

Analysis on Current Issues and Cases of Electronic Document
Delivery Service for Sharing of Knowledge Information
지식정보 공유를 위한
전자원문서서비스의 주요 이슈와 사례 분석

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ABSTRACT

Changes in document delivery service environment such as spread of web-based research information communication and direct communication between users and information providers have considerable effects on document delivery service institutes. Swift advances in information technology have allowed users to receive information on their desktops via web. Web-based document delivery makes the massive scale of reproduction and distribution possible so it need to protect the copyright holders' rights. This study identifies the current trends and issues of document delivery service environment and reviews electronic document delivery services of foreign countries. Also this study introduces the domestic electronic document delivery service, e-DDS, and evaluates the copyright issues for the service.

초 록

웹기반 학술정보 커뮤니케이션이 보편화되고 정보공급자 및 이용자와의 직접적인 커뮤니케이션이 확산되는 등 원문서비스 환경의 변화는 원문서비스 기관에 적지 않은 영향을 미치고 있다. 특히 웹을 통하여 이용자에게 원문을 제공하는 전자원문서비스의 등장은 전자형태 정보의 신속하고 용이한 복제 및 배포로 인하여 그 운영에 있어서 저작권과의 마찰을 피할 수 없다. 이 연구에서는 원문서비스 환경의 주요 변화와 동향을 검토하고, 해외 전자원문서비스 사례를 파악함으로써 국내 웹기반 원문서비스인 e-DDS가 국내 저작권법에서 이슈가 되는 부분 및 향후 해결해 나가야 할 부분들을 검토하고자 한다.

keywords: Electronic Document Delivery Service, EDD, Digital Reproduction, Copyright Compliance (전자원문서비스, EDD, 디지털 복제, 저작권)

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1. Introduction

There has been a growing importance of document delivery services within libraries and document delivery centers recently. Document delivery provides the means of sharing knowledge information resources between libraries, regardless of country. Document delivery services are evolving with the appearance of the internet and the development of communication technologies. While users receive photocopies by mail, they can also get the documents via the Ariel software, facsimile, and/or the web. Electronic document delivery service is a new trend that allows users to receive documents on their desktops. Walker and Thoma (2003) said that electronic document delivery is technology that is faster than mail, more reliable than fax, and offers higher resolution images than what is possible through a conventional fax.

Electronic document delivery is a user-oriented service that enables users to share knowledge

information resources. KISTI, the largest information service institute in Korea, developed an EDD (Electronic Delivery Service) system called e-DDS and delivers information resources using the system.

However, web-based document delivery makes it easy to reproduce and distribute documents on a massive scale so it needs to find ways in which to protect copyright holders' rights.

This paper ① reviews the major changes in the information environment and the current trends and issues of document delivery service environment in Korea, ② identifies overseas cases of electronic document delivery service, ③ looks at the current status of the document delivery service with a focus on KISTI and introduces KISTI electronic document delivery service, ④ and evaluates the copyright issues for the service.

2. Current Trends and Issues in the Document Delivery Service Environment

2.1 Major Changes in the Information Environment

Document delivery service is provided with mutual cooperation between libraries and information centers in order to satisfy diversified and subdivided information needs of library users in the explosion of information beyond human control. However, it began to experience some changes in document delivery service focusing on information environment such as increases in the price of information resources and the development of information delivery technology.

Overall environmental change of document delivery service can be largely divided into 3 parts: First is the change in research information resources. Web-based communication has become common due to the development of the

internet and other information resources. More and more information producers and providers directly communicate with information users rather than passing through information intermediaries. In addition, the Open Access Initiative (OAI) campaign has emerged as an alternative to the price increases of research information resources, in which content producers and users share information without economic or technical barriers so that users from all over the world can freely access information.

Second, publications of electronic journals have substantially increased. According to Ulrich's Periodicals Directory (2005), out of the 230,000 titles of periodicals world-wide, 50,000 titles (22%) are electronic journals. 18,000 titles (64%) of 28,000 titles of Peer Reviewed journal are electronic journals. According to the holding status of overseas science and technology information resources in 2003 at KISTI (Korea Institute of Science and Technology Information), the document delivery service institute with the largest amount of

information resources on science and technology, the percentage of electronic journals and printed journals amount to about 64%, 36%, respectively. The holding percentages of electronic journals to printed journals are higher in small unit libraries and information centers.

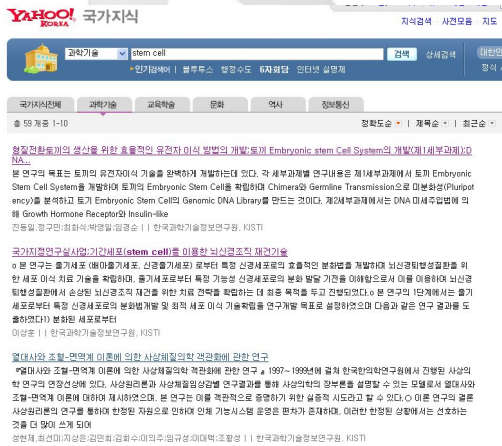
The third is the advent of electronic document delivery services through electronic means. Ariel, developed by Research Libraries Group (RLG), USA in 1991, is an application for an internet-based electronic document delivery system. It does not photocopy the document, but scans it, and allows it to send the electronic image document to the user through FTP/e-mail. Currently, the Ariel system is installed and used in about 6,000 institutes all over the world including Korea. In addition, with the advent of electronic document delivery services such as SDD (Secure Document Delivery) of Canada and SED (Secure Electronic Delivery) of England, we can witness the realization of on-site library services that enables us to

send the copyright-cleared documents to the user's desktop. Overall, approaches on information resources have substantially changed from conventional document copy in the past to electronic methods such as full-text linking and full-text download.

2.2 Trends and Issues of the Document Delivery Service Environment in Korea

Document delivery service environment in Korea has changed, focusing on expansion of approach point and sharing of information resources as an information consumer country rather than an information producer country. Web portal site connected service of the domestic information resource institute can be regarded as the main example. Web portal sites such as KTH, Yahoo!, and Empas execute a knowledge search service called "National Knowledge", in which 3 portal sites construct a consortium and provide about 200 million cases of metadata and full-text in science

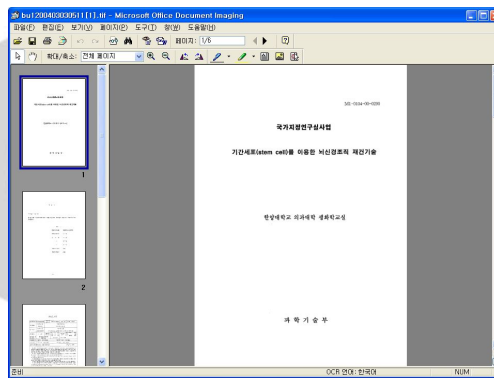
and technology, culture, history, information communication, and education areas in government institutes. For the science and technology area, it enables to search for bibliographic information such as research reports, academic journals and theses, provided by KISTI, and to view document information at KISTI's homepage. <Fig. 1> shows the process of ① searching for resources, ② checking bibliographic information and connecting to KISTI's homepage, and ③ receiving document information on Yahoo! National Knowledge Service through KISTI.



① searching for resources



② checking bibliographic information and connecting to KISTI's homepage



③ receiving document information on Yahoo! National Knowledge Service through KISTI

<Fig. 1> Web portal site connection service

In addition, various kinds of document delivery service institutes and consortiums coexist by topic, type of material, region and feature

of organization. KISTI as well as consortiums like KERIS, KJIST, MEDLIS are pursuing cooperation. However, librarians in charge of document delivery services should be fully aware of the various kinds of member systems, fee systems and service features per consortium and learn the various kinds of document delivery service platforms.

Fortunately, the NDSL (National Digital Science Library), one of the information service consortiums who had played a major role in document delivery service for overseas academic journals and proceedings, was transferred from KAIST to KISTI from Jan. 1, 2006 according to a decision by the national committee on science and technology. It can be regarded to accommodate changes in domestic document delivery service environment for expanding the approach for sharing of science and technology knowledge information to the national level.

With the appearance of electronic journal and the development of information delivery technology, the issue of copyrights on digital

reproduction and transmission has emerged. It is a serious issue not only in Korea but also on the world stage. Article 28 of the Copyright Act revised in 2004 specifies the restriction of copyrights in a library, which causes considerable disputes from translation and application, clearly showing us that there still remains legal restrictions in the reproduction and delivery of documents between libraries for the one-stop service.

3. Overseas Case Study of Electronic Document Delivery Service

3.1 Overview of Electronic Document Delivery Service

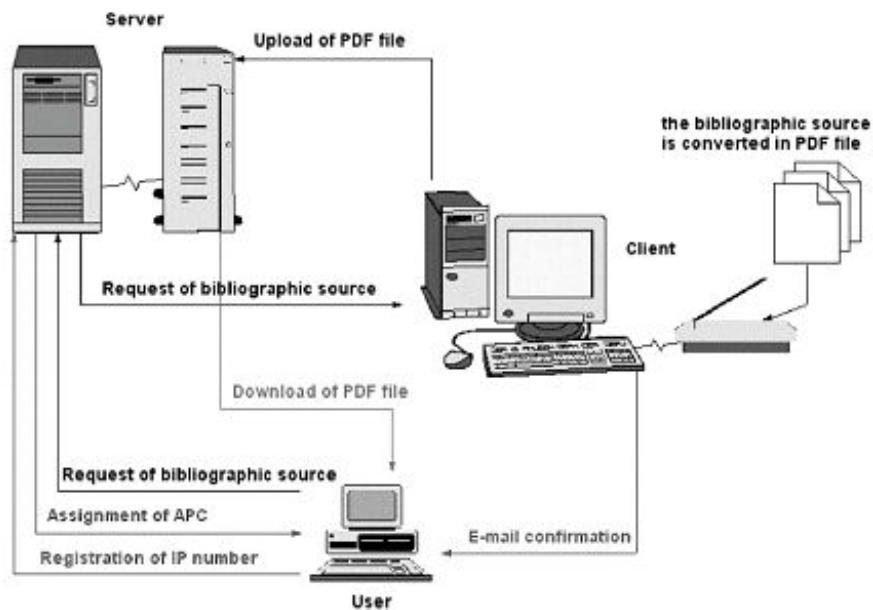
EDD is an electronic type of document delivery service based on the web rather than existing mail or fax. EDD had lots of related projects that were carried out in Europe in middle of 1990's. Bill Tuck (1997) divided Electronic document delivery service into

E(DD) and (ED)D. E(DD) (Electronic (Document Delivery)) is to provide the printed materials as document delivery service in electronic means. Printed form of material is provided to the users. (ED)D ((Electronic Document) Delivery) is to provide electronic documents to the users in electronic form.

This paper focuses on EDD in E(DD), which scans the printed form of materials, converts it into a PDF file and posts it on the web so that users can read the materials

from the internet (<Fig. 2>).

That is, when the request of user is received, it converts the literature to digital format (PDF file), posts it on a FTP server and sends the e-mail notification to the user. The user clicks the URL inserted in the body of mail to move to the page where he can log in with ID and password and view the literature. It may differ slightly depending on software, but it is common that information securing measures are taken so



<Fig. 2> EDD system process

(출처: Arte et al. 2003. "A Web-based document delivery system for scientific information management in Italian research libraries", *Interlending & Document Supply*, 31(2): 113)

that some documents cannot be viewed or printed out or the documents are removed from the server over some period of time once the document is viewed once.

Web-based EDD considerably shortens the document reproduction and delivery time, compared to the traditional document delivery method based on mailing or faxing. It offers higher resolution of documents and brings the effects of cost saving about 20~25% according to the Arte et al.'s research (2003). In addition, since it enables to obtain information directly at the user's computer rather than visiting the place where the materials are housed, it serves as a factor to enhance satisfaction of users for information services. EDD is widely used as the main channel for information distribution between libraries due to such features.

3.2 Overseas Case Study of Electronic Document Delivery Service

For the main overseas EDD examples, let's examine the case of

SDD (Secure Desktop Delivery) of CISTI (Canada Institute for Scientific and Technical Information) and SED (Secure Electronic Delivery) of BL (British Library).

CISTI is one of the world's major sources for information in all areas of science, technology, engineering and medicine. CISTI has developed a system, that allows users to order documents on the web and have them delivered to their desktop in a format compatible with Adobe Acrobat reader. SDD users will be able to view and print each copyright-cleared document once. SDD uses a customized Acrobat Reader Plug-in that enables the user to view and display the document requested in simple web interface. SDD plays a function of a web-based system effectively preventing reproduction, storage and re-distribution through this plug-in application.

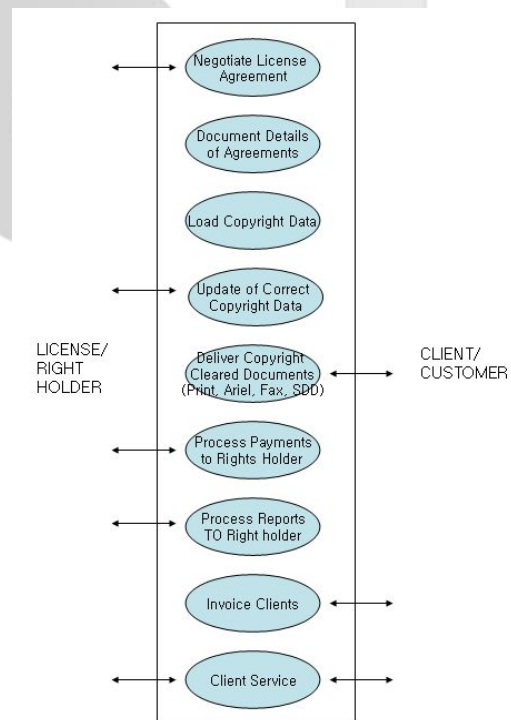
Materials provided through SDD include all journals held by CISTI. SDD is quick and reliable and can alleviate problems associated with other methods of delivery, such as fax quality, firewalls and e-mail server restrictions.

The document will be scanned and delivered to the web server usually within 24 hours of users' request. Once it is online, a document is available to users for three weeks. After users have viewed and printed the document, users will not be able to view and print again. The citation, or bibliographic information about the document will remain online until the end of the three-week period.

Major success factors of electronic document delivery methods include the negotiation of copyrights for electronic delivery with main publishers in science, technology and medicine. All copies provided by CISTI are copyright-cleared. They are covered by copyright agreements with Access Copyright (the Canadian Copyright Licensing Agency) and COPIBEC (Société québécoise de gestioncollectivedesdroits de reproduction), with Access Copyright with the US Copyright Clearance Center, and directly with publishers.

<Fig. 3> shows the copyright management system of CISTI in a diagram. CISTI has negotiated

agreements with copyright collective management societies and publishers. CISTI manages copyright information by examining copyright and license agreements for each literature in details, updating regularly and modifying them. At the request of users, it provides the materials with copyright issues solved. Copyright fees paid by the user are delivered to the rights holders, who will receive notice of the related details.



<Fig. 3> Copyright management system of CISTI

BLDSC, the lending library of BL, is the world biggest institute for document delivery services and collects materials on all topics such as science and technology, medicine, cultural science, social science as well as journals and proceedings.

SED of BLDSC scans the documents, posts them in a library server and sends e-mail notification including the hyperlinks of the relevant materials to the users so that they can view and print out. Over 100 million cases of scanned digital data can be delivered through SED and it is secure delivery service that legally protects the user himself and the institutes he belongs using the materials with copyrights issue perfectly solved.

The software users need for SED is the full version of Adobe Acrobat Reader, which can be downloaded for free from the web. First users will visit the SED web page to view and print the test page, and contact customer service to register an e-mail address to receive e-mail notification. When the user

designates SED as document delivery methods after searching of BL, BL retrieves the materials from DB, posts the document on the web server and sends an e-mail notification to the user. A hyperlink of the web server is given, indicating a request number and document. Users are allowed to access the web server to view the materials but it is restricted to once. They should access the materials within 14 days after receiving the e-mail notification, and the document is deleted from the web server after 14 days. If the user has not opened the materials from the link in the email notification, the user can simply forward the email message to his end users for them to open the materials. The end users also have to have the full version of Adobe Reader installed and activated on their computer. Users cannot make further electronic copies or convert the file into any other format. Also they cannot cut and paste or otherwise alter the text.

BL solves copyright problems on digital reproduction and transmission by entering into an agreement with

publishers, CLA (Copyright Licensing Agency), copyright owners and other authorized licensing bodies. The document delivered by SED has come from an electronic store or has been scanned from a paper or microform original, under licence from the publisher.

All documents set by SED require the additional payment of a copyright fee. The only exception to this is for British and Irish registered users wanting either Standard or 24 hour delivery, who can ask for the Library Privilege service, but 2 hour secure electronic delivery and all international always requires payment of a copyright fee. Copyright fees are set by the publishers, either by themselves or through their agents.

4. Current Status of Domestic Document Delivery Service and EDD

4.1 Current Status of Domestic

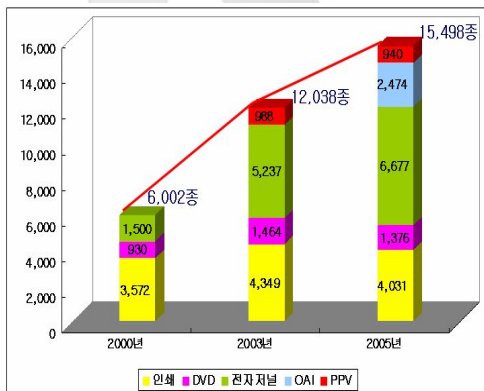
Document Delivery Service

The main goal of KISTI is to contribute to the promotion of international competitiveness in science and technology. To attain this objective, KISTI is devoted to collect, process and distribute science and technology information comprehensively and disseminate to industries, academic circles, and R&D institutes, etc.

In particular, “yesKISTI”, an integrated search site for science and technology information, provides DB such as journal articles, proceedings, research reports, patents, analyses, trends, manpower and seminar videos. <Table 1> shows DB services constructed by KISTI and provided through yesKISTI web site. Among them, the number of journals that can be retrieved about 15,500 titles (See <Fig. 4>). Users can search and download full-text of some materials which are copyright-cleared through yesKISTI web site. If KISTI provides only metadata of materials, users can request them by document delivery service.

<Table 1> Current Status of yesKISTI DB Construction

div.	DB	constructed records
article proceeding	domestic journal article	428,553
	domestic proceeding	224,262
	overseas journal article	14,956,806
	Chinese journal article	485,660
	overseas proceeding	5,866,639
	domestic thesis	807,934
	INSPEC	8,863,749
	FSTA	708,737
	open access articles	504,410
report	domestic, overseas report	220,130
patent	Korea, U.S., Japan, Europe, British, world patent	16,540,138
	analysis report	13,038
	trend report	105,829
	manpower	293,729

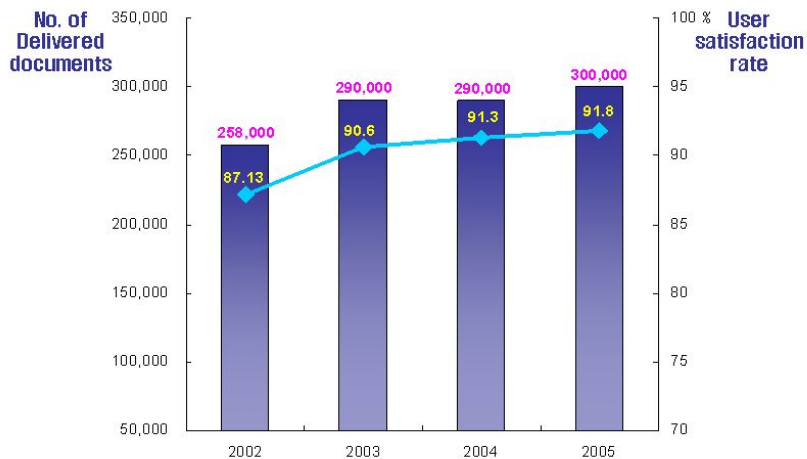


<Fig. 4> Current status of KISTI information resources holdings

The number of delivered documents on a monthly average

through KISTI is about 24,000 documents. This is the highest volume for document delivery services in Korea. 62% of the requests were delivered by post, 32% by courier according to the statistic of the documents delivered in 2005.

The scope of document delivery service by KISTI covers not only materials collected by KISTI but also materials held by many kinds of domestic libraries and overseas major information service institutes.

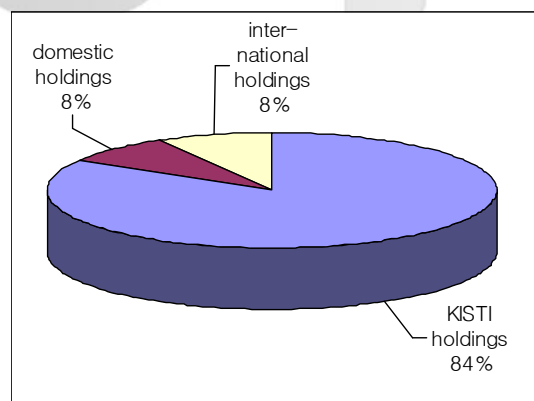


<Fig. 5> Number of documents delivered for the past 4 years and the level of user satisfaction

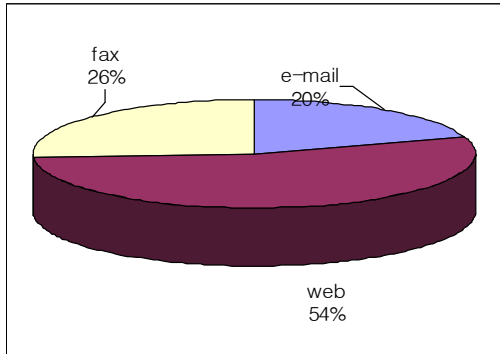
<Fig. 5> shows the total number of documents delivered for the past 4 years including collections of materials and other materials of institutes at home and abroad. The level of user satisfaction on overall document delivery service has also increased constantly. The percentage of KISTI resources delivered out of the total documents delivered for 2005 was about 84%. The percentage of documents provided through institutes at home and abroad is about 8%, each (<Fig. 6>).

Methods for requesting document delivery services for 2005 includes web-based use, sending faxes, and

e-mailing allowing request of documents at any methods that the user wants as much as possible (<Fig. 7>).



<Fig. 6> Percentage of documents delivered per holding institute



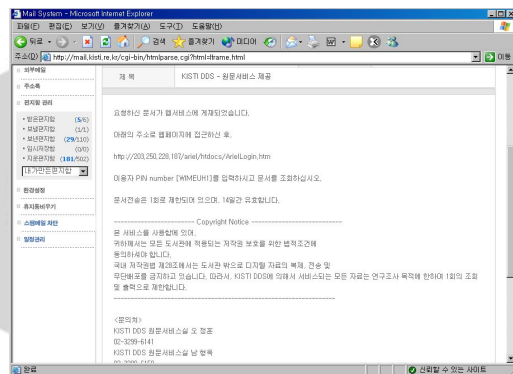
<Fig. 7> Percentage of documents delivered by requesting method

4.2 KISTI Electronic Document Delivery Service: e-DDS

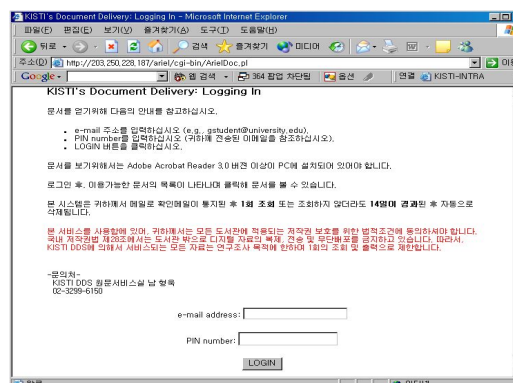
"e-DDS" is the web-based document delivery service in which the platform was developed by KISTI and is operated on a trial base currently. The system is operated the same way as SDD of CISTI and SED of BL. The e-DDS system is operated by producing separate modules based on the Ariel 3.3 version in IIS web server and FTP server operation environment.

When the document is scanned through Ariel and sent to the user, the user receives a e-mail notification as shown in <Fig. 8>. It includes a link to the e-DDS site

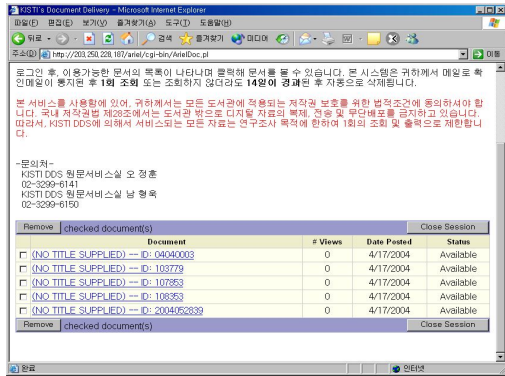
and a PIN for authentication, for the documents that are ready to be viewed. The service notification is sent through an e-mail and the real document is saved on a FTP server. When the user accesses the web page, a copyright notice is announced as shown in <Fig. 9> and <Fig. 10>. Finally the user gets the document as shown in <Fig. 11>.



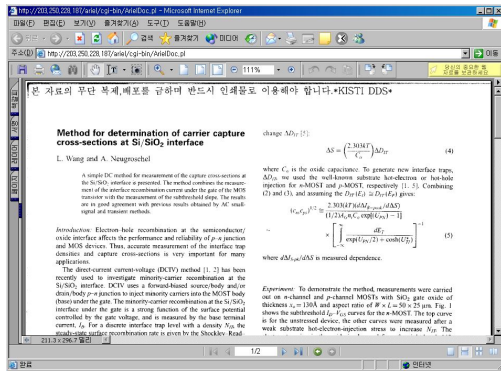
<Fig. 8> Send confirmation e-mail



<Fig. 9> Copyright notice for document access



<Fig. 10> Document confirmation page



<Fig. 11> Provided document

Available materials are restricted to KISTI holdings. Also materials should be over 5 years after publication according to the Article 28 (3) of the Copyright Act. Processing time of e-DDS is less than 24 hours after request of the user to scan and post the document on the web. It is posted on the web for 2 weeks unless the

user views it. Once it is viewed and printed out, it cannot be viewed or printed out anymore. The bibliographical information of document is always posted for 2 weeks. The document cannot be delivered or saved in order to protect the rights of the copyright owner. It arouses attention of users by posting the copyright warning notice on the document, the web page accessed by the user and the contents of e-mail sent to the user.

In addition, e-DDS system of KISTI can be regarded as a more advanced concept system than EDD systems of other institutes focusing on service delivery in that it can be operated as a mutual lending system with other institutes.

e-DDS system has all devices that EDD system must have for the protection of copyright holders' rights. However e-DDS, which is covered under the Copyright Act of Korea, has to consider one more thing, library remuneration system for its secure operation. More details on EDD system and copyright issues follows.

5. Electronic Document Delivery and Copyright Issues

e-DDS cannot be free from collision with copyright law in respect with digital reproduction and transmission. Since electronic forms of information can be copied quickly and easily, and distributed to many people in an instant, copyright issues should be considered in the operation of EDD.

The overseas SED and SDD system, introduced earlier, provide copyright-cleared documents. The e-DDS operation is not the same as that of SED and SDD in terms of processing of overseas copyrighted works.

First of all, Article 28 of the Copyright Act of Korea, "Reproduction in Libraries, etc" specifies some restriction on copyrights, and in particular, executes the remuneration system for printing of digital format documents as well as reproduction and transmission between libraries.

Library remuneration system

specifies to pay remuneration as determined by the Ministry of Culture and Tourism later on after using (reproducing, transmitting) the copyright first without approval of copyright owner. This system is a kind of "legal permission system" that restricts rights of reproduction and transmission of rights holders so as to allow digital reproduction and transmission between libraries.

It is to pursue balance of interests by compensating financially for specific services, rather than restricting the exclusiveness of copyright.

Materials not applicable with library remuneration system are the materials not protected with the Copyright Act, materials with copyright expiration or materials with approval of use from the copyright owner. The acts applicable with this system include a case of reproducing the digital format of a book or a case of transmitting materials to other libraries. In particular, for the case of reproducing digital format of book, it is applied to printing of digital materials transmitted from other library, printing from DB built

by the library and printing of books purchased and held by libraries.

However, in reality, it has some problems operating the e-DDS

<Table 2> Library Remuneration

Notice of Ministry of Culture and Tourism No. 2003-9.

Div.		Print	Outside Transmission /(Including reproduction for transmission)
Book	For sale	5 won for 1 page	20 won for 1 file
	Not for sale	3 won for 1 page	-(0 won)
Periodical	For sale	5 won for 1 page	20 won for 1 file
	Not for sale	3 won for 1 page	-(0 won)

Remuneration amount is based on the standard fixed and announced by the Ministry of Culture and Tourism in accordance with Article 28 (5) of the Copyright Act (See <Table 2>) and levied to the libraries performing printing or transmission. Remuneration should be paid directly to copyright owners or copyright organizations. KRTRC (Korea Reprographic and Transmission Rights Center) is designated as an institute for distributing library remuneration.

Since document delivery service through e-DDS corresponds to reproduction and transmission of digital materials, it should comply with the library remuneration system specified in the law.

service to comply with library remuneration system which is illustrated below.

First, with regards to scanning and transmitting of printed materials for e-DDS service, materials available through e-DDS service are mostly overseas resources in science and technology area purchased by KISTI and currently requested materials from uses are typically less than 5 years after publication. However, Article 28 (3) of the Copyright Act restricts the materials with publication years of over 5 years to be transmitted between libraries. Restriction of publication years presents problems in reality due to nature of science

technology documents focusing on up-to-dateness. It is clear that the discretion of '5 year' is open for dispute.

Second, it is related to the payment of remuneration for viewing and transmission of copyrighted works. It is specified to pay remuneration when viewing and transmitting materials and printed overseas works possessed by KISTI, but it is open to question whether the remuneration amount can be distributed to relevant rights holders most of whom are foreigners. At present, Korea Reprographic & Transmission Rights Center plays a role of receiving the remuneration from users or libraries for use of these documents held by the National Library of Korea and the National Assembly Library of the republic of Korea, and distributing them to their respective copyright holders. Since the center does not enter into copyright agreement with the USA, the main supplier of overseas materials, on the government level, the center receives remunerations announced in Korea, finds out the relevant foreign rights holders and

distributes the remuneration. Materials available for service of KISTI include overseas journals, proceedings, technical reports and etc. whose authors are foreigners. It is unreasonable to apply the remuneration amount currently announced (20 won as transmission fee for 1 file for sale, 5 won for 1 print page). It is also open to question whether it can be properly distributed to relevant rights holders and whether the relevant rights holders content to that copyright fee even though Kim (2005) said the copyright owners cannot determine whether to allow their works to be used, but just charge for price for the usage.

The third, there is a problem in clear distinction of e-DDS service and use of Ariel s/w. e-DDS service is operated based on Ariel s/w and uses the function to scan and transmit the materials through Ariel s/w. The reason why it is problem is because there are various opinions about whether Ariel transmission between libraries is included in the library exemption under the current Copyright Act of Korea Libraries are reluctant to

transmit using Ariel and fax these days. Accordingly, it is difficult to determine whether e-DDS service using Ariel s/w is exempted.

5. Conclusion

There has been increasing the importance of document delivery services in libraries and document delivery institutes recently. Changes in document delivery service environment such as spread of web-based research information communication and direct communication between users and information providers have considerable effects on libraries and information suppliers. Swift advances in information technology have allowed users to receive information on their desktops via web.

Electronic document delivery service is the worldwide trend following the changes in the information environment. There is no postal delays, no need to buy a expensive software to get the materials. Web-based document delivery, however, makes the

massive scale of reproduction and distribution possible so it need to protect the copyright holders' rights.

In case of overseas electronic document delivery services, they have delivered copyright-cleared documents. CISTI and BL have negotiated agreements with copyright owners and copyright related groups such as copyright collective management societies, authorized licensing bodies and publishers.

The users of e-DDS, the EDD service operated temporarily by KISTI, should remain fully copyright compliant. Most of the items requested and delivered by e-DDS are foreign works. When it comes to digital reproduction and transmission of foreign works, they are covered by mutual management contracts between the copyright clearing centers of the countries. A copyright clearing center of Korea, which may be referred to KRTRC, should keep trying to enter into agreements with foreign centers, which make digital reproduction and transmission of foreign copyrighted works in Korea

possible.

KISTI, may enter into negotiations with major publishers who have the rights of digital reproduction and transmission. It can be a simply and convenient way to get permissions from the copyright owners paying copyright fees under the agreements.

The Copyright Act revised in 2004 has been causing considerable disputes from translation and application. It is required to guarantee reasonable rewards to rights holders through legal review on the conflicting issues under the Copyright Act. For this purpose, lots of discussions should be carried out on the current Copyright Act between persons concerned in rights holders, publishers, information service providers and libraries. In addition, we should have the attitude of understanding and having interests in copyrights when using copyrighted works through any means.

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