven major library organizations. The major purpose was to connect major libraries, to further strengthen national informational power, and expand and develop national information sharing capabilities. This allows not only researchers but also the general public to have easy access to any necessary information online. In doing so, it ultimately helps to strengthen national competitiveness in this so called twenty first century information age.

Launched in 1996, the Cyber National Digital Library includes the National Library of Korea and eight other organizations with catalogues and tables of contents and offer 3,376,703 numbers of books (record) or 215,228,711 pages in full text DB. The Cyber National Digital Library enables its users to do simultaneous searches of any affiliated organizations and applies format in a way that allows comprehensive research. In detail, it offers the integrated search services by conducting keyword search and specific menu search with combination of search engines, Meta search, and Z39.50 search.

Eight organizations are participating in the Cyber National Digital Library. The lists are as follows: the National Library of Korea, the National Assembly Library, the Supreme Court Library, the Digital Science Library of Korea Advanced Institute of Science and Technology, the Korea Institute of Science and Technology Information, the Korea Education and Research Information Service, the Korea Agricultural Science Digital Library, and Korea Knowledge Portal by the Ministry of Information and Communication.

4. The National Digital Library

The establishment of the National Digital Library in Korea was officially proposed during the reporting of duties of the National Library of Korea to the President in 2001. The purpose of the National Digital Library was to suggest a new library model for collecting, cataloging, and preservation of digital information resources and to provide a gateway function of national and international information services. The

building process of the National Digital Library started in December, 2005. There are two directions in the the National Digital Library project: one is to build a separate new building for collecting, cataloging, and preservation of digital resources and the other is to conduct research and development on contents, information technology, and information services of digital libraries, which is a new paradigm for libraries.

4.1 Direction of Construction of the National Digital Library

1) Creation of a new eco-friendly and cutting edge the National Digital Library building



* Location : The Square of the National Library of Korea, Banpodong, Seochogu, Seoul, Korea.

* Scale (Size): 38,013.39 square meters (3 ground floors and 5 underground floors)

* Facilities : Spaces for collecting, creation, preservation and user services of digital resources, offices, book stacks, underground parking lots.

* Book stacks capacity: 12 million volumes.

* Duration of project: 2002-2008 (7 years)

* Total budget: 115,200,000,000 Korean Won

Plan to harmonize with the main library building through open outlook

The new the National Digital Library building, with 3 ground floors and 5 underground floors on about 38,000 square meters, introduces a connecting part harmonized with the outside green space to re-integrate the scattered library buildings into one area and to secure the open outlook from the main building.



Futuristic eco-friendly library



Connecting to the Seoripul Park's greens, the National Digital Library will be a library like a park and an optimal information space where the nature and the human being becomes one. Especially the National Digital Library will introduce sunken gardens which let the lateral sunlight reach to underground, green spots which are indoor gardens inside the digital information

service space, and energy-saving ventilating systems, to be a futuristic eco-friendly library.

Digital information service space: gateway for digital knowledge resource

User convenience and reasonable usage are considered as much as possible. Once passing through the main gate, users can use digital information service spaces through escalators and the central passage. Digital information service spaces consist of rooms for digital resource search and retrieval on online electronic publications, e-books, web databases, or VOD



Presenting a new model for digital libraries applied by high-tech intelligent library system.

The National Digital Library emphasizes on the intelligent library system. For example, it introduces cutting edge preservation systems to preserve sensitive digital materials, applies mobile rack systems to every book stack, and introduces an automatic resource transfer systems to connect each room in the library.

4. 2. The National Digital Library Management Strategies

1) Overview

The objective of the National Digital Library is to realize a digital library service based on the new paradigm suitable to the digital society. Traditional libraries mean existing physical or tangible libraries, centered by information service in analog forms. Electronic libraries, which appeared since 1990's, have evolved into digital libraries where effective managements of electronic or digital resources such as e-books or e-journals and convenient information services with them are emphasized.

Meanwhile the National Digital Library pursues a more evolved form of library service, overcoming the limitation of mere conversion form traditional libraries into electronic forms. In other words, based on various digital collections and quality information services with them, the National Digital Library is a library leading knowledge literacy useful for users' information use and knowledge creation activities. Traditional libraries, electronic libraries, and the National Digital Library have major differences in five areas.

1. The National Digital Library is based on hybrid collections where both analog and digital collections co-exist, and its unit for management and services is divided into collections and resources which consist of collections.

2. The National Digital Library is functioning as a library portal providing integrated searches.

3. The National Digital Library is utilizing both physical spaces and online spaces, and those spaces have the characteristics of "openness."

4. The National Digital Library guarantees the permanent access to its collections by OASIS, a separate digital archive system, while traditional libraries do

the preservation activities in book stacks and digital libraries in databases.

5. The National Digital Library creates a library portal system with the core system for management of digital collections. Compared to library automation systems in traditional libraries, the National Digital Library forms related functions with the digital contents management system.

2) Vision Development and core keywords

A vision seeks innovations because the new future is opened through executions of innovation tasks. The future objectives of the National Digital Library are to collect, catalog, and preserve abundant and high quality digital information resource and to provide convenient and appropriate information services to produce the knowledge literate. As an innovative model for the next generation digital libraries, the National Digital Library has its focus on the role of the best digital information platform in Korea and the operating system with which the digital information service can be upgraded to the next level by blending information technology and the cultural elements in the information society. Therefore foreseeing the next 10 years, the National Digital Library's operation goals, which raise its core value, have the following three premises.

1. The National Digital Library should meet the practical goal of realization of the national representative digital library service.

2. The National Digital Library should establish the national digital library leadership based on integration and openness which are major keywords representing the digital society in the 21st century.

3. The National Digital Library should maintain the role of the best digital library portal in Korea.

Based on these considerations, the vision of the National Digital Library is to provide convenient information service environments by integration of digital library information resources scattered all over the world.

Integration and openness are two keywords to support the National Digital Library's vision. Integration is the keyword for integrated management of the high quality resources of digital libraries which are scattered nationally and internationally. Openness means the National Digital Library aims at an open platform where users can

access to its information resources and participate voluntarily. Integration is an internal and management-oriented concept, while openness is an external and service-oriented one. Integration and openness are not mutually exclusive but closely related each other to generate the National Digital Library services. In addition, integration and openness are important tools to enable information sharing and users' participation. They provide information sharing and user participation environments for the entire people to contribute to the enhancement of knowledge literacy of all the people. This is the foundation for the realization of a knowledge super power of the Republic of Korea, and it will be the core basis of the future information society.

3) Basic principles of operational strategy

The operational strategy is a practical tool or a method to accomplish its vision. While the vision represents the future objective, the operation strategy as a practical method, consists of tasks of understanding the reality and drawing strategies to connect the present and the future.

To pursue the new paradigm for digital libraries, the National Digital Library established seven principles for its operational strategy. These principles play a role of the basic perspective of the National Digital Library with which the understanding of reality and the prospect of the future can be discussed.

1. The National Digital Library is a ubiquitous or universal library portal accessible by anybody, whenever, and wherever.

2. The National Digital Library provides a consistent and simple search interface (Simple NDL). It should provide a user-centered interface that anybody can use easily. It should reflect the users' information search needs and use and conduct periodic evaluations of users' usage.

3. The National Digital Library follows international standards and guarantees interchangeability (Global standard based NDL). This means establishment of digital collection and information resource and offering related services, which are based on international standards.

4. The National Digital Library provides services based on a large scale of information resource collection (Scalable NDL). The National Digital Library secures internal and external contents based on appropriate digital collection development

policy, provides hybrid contents, digitizes existing analog resources, creates databases for information resources produced in digital formats, and collects external digital collections by methods like collaborative purchases by participating institutions.

5. The National Digital Library builds its information resource collection and provides services based on user participations (Collaborative NDL). It should build the information resource (digital) collection and offer information services based on user participations either at online Internet space or at physical offline space. The National Digital Library opens its own collections and services to others, and the participating bodies open their collection database to create a generally shared information environment.

6. The National Digital Library should adhere to the role of digital archiving where it preserves information resources permanently and provides search environments (Archival NDL). The National Digital Library should preserve its collections permanently as digital cultural heritage and make them searchable.

7. The National Digital Library should accommodate the next generation of information service related digital technology appropriately (Advanced NDL). It should implement basic element technologies such as various digital system operating process innovative technologies like ITIL, web-based information service platform technologies like Web 2.0, information resource integration and distribution technologies such as OAI-PMH, RSS, SRW/SRU and Web services, and ubiquitous digital technologies.

4) Achievement goals for operational strategy

The National Digital Library's operational strategy achievement goals have five task objects: integrated management of the National Digital Library collections, creation of the National Digital Library portal site, offering the information commons, maintenance of the digital archives, OASIS, and operational innovation on various digital systems. Each task's content is the following.

1. The National Digital Library holds and preserves a large scale of digital collections, and provides access environments. The integrated collections of the National Digital Library include the analog collections of the National Library of Korea and other libraries in Korea, the digital collections by region and subject in Korea, international library resources and academic cultural resources, and the preserved

collections of digital cultural heritages. The National Digital Library collections are conceptualized and managed by three levels of metadata.

The first level of metadata is the content metadata. It is metadata for representing the information of digital contents such as MARC, MODS, DC, EAD, CDWA, and CIMI. Such metadata is required to be integrated and converted for NDL's information services. The second level of metadata is the collection metadata, which covers information representation of the collection level like RSLP CD Schema and DC CD AP of DCMI. It consists of a variety of information necessary for effective collection management and user access. The third level of metadata is the community metadata. It serves for representing information about the communities of stakeholders who have interests in contents or collection development and providing service.

2. The National Digital Library provides the digital library integrated search environment. The National Digital Library aims at providing flexible integrated search services by various search methods for about 3,000 national and international quality digital collections. In addition, it offers various meta-search methods along with high level search services like the chained search based on OpenURL. The National Digital Library provides a variety of value-added services based on its integrated search.

3. The National Digital Library creates an innovative model for digital resource services in physical spaces. The National Digital Library creates a digital information resource sharing space called "information commons" which is an active service space to provide all kinds of reference information services, digital facilities services, media services, services for the information-underprivileged.

4. The National Digital Library creates a service system to expand and maintain digital archiving which is currently served by OASIS Initiatives. For this, the mandatory submission related law will be revised, the processed for different types of digital resources will be established. With upgrades of OASIS system, a new digital archive system will be created and the new system will be the treasure box for knowledge resource with more than 3 million items in 10 years.

5. All the National Digital Library digital system management will be operated on a new innovative system. The National Digital Library will improve its operation process by ITIL/ITSM-based server management system and enhance the quality of NDL collections and contents by database quality control systems. In addition, the

National Digital Library will develop new systems and improve the existing systems and all the digital systems will be created on ITA/EA-based system integration management platform.

The five task objects above consist of 15 core tasks and 44 detailed tasks. Accomplishing these tasks for operational strategies, the National Digital Library will deliver the national representative-level digital library information service.

The National Digital Library information services are provided by its organization, community, technology and process. The organization and community create diverse types of participatory activities. The community and technology creates high quality knowledge in digital formats. The technology and process generates effective tools for the National Digital Library. The process and organization produce general management activities and work functions. Through this interaction, the organization improves information leadership to create information governance, the community makes the people more matured digital intelligentsia, the technology provides information technology infrastructure and compose the architecture of the National Digital Library information technology, and the process manages all kinds of information technology services for system operation innovation.

Such established the National Digital Library will play a role of the national leading digital library architecture model. From 2007 to 2008, for two years, the National Digital Library will execute building architecture, consulting procedure, improvements of existing systems, and developments of new systems.

In 2009, a stabilized version of the National Digital Library will be operated, which would be a model for distribution to public libraries or other libraries after enhancement and standardization processes. This will play a role of the representative model as a national digital library and will be an exemplary case at the global level.

4. 3. Friends of the National Digital Library

The National Digital Library is trying to realize a user-centered library according to the new knowledge paradigm. To collect user feedback for effective library management, the National Digital Library will create “Friends of the National Digital Library” and they will actively get involved in the library operations. “Friends of the

National Digital Library” consists of 7 areas: Library & Information Studies, Information & Communication Science, libraries, information contents companies, promotion group, user group, and entertainer group. As the first step, it started with 49 expert “friends” from each area in 2006, and will expand gradually.

To facilitate their roles, the National Digital Library encourages the “friends” group to create active communities both online and offline. This year, the group was divided into 5 sub-groups, and each group had meetings to provide their opinions for the management strategies for the National Digital Library. In addition, the National Digital Library provides the “Friends” space at the National Digital Library homepage. The “friends” group is expected to grow as an honorable support organization to share the members’ views on the management of the National Digital Library.

4. 4. New Paradigm, the National Digital Library

The National Digital Library will not only integrate national and international digital library collections and digital cultural heritages into the largest digital archive in Korea, but also improve users’ information access environment by integrated management of the past analog collections and the new digital ones. In addition, the National Digital Library will provide the information commons with 3,960m², as an open space fully equipped with digital information environments. The information commons will have cutting edge service environments including digital information reading rooms, digital video rooms, media rooms, and book cafes, group study rooms, and U-Lounges (Ubiquitous Lounges) where conversations and discussions are possible.

The National Digital Library will provide users differentiating services with high-tech digital equipments and information communication networks and places where active users’ interactions are possible. The National Digital Library will prepare for effective programs with special devices for those alienated such as the disabled, foreigners, or senior citizens, who have difficulty in access to digital information.

The National Digital Library will create an open portal web site to pursue a user-centered two-way digital library and provide convenient search and service sharing environments based on wide range of quality databases, to become the real hub for the knowledge society.

5. Conclusion

By integrating the collection of books and digital cultural assets in both domestic and abroad, the National Digital Library embodies the largest digital archive in Korea. Further, it helps to refresh and break the way of accessing information by the comprehensive management system combining the previous analog and digital collection of books. The National Digital Library is the offline space where one can find the perfect digital information environment. In this information commons in the size of about 4,000m², one can encounter the high technology service environment including digital information reading room, digital visual image room, media room and lively book café, group study room, u-lounges, and more.

Equipped with the advanced digital facilities and the integrated information digital network, the users can expect to receive differentiated as well as high quality service. Also, it is the place where lively interactions among users would take place. The National Digital Library will offer efficient support program to accommodate the needs and demand from those who are having difficulties to access digital information resources, such as the disabled, foreigners, and the seniors, by facilitating the special equipment. Furthermore, it strives to build open portal site which is characterized as the user-friendly and interactive digital library. Also, by offering easy search environment with the comprehensive high quality databases and service sharing environment, it will play the role as a hub of digital information society.

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