Effect of NDSL Open Service(NOS) on Sharing S&T Information

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1. Introduction

This paper is a case study on sharing science and technology information through the Open Application Programming Interface (API) in Korea Institute of Science and Technology Information (KISTI). KISTI has shared the national science and technology information, such as journal articles, patents, technical reports, standards, and trends with users through a portal system called National Discovery for Science Leaders (NDSL). In 2010, KISTI implemented an OpenAPI called NDSL Open Service (NOS) to increase sharing of the national R&D research results among users through major portals, institutes, and universities in Korea. The NOS participants can access the technical reports from their website directly instead of having to use the NDSL platform. Usage of technical reports has increased dramatically since the implementation of NOS. This study analyzes the effect of NOS on the usage of national science and technology information by examining the changes in usage amount and the number of participating organizations in NOS.

2. NDSL Open Service

NDSL Open Service is a service environment that allows information institutions and researchers to freely use contents and services restricted on the web site platform of NDSL that constructs the national science technology information, such as dissertations, patents, and reports by introducing up-to-date open technology such as OpenAPI. In distribution of academic information, the activity for sharing and dispersing information is being conducted in two methods of OAI protocol-based open access form that allows free access of the content, and the method of sharing resources through OpenAPI. The OAI-PMH(Open Archives Initiative Protocol for Metadata Harvesting) method, which is the standard protocol used for open access content distribution is an open protocol used for collection and dispersion of metadata. OpenAPI method is the method that opens up standard interface in web services form for specific services and functions to be used, and is based on REST protocol or SOAP protocol. NOS is divided in three types that provides metadata based on OAI-PMH protocol, and OpenAPI based on REST-protocol and SOAP-protocol, sharing and opening the contents of NDSL. The three methods differ in scope and the utilization steps of the contents being opened.

[Table 1] NOS Types

Type	stOAI	OpenAPI	
Protocol	OAI-PMH	REST	SOAP
Contents	domestic articles , R&D reports, S&T trends	articles, patents, R&D reports, S&T trends, standards	Articles
Services	metadata, full-text link	search, browse, DDS(Document Delivery Service) , link resolver	search, browse, DDS
Data transmitting method	XML	RSS XML JSON	XML
Authentication method	IP authentication	API Key authentication	Partners only

3. Research design and methods

The number of universities, institutes and portals using NOS and the usage statistics of science and technology information through NOS was examined from 2010 to 2013. The statistics were obtained from the NOS usage monitoring system. This study analyzed the usages of science and technology information, such as journal article, national R&D technical reports, S&T trends shared by NOS. Analyzed usage statistics include the number of detailed content views and full-text views trough NOS.

4. Result of survey research

Number of institutions using NOS has increased every year, reaching 95 institutions as of December 2013, and as seen in Figure 2, number of institutions using OpenAPI is rapidly increasing from 2011. The participants include universities, research institutes, and major portals such as Seoul National University, Korea Advanced Institute of Science and Technology, NAVER, Samsung Electronics, etc.
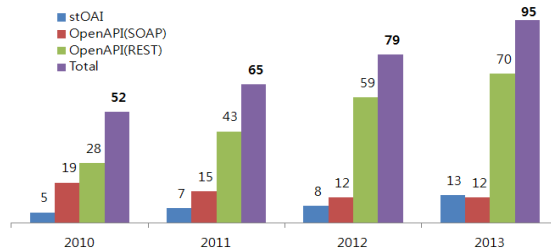

Figure 1. NOS organizations (2010-2013)

The usages of articles and reports have increased by about 2 million and 1.8 million respectively in detailed content views as of December 2013. The usages of articles and reports have increased by about 3.7 million and 3.1 million respectively in the Full-text views. The usages of science and technology information in search, detailed content views, and full-text views have increased through NOS. KISTI is providing sharing service through NOS to share the contents and service of NDSL. Using NOS, contents and service provided by NDSL can be used through website of local institution without accessing NDSL website. As number of institutions using NOS increases, more users are accessing electronic original text through NOS, not using the information by directly accessing to NDSL, and as of December 2013, over 50% of all users of NDSL are accessing through NOS.
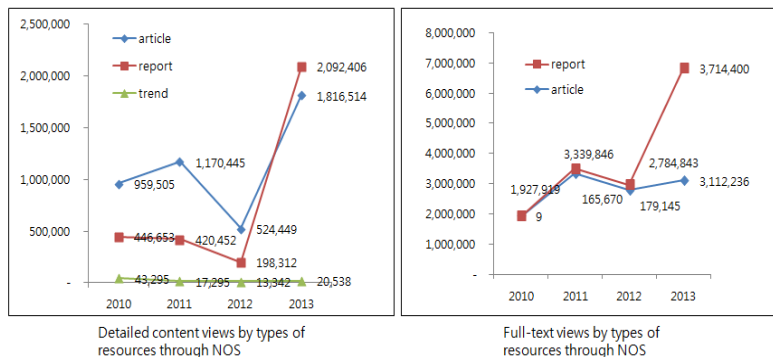

Figure 2. Usages by types of resources through NOS (2010-2013)

5. Conclusion

Science and technology information, such as journal article, national R&D technical reports, S&T trends are being shared among users through various portals, universities, research institutes, and companies through NOS. The usage of the science and technology information has increased dramatically since NOS implementation in 2010, which has contributed to spread the R&D research results. Through NOS, the Korean R&D research results as national knowledge asset can be utilized by a vast number of users for creating new studies and avoiding duplication of research.

6. References

[1] M.H. Hyun, S.M. Shin, and W.J. Kim, "Study on Sharing and Spreading of Academic Information : Focused on the Case of NDSL Open Service", The 3rd International Conference on Convergence Technology 2013, Korean Convergence Society, 2013.7, pp. 1034-1035