

**The National Diet Library
Electronic Library Concept**

National Diet Library

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Introduction

1. Background

Since the mid-1980's, the National Diet Library (NDL) has been developing a vision of the new role and functions it will fulfill, utilizing new information and communications technologies, in the twenty-first century. This vision has been set out in a series of plans and reports, beginning with the "Report on the Nature and Functions of the Facilities to be Established in the Kansai Region in Order to Improve the Library Organization and Library Services Prescribed in the National Diet Library Law" (NDL Kansai Project Investigation Committee, April 1987). This was followed by the "First Basic Concept for the Establishment of the Kansai-kan of the NDL(Provisional Name)" (August 1988; hereinafter called "the First Plan"); the "Second Basic Plan for the Establishment of the Kansai-kan of the NDL(Provisional Name): Toward the Sharing of Information Resources" (August 1991; hereinafter called "the Second Plan"); and the "Report of the Investigation Committee on Facilities to be Established in the NDL Relating to the Use of Children's Books, etc." (November 1995).

During the 1990s, as advanced information and multimedia technologies have come to play an ever more important role in society as a whole, and information networks such as the Internet have rapidly developed, electronic library projects have been launched both in Japan and worldwide. In response to this new environment, the NDL drew up "Working Guidelines for the Formulation of an Electronic Library Plan" (NDL (PL) No. 84, 1996; hereinafter called "Working Guidelines"). This identified the need for an electronic library plan, against a background which includes the changing environment for libraries with regard to information and telecommunications, the NDL's future plans, and the results and experience it has already gained in implementing electronic library projects, either alone or in cooperation with other institutions.

Based on the Working Guidelines, in April 1997 the Electronic Library Promotion Committee was established within the NDL. In addition, the Electronic Library Promotion Council, composed of outside experts and information technology specialists, has met five times since May 1997. After studying all aspects of the electronic library to be created by the NDL, on February 23, 1998, the Council submitted its report, "Building a New Infrastructure for Knowledge, Information, and Culture: Toward a

Free and Creative Information Society," to the Chair of the Electronic Library Promotion Committee.

The Plan contained herein represents the desired form of the electronic library to be created by the NDL, based chiefly on the findings of the Electronic Library Promotion Committee, with the guidance of the report of the Electronic Library Promotion Council. It is also intended to serve in future as a basis for the detailed planning and implementation of the electronic library.

2. Basic Perceptions

Today, the processes of producing, distributing, storing, and handling all forms of data are rapidly shifting from analog to digital mode. As information and communications technologies have advanced, they have made it possible to produce a great variety of information electronically, and, moreover, to access it via communications networks from the office or home.

Libraries have long employed computers to perform their administrative work efficiently, but the new digital technologies have enabled them to greatly expand and enhance their inherent functions as libraries. These have traditionally consisted of collecting the products of human intellectual activity which have been recorded on various media, organizing and preserving them, and making them available on request. The electronic library is an expansion of these traditional library services utilizing new information technologies. It makes a wealth of information accessible, and enables regional or other disparities in information access to be corrected. It acts as a guide to the vast expanse of cyberspace, allowing anyone, anywhere, to access information at any time.

The NDL was established under the jurisdiction of the Diet by Article 130 of the Diet Law (Law No. 79, 1947), and by the National Diet Library Law (Law No. 5, 1948). Its main purpose is to assist Diet Members in the performance of their duties by collecting and making available books and other library materials, but it also provides library services for the executive and judicial agencies of the national government and for the general public. The NDL is a parliamentary library with a research function which serves the Diet; at the same time, as the national library of Japan its role includes collecting and preserving all publications issued in Japan by means of a legal deposit system, maintaining a national bibliography, and providing library services for the general public.

In the new environment of on-line information access, the NDL is being called on

to play a new role. The electronic library to be created by the NDL (hereinafter called "the NDL's electronic library") will serve as a social agency for preserving, transmitting, and providing library materials as a national cultural heritage, thereby playing a role in information storage and access in the electronic age that will be at least as great as that traditionally played by the NDL in the age of print media.

The creation of the electronic library presented herein is an undertaking of the NDL as a whole. In particular, the electronic library will be a major function of the Kansai-kan of the NDL (provisional name), which is due to open in fiscal 2002, and of the International Library of Children's Literature, whose first phase is due to open in fiscal 2000; in addition, it will be a means of expanding and improving the NDL's Diet services.

There are a number of challenges to be met in creating the electronic library, including financial, institutional, and technological issues. Together with a multifaceted approach to studying and resolving these issues, efforts will be made to form a consensus among all the parties concerned.

Chapter 1

The NDL's Electronic Library

1. The Electronic Library and the Role of the NDL

With regard to those books and other materials which form the basis of a library's activities (hereinafter called "library materials"), under the mandatory legal deposit system for materials issued in Japan, the NDL has built a comprehensive collection of publications issued by the national government, local authorities, and other public bodies, in order to make them available for public use and international exchange, together with publications issued by other parties (hereinafter called "private-sector publications"), in order to contribute to the accumulation and use of cultural assets. In addition to preserving and storing the library materials collected under the legal deposit system, the NDL is responsible for preparing and providing bibliographic data to render these materials accessible for use, making the materials themselves available, and providing guidance to both materials and information. A further important role of the NDL, as the nation's representative library, is to carry on cooperative programs with other libraries in Japan and overseas.

In today's advanced information society, the formats and methods of producing,

distributing, and transmitting information are rapidly changing. In particular, the growth of electronic publishing and distribution of materials in electronic form has given rise to a new and unfamiliar environment. In this new environment, the NDL should extend the role it has traditionally played with regard to print media to include electronic publications as well.

In the chapters that follow, we present the form which should be taken by the NDL's electronic library. The following areas are particularly important as they form the framework of the electronic library:

- Enhancement of Diet services through the electronic library
- Collection and preservation of electronic publications issued in Japan
- Bibliography compilation and bibliographic control for electronic publications
- Making electronic publications available to the general public, and providing guidance (navigation) to information sources
- Cooperation with other Japanese and foreign institutions involved in the digitization of materials and creation of electronic libraries

2. The Definition of Electronic Library

The term "electronic library" is defined herein as "the provision by a library of primary information (actual materials) and secondary information (information about the materials) electronically, via communications networks, together with the infrastructure for this purpose." The NDL's electronic library will provide electronic publications on-line, and will also digitize and make available materials that are presently held in print form. Through the resulting expansion and improvement of its library services, the NDL will be able to offer an array of fast services. The electronic library will lead to expansion and development of library services in the following ways:

- Correcting regional or other disparities in information access
- Enabling integrated access to many types of information
- Realizing a variety of functions which utilize information and communications technologies
- Enabling economic, efficient access to information

3. Contributing to the Advanced Information Society

The NDL's electronic library will form an infrastructure for information access

which is open to the general public. It will make many contributions to the advanced information society in the following areas, as a result of expanding and improving Diet services, correcting regional or other disparities in information access, and preserving and transmitting library materials as a national cultural heritage.

Contributions to Academic Research

Academic researchers, in their own studies or laboratories, will be able to obtain a vast quantity of scholarly information on demand. This will contribute to both the efficiency and quality of research work by shortening the time required for literature searches and enabling scholars to conduct searches for a wide range of research materials.

Contributions to Industrial Society

In today's industrial society, there is a need for rapid access to accurate information in all areas of industrial activity. The electronic library will lead, both directly and indirectly, to revitalization and innovation in these areas.

Contributions to the International Community

By making a wealth of information available for access from outside Japan, the electronic library will serve to increase international understanding of Japan, and to enhance mutual understanding. It will also enable Japanese academic researchers to contribute to the progress of the world community by circulating the results of their work internationally.

Contributions to People without Ready Access to Libraries

For people who have been unable, for various reasons, to visit conventional libraries, the electronic library will make it possible to access information from the home or other remote location. To a large extent, this will enable the disparities in information access to be corrected.

Contributions to Internet Culture

The electronic library will not only make it possible to navigate the rapidly growing volume of information on the Internet in an easily comprehensible way, but will also add to the cultural depth of the Internet by providing a vast quantity of information.

4. The Electronic Library as Knowledge and Information Infrastructure

Until now, the NDL has served as a "last resort" in view of its duties as a repository library under the legal deposit system. With the advent of the electronic library, however, it will be able to serve concurrently as a "first resort" by taking on the function of making electronic publications and digitized materials-which do not deteriorate with use-widely available for on-line access.

Further, in creating the electronic library, the NDL will carry into the digital age its traditional social role of preserving, transmitting, and providing library materials as a national cultural heritage, and will also aim to serve as an infrastructure of knowledge and information. Moreover, the NDL's efforts toward realizing the electronic library will be founded on the awareness that it is not merely a developmental stage of conventional library functions, but a new knowledge and information infrastructure for the advanced information society.

Chapter 2

Building the "Collections" of the Electronic Library: Preserving Culture and Providing Access

The NDL is the library responsible for building and preserving a comprehensive collection of publications issued in Japan. The need has now arisen to collect, preserve, and make available electronic as well as conventional print-media publications, in view of the rapid growth of electronic publishing in recent years and the fact that the information carried by both types of media is of equal cultural value as the product of human intellectual activity.

To help promote the necessary reforms of the legal deposit system, the NDL established the Legal Deposit System Research Council in fiscal 1996 and has studied the form that the national legal deposit system should take in the twenty-first century, with special reference to the design and operation of a legal deposit system for electronic publications. The Final Report of the Research Council's Electronic Publications Subcommittee, issued in March 1998, states that packaged electronic publications such as CD-ROMs and DVDs will be included under the legal deposit system, and also that it will be necessary to make arrangements to actively collect networked electronic publications such as on-line magazines, although for the present these will not be included under the legal deposit system but will be collected on a selective basis.

In order to turn the acquired electronic publications into "collections," they must be organized and bibliographic data must be prepared. As the national library of Japan, the NDL has compiled bibliographic databases such as JAPAN/MARC, and it has the same responsibility with regard to the packaged and networked electronic publications it collects. In the United States and Europe, progress has been made in the bibliographic control of electronic publications, including systematic and standardized cataloging, and it is important that the NDL also organize its electronic publications and carry out bibliographic control, in cooperation with related institutions both in Japan and overseas.

1. The Types of "Collection" in the Electronic Library

The electronic library "collections" (electronic information resources) to be provided by the NDL fall into several possible categories: digitized printed matter, electronic publications, and navigation resources to locate electronic information provided by external institutions. Each type can be divided into secondary and primary information.

(a) Secondary Information

This consists mainly of guidance to help locate information held by various institutions, both in Japan and overseas; in particular, it takes the form of bibliographic data prepared by the NDL.

(i) Bibliographic data and information about various documents, prepared by the NDL

Information about library materials

Union catalogs and other indexes made in cooperation with external institutions

Union catalogs (registers) and other indexes of materials digitized in Japan

(ii) Information provided by external institutions

Guidance to and provision of secondary information made available by external institutions

Navigation to information resources available on the Internet

(b) Primary Information

One advantage of the electronic library is that it enables primary information to be made available via communications networks such as the Internet. Ideally, as much primary information as possible should be provided; in practice, however, due consideration must be given to copyright and other institutional issues, to financial

issues, and to the constraints of cooperation with external institutions. Further, the primary information provided will be systematically linked with secondary information.

(i) Electronic information held by the NDL

Electronic publications, etc., collected by the NDL

Electronic archives created by digitizing printed matter

Information resources available on the Internet (that is, electronically archived information which is important and of scholarly value, and which might otherwise be lost due to updating or other causes)

It is also envisioned that the NDL will hold other types of electronic information through cooperative arrangements with publishers (including academic societies); for example, print composition data prepared in the publication process, and electronic publications of publishers who do not have their own servers, to be stored and accessed on NDL servers ("rental space" in the electronic library).

(ii) Access to databases provided by external institutions

(iii) Navigation to information resources available on the Internet

2. Guidelines for Providing the Electronic Library's "Collections"

As a basic principle, in providing the electronic library's "collections" the NDL will digitize and make available as wide a range of printed matter as possible, together with electronic publications, while taking into consideration the state of financial constraints and institutional issues such as cooperation with external institutions, discussions with publishers, copyright and user fee systems.

The following viewpoints will be emphasized:

Considerations of neutrality and impartiality

Responsiveness to user needs

Assurance of long-term access to materials

Respect for academic and cultural value

Comprehensiveness and coherence of collections

3. Categories of Material to be Given Special Priority

For the present, special priority should be given to making materials in the following categories available in digitized form:

Diet Information

Information related to lawmaking and other Diet activities (hereinafter called "Diet information") is essential to the NDL's role of providing appropriate support for legislative activities. There is also a need to make digitized Diet information widely available to the general public by means of the electronic library. The resulting fundamental improvement in information access will help stimulate the public's interest and involvement in national affairs. In consultation with both the House of Representatives and the House of Councilors, active efforts will be made to transmit Diet information to the general public through the electronic library.

Publications Issued by Executive Agencies

The publications issued by executive agencies should be made widely available to the general public, since they are the product of work entrusted to them by the public and carried out in the national or public interest. The NDL plays a special role in the collection and provision of publications issued by Japan's executive agencies. The NDL's work of digitizing those materials issued in print form, collecting those issued in electronic form, and making both available in an integrated way is important both in improving public access to the publications of executive agencies and in expanding its Diet services, as well as in transmitting information about Japan's executive agencies overseas.

Japanese Periodicals with a High Frequency of Use

In consultation with the copyright holders, publishers, and other interested parties, Japanese periodicals with a high frequency of use will be digitized and made available electronically. This work, which has a basis in both the First and the Second Plan, calls for an electronic document supply system to be linked effectively with bibliographic data in units of individual papers or articles. In implementing this plan, the technological and institutional issues discussed later will need to be addressed.

Scientific and Technical Information

The NDL must play its part in the smooth distribution of scientific and technical information while adapting to the new environment in which information circulates. To this end, it will actively collect and digitize scientific and technical information, especially by gathering information on research findings from the institutions where it is produced, such as universities, academic societies, and research institutes. In cooperation with the Japan Science and Technology Corporation and other external

institutions, the NDL will also actively undertake to collect, use, and preserve research results that have been digitized by these institutions.

Library Materials as a National Cultural Heritage

Digitization will be carried out for rare books, including Important Cultural Properties, and library materials published mainly in the Edo, Meiji, and Taisho Periods. The library materials will be made available for use in digitized form as a means of reconciling the need to preserve and pass on the nation's cultural heritage with the need for its use.

Children's Books

The program of digitization of children's books will be continued in view of the scheduled opening of the first phase of the International Library of Children's Literature in 2000.

4. Editing and Compilation of Information

The "collections" of the electronic library should also be made attractive to users by editing materials and information appropriately in particular fields of interest.

In the "American Memory" project, for instance, the Library of Congress is digitizing a wide range of American historical and cultural materials. The NDL will plan a similar project to electronically edit, compile, and supply Japanese materials in these fields. These will not only be useful as supplementary educational materials in schools, for example, but will also be an effective means of introducing Japan overseas.

Also under consideration are theme-based electronic "collections," the selection and editing of information on topics of particular social concern or interest to users, and electronic exhibitions.

5. Remote Access Services of the Electronic Library

The electronic library is an excellent system for remote access services, since it enables prompt access whenever and wherever required. While a number of institutional and technical challenges (discussed in Chapters 7 and 8) must still be met before the electronic library becomes a reality, the NDL will endeavor to resolve these issues without delay and provide document supply services, as far as possible in the form of an electronic library, in keeping with the rapidly developing information and

communications environment of the advanced information society.

Further, the Council on Development of Science and Technology Materials of NDL, established by the NDL to review and examine its improvement plans for said materials, presented its report to the NDL's Director on February 23, 1998. The report notes, "The creation of an electronic library which provides appropriate information and which links digitized primary, secondary, and reference information is an essential element in establishing effective remote access services."

6. Preservation of Materials by Digitization

The NDL will work to preserve library materials by digitization, from the viewpoint of preserving and guaranteeing permanent access to the nation's cultural heritage.

(a) Digitization and Preservation of Printed Matter

Although digitizing printed matter preserves its contents, unlike reproduction on paper or microfilm, the result is electronic information with no tangible form. Thus, its permanence depends on the physical medium on which it is recorded. If the various electronic recording media available today were assessed solely in terms of their durability, none could be expected to outlast microfilm. From the viewpoint of usability, however, electronic recording media offer broad and effective access, and thus can alleviate a perennial problem—the fundamental contradiction between preservation and use of original materials.

(b) Packaged Electronic Publications

Electronic publications, which have shown rapid growth in recent years, are recorded on a variety of media and in a variety of formats. Examples of packaged electronic publications include CD-ROMs and DVDs, which are expected to come into wide use in the future. In addition to the durability of the recording medium, the preservation of all such materials also depends on the preservation of the necessary reading devices, software, and formats. Electronic recording technology is constantly changing, and the use of packaged electronic publications depends on the availability of particular devices and formats. Accordingly, the preservation of these devices, software, and formats will be studied and implemented, together with the preservation of electronic information by conversion to other recording media.

For long-term storage of information in digitized form, it is necessary to use a

highly durable recording medium, and to copy the information to another medium if the original one deteriorates. Further, since recording media and formats are expected to change as new technologies develop, these questions will be fully studied on an ongoing basis.

(c) Networked Electronic Publications

In the case of networked electronic publications, the content provider may make frequent revisions, changes, or deletions, and previously posted information is often lost when this happens, unlike previous editions of printed matter. The electronic library will collect and preserve networked electronic publications of particularly high scholarly value (including versions subsequently revised, changed, or deleted), from the viewpoint of preserving and ensuring permanent access to the nation's cultural heritage.

Chapter 3

Enhancing Services to the Diet and to Executive and Judicial Agencies by Means of the Electronic Library

As a library under the jurisdiction of the Diet, the NDL makes active use of the huge volume of materials it has collected and organized to provide the Diet with library services and legislative research services. By creating the electronic library, the NDL will be able to enhance its services to the Diet and to the executive and judicial agencies of the national government.

1. Expanding and Improving the Supply of Information to the Diet

The NDL will improve the Diet's access to information by providing a wide variety of resources through the electronic library, including its own databases, digitized library materials, publications for reference in deliberations on national affairs, and information prepared by external institutions which is available via communications networks. Together with improved library services for the Diet, the NDL will strive to provide a higher level of Diet services by utilizing these resources to the full in its legislative research services.

2. Digitization of Diet Information

"Diet information" includes Minutes of the Diet, laws, materials prepared by executive agencies for submission to the Diet, and materials prepared to assist deliberations of national affairs by the Legislative Bureaus of both Houses, the Research Bureau of the Secretariat of the House of Representatives, the Research Office of the Standing Committee of the House of Councilors, and the NDL's Research and Legislative Reference Bureau. By digitizing this information with the cooperation of both Houses, creating a system to allow integrated use of a wide range of Diet information, and making it available on-line, the NDL will enable Diet Members to access Diet information whenever and wherever required. It is already working with the Secretariats of both Houses to develop the Full-text Database System for the Minutes of the Diet.

3. Improving Library Services to Executive and Judicial Agencies

The NDL provides library services to all executive and judicial agencies of the national government. Creating an electronic library and making a wealth of electronic publications available to these agencies will help the NDL further improve its services.

Chapter 4

The Kansai-kan of the NDL and the Electronic Library

The NDL is scheduled to open its Kansai-kan of the NDL in fiscal 2002. In addition to providing traditional library services, the Kansai-kan is intended to serve as a center for storing and transmitting information to meet the needs of the advanced information society, and the functions of its electronic library will therefore play an important role in realizing the Concept presented here. From its inception, the electronic library of the Kansai-kan is intended to operate with the existing facilities in Tokyo as an integral part of this electronic library concept.

1. Functions of the Electronic Library of the Kansai-kan

As steps toward the establishment of the Kansai-kan, the NDL formulated the First and Second Plans. These emphasize that the Kansai [KAN], which will be opening in the twenty-first century, should draw on the full range of new information

and communications technologies to greatly strengthen the functions of the NDL.

In particular, the Second Plan presents the idea of an information library with remote access services. This goes beyond the traditional library—a physical facility which users must visit to access materials—to function as a "transmitting" library from which users can quickly obtain materials and related information in any field, whenever and wherever required, via communications networks.

The "Outline of the Call for Architectural Design Consultations for the Kansai-kan of the NDL (Provisional Name)" was issued in November 1995, based on the Second Plan. This outline states: "While the information resources amassed by the NDL will be distributed between the Main Library and the Kansai-kan for storage, thereby enabling maximum efficiency of use, the Kansai-kan will also facilitate user access to information held on electronic media, which will be vital to the advanced information society of the twenty-first century." The outline also sets out the following basic principles:

A Center for Accumulation of Information Resources

The Kansai-kan will work in unison with the Main Library to collect and preserve library materials as information resources, and to pass them on to future generations as cultural assets of the Japanese people.

A Center for Transmission of Document Information

The Kansai-kan will make full use of the latest technology to provide both Japanese and international users with actual documents and information about documents. Links with other databases and networks, both in Japan and overseas, will give access to the document information held by other libraries or provider institutions.

A Center for Library Services Open to the Global Community

The Kansai-kan will be an "information window" open to the global community. It will both transmit information from Japan to the world, and receive information from outside Japan, turn it into a readily usable form, and relay it within Japan. In particular, it will contribute to the international circulation of Asian document information.

A Center for Interlibrary Cooperation

The Kansai-kan will work to share information resources and increase the efficiency of library services as a center for interlibrary cooperation, that is, a center

which promotes the networking of library information and supports the activities of libraries of all types, both in Japan and overseas.

2. Conditions to be Fulfilled by the Electronic Library of the Kansai-kan

The electronic library of the Kansai-kan will be an undertaking of the NDL as a whole, and as such it will be underpinned by an Electronic Library Infrastructure System, allowing its operation to be unified with that of the existing facilities in Tokyo. However, as set out in the Second Plan, certain programs, such as the preparation and supply of electronic publications and research and development related to the electronic library, will be centered on the Kansai-kan.

In order for the Kansai-kan to function as an electronic library, the facility will fulfill the following conditions:

Communications networks and system infrastructure to support the electronic library will be provided.

Electronic library "collections" will be created.

Facilities for the digitization of materials will be established.

An organization will be set up to implement and operate the electronic library.

Chapter 5

The Electronic Library of the International Library of Children's Literature

1. The Electronic Library of the International Library of Children's Literature: Aims and Direction

With children's books and related materials (hereinafter called "children's books, etc.") as its foundation, the International Library of Children's Literature (ILCL) will offer library services including the accumulation and provision of primary and secondary information on children's books, etc., and cooperation with related institutions in Japan and overseas. The electronic library of the International Library of Children's Literature will be an important means of realizing, expanding and improving these library services.

The aims of the electronic library of the International Library of Children's Literature can be summarized as follows:

- (a) to digitize and provide primary and secondary information on children's books, etc.
- (b) to offer multimedia information services which take into consideration the special features of children's culture
- (c) to cooperate with related institutions in Japan and abroad for the mutual use of children's books, etc., via communications networks

2. Functions of the Electronic Library of the International Library of Children's Literature

The electronic library of the International Library of Children's Literature will have two functions: as a digital archive and as a digital museum.

(a) Digital Archive Function

This refers to the collection, storage, and on-line provision of a wide range of secondary information on children's books, etc., together with primary information, that is, actual materials in digitized form.

Secondary information on children's books, etc.

Information on all forms of children's books, etc., including multimedia materials as well as books and magazines, will be provided as the "International Library of Children's Literature Union Catalog of Children's Books" (provisional name).

Primary information (digitized children's books, etc.)

Together with collecting multimedia materials, the library will digitize primary information, centered on older publications, in order to make rare children's books, etc., mutually accessible to institutions and users within Japan.

Specialized information

Specialized information of all kinds relating to children's books will be collected and made available. This will include selection information, award information, reviews, synopses and annotations, and bibliographic data in English translation.

(b) Digital Museum Function

This refers to selectively collecting multimedia materials, especially animated films and still pictures, editing and processing them, and displaying this primary information in cyberspace. As an intellectual infrastructure for children in the new era, the library will selectively collect, edit, and process multimedia information, especially animated films and still pictures, in a number of fields or thematic areas which demonstrate the appeal of multimedia culture, and will maintain permanent exhibits

which can be viewed on-line as a "digital museum" service.

3. Electronic Library Services to be Provided by the International Library of Children's Literature

Based on the two functions of a digital archive and a digital museum, the International Library of Children's Literature will provide services for each of the following user groups, both in Japan and overseas:

- (a) Researchers, specialists, and general users
- (b) Children
- (c) Libraries and similar specialized institutions

Chapter 6

Cooperative Programs of the Electronic Library

As Japan's representative library, the NDL has been a partner in various cooperative programs in the past, and with the advent of the electronic library, collaboration with an even larger number of institutions and individuals will be important. In creating the electronic library, the NDL will actively undertake the following types of cooperative program:

1. Cooperation with Institutions Implementing Electronic Library Projects

The NDL will actively carry on cooperative programs with other institutions implementing electronic library projects, mainly in order to exchange technical information, promote the standardization of information distribution, and coordinate the digitization of materials.

Internationally, the NDL will cooperate with the electronic library projects of other national libraries, as well as with the G8 Electronic Library Project (Bibliotheca Universalis) already in progress. Within Japan, the NDL will cooperate with the Management and Coordination Agency, which is in charge of the Administrative Informatization Promotion Plan; with the National Center for Science Information Systems, whose electronic library project covers the journals of academic societies; and with universities or other academic research institutes, public libraries, and private bodies which have electronic library-related projects. In addition, a nationwide organization will be established for liaison and cooperation in creating the electronic

library of the NDL, and a systematic basis will be laid down for cooperating with other electronic library projects.

Various electronic library projects are likely to be created in Japan in the future, in addition to the present project. The NDL will prepare a union catalog (register) of the distributed digitized materials related to these projects, and will maintain and manage this catalog. To further support user access to electronic library services, the NDL will conduct studies on the preparation of metadata (information about information) and related areas, and will provide appropriate bibliographic control for digitized materials in distributed storage.

2. Cooperation with Various Libraries and Information-Related Institutions

When the electronic library of the NDL becomes fully operational, cooperation with an even larger number of institutions will be necessary. A broad array of institutions and individuals involved in producing and providing information, both in Japan and overseas, are expected to play an important role in the electronic library; they include libraries, specialized information agencies of all kinds, academic research institutions, social education agencies, authors, and publishers. The electronic library will have especially close ties with content providers such as publishers, and it is important to develop a cooperative relationship in this area.

Working with these various institutions and individuals, the NDL's electronic library will play a coordinating role in order to meet the intellectual needs of the Japanese people.

Chapter 7

Institutional Challenges for the Electronic Library

1. The Electronic Library and Copyright

Much of the primary and secondary information to be provided by the electronic library consists of works under copyright. Their use is regulated by the Copyright Law (Law No. 48, 1970), which was enacted for the purpose of "protecting the rights of authors and others while allowing for the fair use of cultural products, thereby contributing to the development of culture." The law contains provisions which limit the rights of the copyright holder from the viewpoint of allowing fair and amicable use of works.

Since the electronic library will store the library's collections of electronic publications and digitized materials on servers and make them available on-line, the process of its creation will come under the Copyright Law's provisions governing the right of reproduction (Article 21) and the right of public broadcast or transmission (Article 23). Although Article 31 of the Law allows certain parties, including libraries, to reproduce works without obtaining the permission of the copyright holder under certain circumstances, such as at the request of a user for purposes of private study or research, or when necessary for the preservation of the library's materials, its provisions are not readily applicable to the reproduction necessary to create the electronic library.

2. The Author's Rights and the Role and Public Nature of Libraries

A library is a social arrangement for the storage and reuse of knowledge and information as part of social discourse. In light of this role, libraries must organize and guarantee access to electronic publications, just as they do in the case of printed matter. A broad social consensus regarding the rights of the copyright holder and the fair use of works in libraries should therefore be developed.

In attempting to strike a balance between protection of the author's rights and use in the electronic library, the special properties of electronic information must be taken into account; these include the identical nature of the reproduction and the original, and the ease of reproduction, transmission, editing, and processing. The International Federation of Library Associations and Institutions and the International Publishers Association have both stated their positions on electronic libraries, but there remains a distance between the two with regard to the rights of the author of an electronic work and the role and public nature of libraries.

3. The Need to Formulate Rules in Creating the Electronic Library

Since the electronic library represents a form of use of works in a new environment, unlike those envisaged by the Copyright Law, there is a need to formulate rules from a new perspective. The electronic library will make a vast amount of primary and secondary information rapidly accessible to multiple users, but in view of the vast amount of permissions work potentially involved in reproducing materials and making them available on-line, there is a need for the NDL and copyright holders to jointly draw up rules which take into consideration the public nature of the library.

Discussions involving other interested parties such as publishers, other libraries, and users will also be necessary.

4. Points at Issue in the Formulation of Rules

In creating the electronic library, in addition to the copyright issues already discussed, there are also financial issues to be resolved with regard to instituting a system of user fees. The following are possible options regarding categories of materials, methods and extent of user access, and ways of instituting user fees:

Properties of Individual Materials

Works no longer under copyright will be digitized and made available. For private-sector publications under copyright, care will be taken not to infringe the interests of the copyright holder. In cases where materials are not readily available commercially, whether because they are out of print or for other reasons, discussions will be held with the copyright holders with a view to offering access through the electronic library, together with government publications, which should be made widely available to the general public. Access to other private-sector publications will be limited to the extent allowed by agreement with the copyright holders, or to navigation only.

Methods of User Access

Possible types of access to materials through the electronic library are reading, printing, downloading, and navigation. Those types most likely to affect the interests of copyright holders will be implemented on the basis of agreements.

Extent of Access

Treatment will differ according to the extent of access, which may be limited to the facility where the server is located, or the facilities where the Main Library, the Kansai-kan and the International Library of Children's Literature are located, or may include branch libraries of the various executive and judicial agencies, or public libraries and similar institutions, or may not be limited in any way. For private-sector publications that are out of print or otherwise difficult to obtain commercially, and government publications digitized by consultation with the copyright holders, the extent of access will be subject to negotiation. Access to other private-sector publications will be limited to the extent allowed by agreement with the copyright

holders, or to navigation only.

User Fees

With regard to reading and copying at the library, electronic publications and digitized materials will be treated like printed matter. Where publications are made available by agreement, an appropriate user fee will be charged for downloading or on-line use. In levying the fees, consultations with the copyright holder will be necessary. The question of how to handle the costs of digitization and copyright procedures will be considered separately.

Procedures for Obtaining Rights

Permissions agreements may be made through copyright administration bodies, or with individual copyright holders where necessary.

Further, since the understanding of publishers is essential to the collection of Japanese publications under the legal deposit system, special attention should be given to publishers during the process of creating the electronic library.

The electronic library is a new system which was not envisaged in existing legislation. Moreover, the information infrastructure it provides is of the greatest importance in today's advanced information society or "networked" society. The NDL will therefore endeavor to develop appropriate rules in readiness for its realization.

Chapter 8

Technological Challenges for the Electronic Library

Although the technology to realize the basic functions of the electronic library already exists, in building a fully operational electronic library, many issues remain to be addressed in the future and many items of technology have yet to be developed. Various issues and challenges to be met in creating the electronic library and making it user-friendly are outlined below.

1. User-Friendliness

User-friendliness is important to the electronic library. In accessing a wealth of electronic information resources, the user needs to know that they are comprehensive

and reliable. Further, users also need a means of navigation which accurately identifies their requirements and leads them to the right information, as well as a user-friendly interface. Other issues include ease of terminal operation, legibility of document display, and availability of different reading methods depending on the nature of the information resource. For individuals who use the electronic library as their personal "study," an environment-customizing function would also be convenient.

2. Search Functions

Since existing information retrieval systems tend to have high retrieval noise and drop-outs, the electronic library should be equipped with an effective system for accurately locating required information. To enable users to select what they need, it is also important to organize the information on the basis of an understanding of document structure and trends in document use. High-powered search systems which should be considered in future include adaptive searches, which are responsive to the user's query patterns, multimedia information searches, searches which automatically analyze the meaning of the query, searches based on the user's conceptual layers, and multiple simultaneous searches using distributed cooperative agents.

3. Protection of Rights to Digitized Materials and Electronic Publications

Protection of the rights to digitized materials and electronic publications is another major technological challenge for the electronic library. Adequate study must be given to copyright protection technology, including ways of guaranteeing security and preventing improper use in order to allow on-line distribution of materials. Technologies already developed for copyright protection include electronic watermarks and electronic signatures. A number of technologies currently being developed in the field of electronic commerce can also be utilized effectively; for example, those which allow improper use to be blocked at the user terminal.

4. The Preservation, Standardization, and Architecture of Digitized Materials and Electronic Publications

The electronic library will take adequate steps to preserve digitized materials and electronic publications permanently. Another key issue is the standardization of rules and compatibility of systems in order to ensure stable interoperability with other

libraries and institutions. Over the longer term, technological issues that will be important in ensuring stable operation include extensible system architecture, long-term preservation of digitized materials, and preparing metadata that will assist in the sharing of electronic information resources and interoperability with external institutions.

Chapter 9

Creating the Electronic Library Infrastructure System

The information systems with which the NDL performs its work must be structured to support the creation of the electronic library. To achieve this, the NDL will draw on the results achieved with its existing work system, while fundamentally improving and restructuring it to make the most effective use of its databases and work-related information. Further, the resulting system must operate in unison with the information system to be created for the Kansai-kan.

Since fiscal 1996, the NDL has been studying the concept of an information system to form the infrastructure of the electronic library and, at the same time, support efficient work performance. Its findings are summarized in the "Basic Plan of the Electronic Library Infrastructure System" (NDL (PL) No. 35, 1998).

The Electronic Library Infrastructure System (ELIS) is centered on a database management system, with a number of other interconnected information systems, as shown in section 2 below. Its basic principles are as follows:

1. Characteristics of the ELIS

A high-speed, high-quality, secure communications infrastructure

A database management system with excellent safety, extensibility, and flexibility

Adoption of layered architecture and modularization of functions (for flexibility in upgrading hardware and software)

Restructuring of the logic database in terms of functionality (allowing flexible extension and alteration of search functions)

Promoting openness and standardization of the system

2. Overall Composition of the ELIS

Database Management System

Sorts and stores primary and secondary information; retrieves or extracts data on demand from other component systems of the ELIS.

Information Collection System

Supports the collection of primary and secondary information; extracts and sorts the required primary and secondary information, and enters, registers, and updates data in the databases.

Information Provision System

Serves as the access point for providing information on request, by analyzing and accepting user queries and communicating with the database management system and other component systems.

External Connection System

Serves as the point of connection with information systems of external institutions, and performs the necessary protocol and format conversions, user authentications, etc., when receiving data from these systems.

Common Systems

A set of systems which perform functions common to some or all of the component systems; manages use statistics, fees, etc.

Systems Management System

Oversees and manages the system equipment, database management system, networks, software, user profiles, security information, etc.

3. Procedure for Creating the ELIS

In developing the ELIS, due to schedule and budget constraints the NDL will not replace its existing systems all at once, but will proceed in phases while creating prototypes.

Further, rather than matching the ELIS to the existing work flow, the NDL will first analyze the overall work structure and visualize an efficient work flow before entering the design and development process. The component systems will share their interfaces and database structures as far as possible. The existing workload and work systems will be reviewed with this goal, and the design of the ELIS as a whole will be contracted out to system integrators and other specialists.

In Conclusion
Efforts toward Making the Electronic Library a Reality

Information processing and network technologies, which have been developing rapidly since the mid-twentieth century, have now advanced to the point where they can form a technological infrastructure for information, knowledge, and culture. In the twenty-first century, this technological foundation will underpin the development of a new knowledge and information infrastructure. Against this background, the NDL's electronic library is to be created as a new knowledge and information infrastructure for the twenty-first century.

The electronic library is a means of realizing a long-cherished ideal of librarians around the world, that is, to bring knowledge and information within reach of all, whenever and wherever it is needed. It will also lead to great expansion and development of the NDL's own functions.

While the electronic library will be founded on the existing work of the NDL, its creation will not necessarily represent a linear extension of that work. In particular, it will be essential to establish a new organization and work structure, train staff with the relevant professional knowledge, and create an Electronic Library Infrastructure System.

Making the electronic library a reality is a challenge for the future. In recognition of the NDL's own proper role and the social significance of electronic libraries in the advanced information society, we will make every effort to realize the electronic library, as an undertaking of the NDL as a whole and in cooperation with related institutions, by the Kansai-kan's scheduled opening date of fiscal 2002.