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## **Digital Collaboration: Linkages among Local History Collections in Japan**

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### **Abstract:**

*The provision of digital collections built by the university libraries started to provide the service to the public in the mid-1990s, and then the class of prefectural library which is a main library in each prefecture started in the mid-2000s. The NDL Search is enlarging the number of libraries and aggregators which supply their metadata to the NDL Search, however, the metadata which was acquired by the NDL Search is not all of what the digital collections of local history resources served by libraries. Recently, a trial version of new portal “Japan Search” which links digital archives in the publications, cultural properties, and media arts fields started in February 2019. The new portal “Japan Search” organizes metadata from a wide variety of contents owned by Japanese institutions and organizations. The originality of this paper is to clarify their linkages among the digital collections of local history resources on the NDL Digital Collections, university libraries, prefectural libraries, regional repositories, a cloud service for digital collections, museums, archives and other memory institutions in Japan. And then what differences on their linkages of digital collections of local history resources between NDL Search and Japan Search are discussed based on the results of this study.*

**Keywords:** digital collections, local history resources, libraries, memory institutions, Japan.

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### **Introduction**

The rapid transformations of libraries have undergone in recent years. In larger social context, one of the reasons is thought of as follows. the development of the library is consistent with the three modes of culture from 1.0 towards 3.0: public patronage, marketization and active cultural participation (Jochumsen, et al. 2015). Currently, libraries play an important role as parts of the digital, smart, knowledge and creative infrastructures of the modern societies (Mainka, et al. 2013). Moving towards the field of digital preservation in our societies, the

research in digital libraries and digital preservation has progressed side by side for nearly two decades both with the same broad mission to make digital information accessible and useable to the user community of the present and future (Chowdhury, 2010).

The service for digital collections in public library started with the class of prefectural library which is a main library in each prefecture in the mid-2000s (Kubo, 2008). In the United States, virtually every public library offers public Internet access, however, all libraries are not equal with rural public libraries lagging behind libraries in more populated areas in providing technology services (Real, et al. 2014). The public libraries in Japan face a similar situation as the public libraries of the United States were played out the gap of technology services between rural areas and cities. The number of public libraries providing their resources on the Web were 121 in 2007(Kubo et al., 2008). This figure is quite low compared to 3,111 public libraries of the same year in Japan. The proportion of public libraries providing their resources on the Web is 43.5 % of the total number of prefectural libraries. The large public libraries such as prefectural libraries started to provide the collections of digital archives on their Web in the mid-2000s.

During the ensuing decade, most prefectural libraries currently provide the service of digital collections on their websites. Since the city, town and village libraries are relatively small size, if these libraries and institutions begin to start the service of digital collections individually, the service might not start lightly (Nagatsuka, et al. ,2017).

The current status about the digital collections at libraries in Japan and described about the relationships and linkages among the digital collections at libraries. The future directions about the digital collections at libraries were discussed. Since this study is in the early stage of making an analysis on the relationships and linkages among the digital collections at libraries, more research will be needed to understand the advanced service of the digital collections at libraries in the future(Nagatsuka, 2019).

Recently, a trial version of new portal “Japan Search Beta” which links digital archives in the publications, cultural properties, and media arts fields started in February 2019. Japan Search Beta organizes metadata from a wide variety of contents owned by Japanese institutions and organizations(The Direction, 2017).

The originality of this paper is to clarify their linkages among the digital collections of local history resources on the NDL Digital Collections, university libraries, prefectural libraries, regional repositories, a cloud service for digital collections, museum, archives and other memory institutions in Japan. And then what differences on their linkages of digital collections of local history resources between NDL Search and Japan Search are discussed based on the results of this study.

### **Digital Collections in Libraries**

The university libraries in Japan offer two types of digital collections which are institutional repositories and digital archives created by them from their special collections. The institutional repositories what mean “digital archives of research findings”, and the digital archives what mean “digital archives of collected materials” (Research Report, 2009). Many university libraries have already introduced the institutional repositories for providing their research findings and related materials to the public. The IRDB (Institutional Repositories DataBase) serves the metadata of digital collections which is collected from each institutional repository of university library to the users (Fig. 1).

The users can retrieve the metadata of digital collections what libraries provided to the NDL Search as shown in Fig. 1. Recently, the NDL Search is enlarging the number of libraries and aggregators which supply their metadata to the NDL Search, however, the metadata which was acquired by the NDL Search is not all of what the digital collections served by libraries in Japan (Nagatsuka, 2018). About 10 years ago, we can only access the digital collections separately through each website of library and there were the linkage from the websites of libraries only linking to the external databases such as the “National Diet Library Digital Archive Portal” (PORTA) in NDL and the “National Archives of Japan Digital Archive” in National Archives of Japan. There are great differences between the prior status 10 years ago and the present status to access the digital collections as shown in Fig. 1.

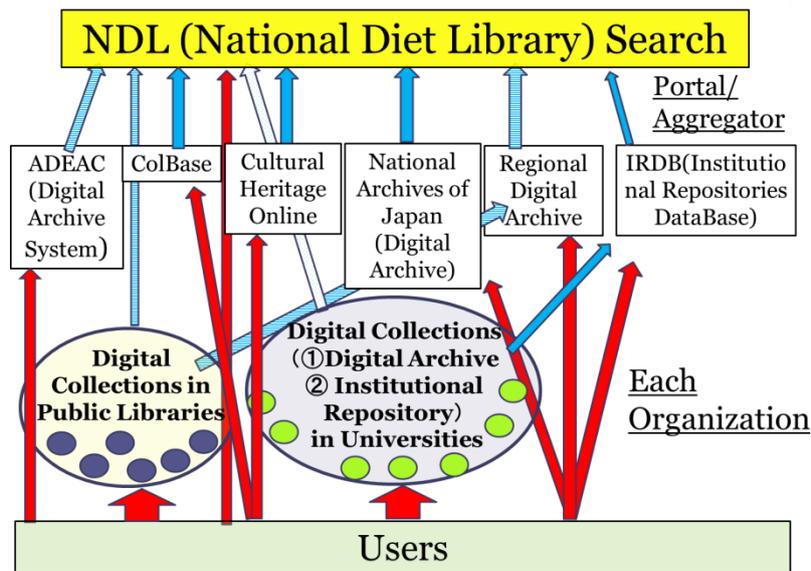


Fig. 1 Digital Collections in Libraries

### Japan Search Beta

Japan Search Beta (<https://jpsearch.go.jp/>) has started a trial service in 2019. The relation between Japan Search Beta and organizations which are supplying the metadata from their databases is shown in Fig. 2.

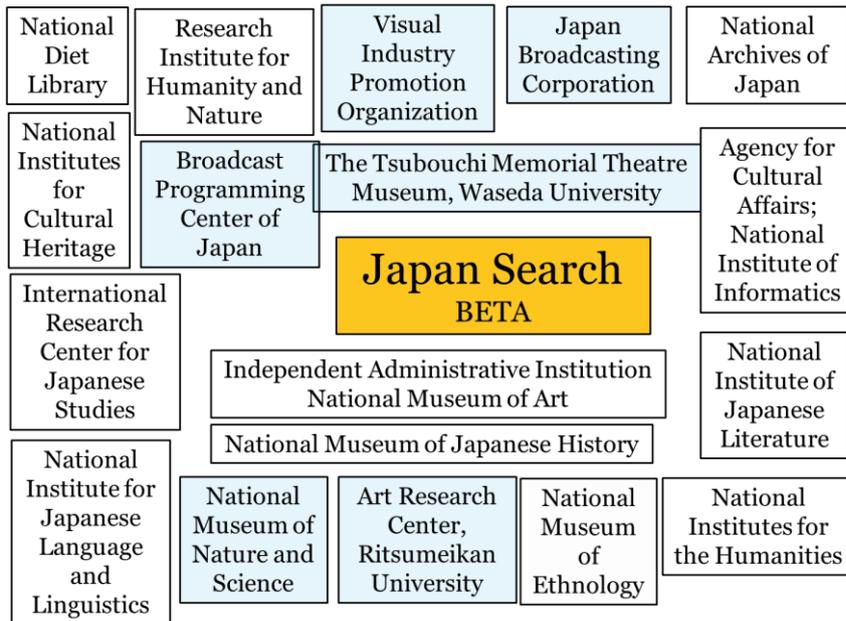


Fig. 2 The organizations supplying the metadata from their databases to Japan Search Beta  
 \*The blue coloured organizations do not offer a database on NDL Search. The white coloured organizations offer a database on NDL Search.

Japan Search Beta links digital archives in the publications, cultural properties, and media arts fields and organizes metadata of varying of contents preserved by Japanese institutions and organizations. Japan Search Beta aspires to become “national, integrated and cross-sectoral portal website”. Aside from providing searchable aggregated metadata, Japan Search Beta provides metadata in a user-friendly format and also plays a vital role as a foundation for promoting content utilization (The Direction, 2017).

### Local History Resources in NDL Search and Japan Search Beta

The numbers of records searched by "地方史" or "郷土史" as Japanese terms which mean "local history" on NDL Search and Japan Search Beta shown in Table 1. The total numbers of records searched by "地方史" were 18,611 in NDL Search and 4,227 in Japan Search Beta, respectively. The total numbers of records searched by "郷土史" were 31,146 in NDL Search and 7,370 in Japan Search Beta, respectively. The numbers of records searched by using two terms in NDL Search were more than four times larger than ones in Japan Search Beta. The difference in the number of records between NDL Search and Japan Search Beta might be caused by the difference in size of collected metadata between two portal services. The numbers of aggregators and sites which are collecting the metadata in NDL Search are significantly larger than ones in Japan Search Beta.

Table 1. The numbers of records searched by "地方史" or "郷土史" on NDL Search and Japan Search Beta.

Search Term (Japanese)	地方史				Search Term (Japanese)	郷土史			
Name of Portal Site	NDL Search	%	Japan Search	%	Name of Portal Site	NDL Search	%	Japan Search	%
Total number of records	18,611	100	4,227	100	Total number of searches	31,146	100	7,370	100
The number of records in the category of Digital Materials	5,503	30			The number of records in the category of Digital Materials	9,146	29		
<b>Database name</b>					<b>Database name</b>				
NDL Periodical Index	5,238	28			Public Libraries Catalog	14,115	45		
Public Libraries Catalog	4,609	25			CiNii Books	4,199	13		
Japanese National Bibliography			2,112	50	NDL Digital Collections	3,900	13	3,855	52
NDL Digital Collections	2,091	11	2,073	49	Japanese National Bibliography			3,443	47
CiNii Books	1,975	11			Akita Prefectural Library Digital Archive	2,913	9		
IRDB	1,634	9			Collaborative Reference Database	1,488	5		
Akita Prefectural Library Digital Archive	1,336	7			Eichi no Mori Web (Miyagi Prefectural Library)	1,329	4		
NDL Online	1,199	6			JapanKnowledge	572	2		
Collaborative Reference Database	573	3			NDL Periodical Index	462	1		
CiNii Articles	202	1			Union Catalog of Agriculture, Forestry and Fisheries Research Insititute's Libraries	212	1		
Union Catalog of Agriculture, Forestry and Fisheries Research Insititute's Libraries	162	1			IRDB	169	1		

\* The NDL Search and Japan Search have been searched on August 6, 2019.

\*The databases retrieved over 100 records were listed.

Each record format searched by "地方史" or "郷土史" on NDL Search are shown in Table 2. The record format retrieved by the word "地方史" is composed of Book (51%) followed by Digital Materials(30%) and Article・Thesis(30%). On the other hand, the record format retrieved by the word "郷土史" is composed of Book (77%) followed by Digital Materials(29%) and Reference(7%). Overall, it is clear the book is higher ratio than the other record formats

Table 2. The numbers for each record format searched by "地方史" or "郷土史" on NDL Search

Search Term (Japanese)	地方史	%	Search Term (Japanese)	郷土史	%
Total number of records	18,615	100	Total number of searches	31,152	100
<b>Record Format</b>			<b>Record Format</b>		
Book	9,450	51	Book	23,968	77
Digital Material	5,505	30	Digital Material	9,148	29
Article・Thesis	5,495	30	Reference	2,070	7
Reference	637	3	Article・Thesis	555	2

\* The NDL Search has been searched on August 2, 2019.

The "Book" record format occupied the highest percentage among all record format on NDL Search has been shown in Table 2. The list of databases contained in the records on the "Book" record format which occupied is shown in Table 3. The database of "Public Libraries

Catalog” was the the largest part in both of the searched words "地方史" (49%)and "郷土史" (59%). The metadata of Public Libraries Catalog is harvested by NDL from each public library which signed an agreement with NDL. The most of “Book” records from Public Libraries Catalog are limited metadata only. It needs more research for clarifying the relation between the metadata and the digital contents in Public Libraries Catalog. The ranking of NDL Digital Collections showed the second or third order in all databases. The most of records from NDL Digital Collections include both metadata and digital contents of the original source.

Table 3. The record format of book searched by "地方史" or "郷土史” on NDL Search.

<b>Search Term (Japanese)</b>	地方史	%	<b>Search Term (Japanese)</b>	郷土史	%
Total number of records	18,615	100	Total number of searches	31,152	100
<b>Record Format</b>			<b>Record Format</b>		
Book	9,450	51	Book	23,968	77
<b>Database</b>			<b>Database</b>		
Public Libraries Catalog	4,611	49	Public Libraries Catalog	14,119	59
NDL Digital Collections	2,084	22	CiNii Books	4,199	18
CiNii Books	1,975	21	NDL Digital Collections	3,900	16
NDL Online	1,199	13	NDL Online	3,454	14
Union Catalog of Agriculture, Forestry and Fisheries Research Insititute's Libraries	162	2	Union Catalog of Agriculture, Forestry and Fisheries Research Insititute's Libraries	212	1

\* The NDL Search was searched on August 2, 2019.

\*The databases retrieved over 100 records were listed.

### Local History Resources in the Portal and Aggregators

The NDL search as a portal and aggregators of digital collections in the libraries are growing recently (Fig. 3). The NDL Search is enlarging the number of libraries and aggregators which supply their metadata to the NDL Search, however, the metadata which was acquired by the NDL Search is not all of what the digital collections of local history materials served by libraries.

Japan Search Beta has started a trial service in 2019. The relation between Japan Search Beta and organizations which are supplying the metadata from their databases is shown in Fig. 3. The users should also access the digital collections separately through each website of library and also access to aggregators of digital contents directly. Main aggregators are described as below.

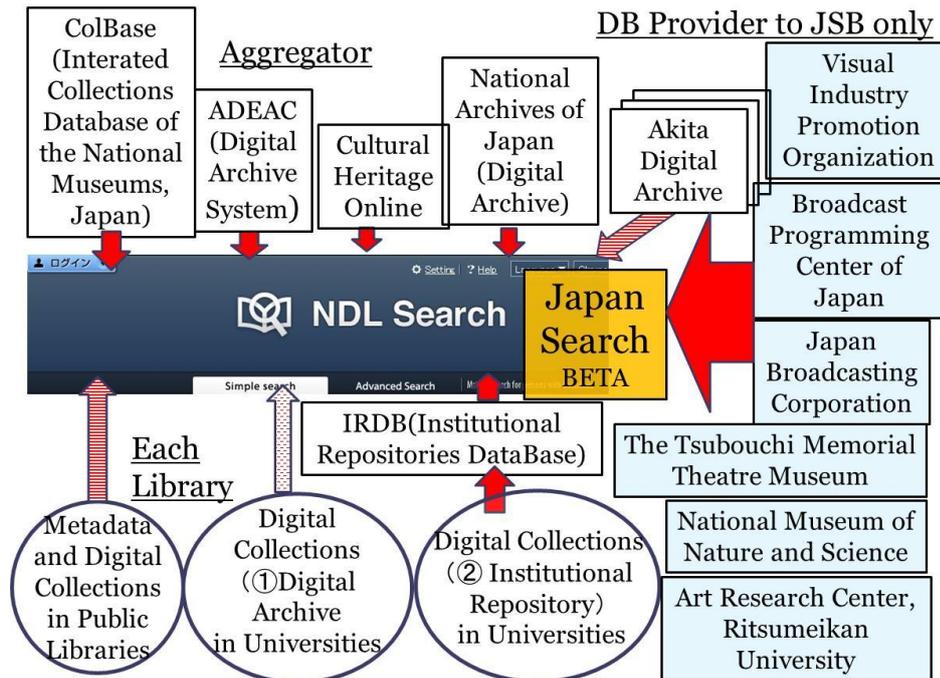


Fig. 3 The NDL Search and Japan Search Beta as portals of local history resources.

### 1) NDL (National Diet Library) Search

The NDL Search has enlarged the number of libraries and aggregators which supply their metadata to the NDL Search in recent years (Fig. 1). The NDL transmits the information to each user or group for a purpose through the use of API. Each user or group can build a special collection by the metadata which was acquired from the NDL through the use of API. As described above, the NDL Search is enlarging the number of libraries and aggregators which supply their metadata to the NDL Search recently, however, the metadata which was acquired by the NDL Search is not all of what the digital collections served by public libraries and university libraries in Japan. Remarkably, the metadata of digital archives collected resources in each university library put on the NDL Search very little.

### 2) IRDB (Institutional Repositories DataBase)

IRDB (<https://irdb.nii.ac.jp/en>) provides academic information such as journal articles, theses or dissertations, departmental bulletin papers, research papers, etc. which are accumulated in institutional repositories being run by university libraries in Japan to the users.

### 3) Cultural Heritage Online

The Cultural Heritage Online covers both tangible objects such as paintings, buildings and other artefacts, and intangible objects including theatre performances and dance, as well as art that creates artefacts. The key issues in system design are mechanisms for continuous search-and-navigation through a combination of content- and structure-based retrieval. The metadata of digital contents created by the Cultural Heritage Online provides to the NDL.

### 4) ADEAC (Digital Archive System)

The ADEAC (A system of Digitalization and Exhibition for Archive Collections) as a cloud service for digital collections has started in 2013. The ADEAC (<https://trc-adeac.trc.co.jp/>) has a lot of view and search functions for the digital collections such as multi-display, simultaneous display, 3D display screens, high-resolution display, full-text search and cross search. The relatively small size public libraries such as city, town and village library had

come to provide the service for digital collections on the platform of ADEAC because the ADEAC approach for digital collections is less expensive than the development of whole system for digital collections or archiving.

### **5) Regional Aggregators**

A website of digital collections named as “Akita Prefecture Digital Archive” (<http://da.apl.pref.akita.jp/lib/>), which is constituted by Akita Prefectural Library, Akita Prefectural Museum, Akita Museum of Modern Art, Akita Prefectural Archaeological Center, Akita Prefectural Life-Long Learning Center, Akita Literature Center and Akita Prefectural Archives. The website of “Akita Prefecture Digital Archive” is a good example as the network of digital collections among many types of cultural organizations such as public libraries, museum, archives, archaeological center and life-long learning center at a prefectural level. The Akita Prefectural Library Digital Archive within Akita Prefecture Digital Archive is only serving the metadata of digital collections to the NDL Search.

The second is a website of “Eichi no Mori Web” which is run by Miyagi Prefectural Library (<http://eichi.library.pref.miyagi.jp/>). The website being set up the bibliographic data of local history, newspaper index related local resources published on local newspapers, newspaper index related libraries published on local newspapers and digital collections housed old resources in Miyagi Prefectural Library is a typical instance of serving the bibliographic data and digital contents related with local historical collections and news by a local government body. The “Eichi no Mori Web” is as one of representative examples of which digital contents related with local historical collections serve on the Web.

The third is a website of “Digital Okayama Encyclopaedia” which is run by Okayama Prefectural Library (<http://digioka.libnet.pref.okayama.jp/en/>). The Hometown Information Network in Digital Okayama Encyclopaedia is as a navigator to local history resources in Okayama prefecture and also provides the digital contents of local history resources in Okayama prefecture.

The fourth is a website of digital collections named as “Northern Regions Literature Digital Library” (<http://www3.library.pref.hokkaido.jp/digitallibrary/>), which is provided by Hokkaido Prefectural Library, The Archives of Hokkaido, Hokkaido Archaeological Operations Center and City Libraries. The website of “Northern Regions Literature Digital Library” is an example of the network on digital collections among cultural organizations such as archives and archaeological operations center, and prefectural and city’s public libraries at a prefectural level.

Nowadays, most prefectural libraries provide the service of digital collections on their websites. The libraries in many designated cities or core cities already began to start the service of digital collections, and some libraries in towns or villages also started the service of digital collections. The number of libraries which are offering the service of the digital collections has been on the increase recently. Previously, the service of digital collections in each library was served separately in many cases.

### **Different Forms of Serving Digital Collection of Local History Resources**

The best practices of digital archiving projects conducted by public libraries in Japan were surveyed by the National Diet Library (NDL) in 2010. The NDL surveyed 23 domestic public libraries actively conducting digital archiving projects to provide contents and/or information about their regions including 3 local governments. In this survey, interviews by e-mail were

conducted about the start of digital archiving projects, contents, process and framework for construction of digital archives, daily work and issues, participation of regional residents, cooperation with other institutions, use of commercial services, future prospects, etc (Digital Library Division of NDL, 2010). The prefectural libraries play an important role as a digital collection center within a prefecture for serving the digital contents such as local history and others. The role of prefectural libraries might be increasing in the future.

A typical example of the digital archives of local history resources in a university library is “” by Wakayama University Library. The Local Collection Digital Archives of which the local collections are hold by Wakayama University Library are to provide the widest possible public access through one of aggregators named ADEAC already introduced on the paper (<https://trc-adeac.trc.co.jp/WJ11C0/WJJS02U/3071055100>). The metadata of ADEAC is providing to the NDL Search.

### **The Relation between NDL Search and Japan Search Beta in Local History Resources**

The numbers of records searched by "地方史" or "郷土史" as Japanese terms which mean "local history" on NDL Search and Japan Search Beta shown in Table 1. The numbers of records searched by using two terms in NDL Search were more than four times larger than ones in Japan Search Beta. The difference in the number of records between NDL Search and Japan Search Beta might be caused by the difference in size of collected metadata between two portal services (Fig 2 and 3). The numbers of aggregators and sites which are collecting the metadata in NDL Search are significantly larger than ones in Japan Search Beta.

The National Diet Library (NDL) Search has enlarged the number of libraries and aggregators which supply their metadata to the NDL Search in recent years. Currently, the users should also access the digital collections separately through each website of library and also access to aggregators of digital contents directly (Fig. 1). Nevertheless, the NDL Search is enlarging the number of libraries and aggregators which supply their metadata to the NDL Search recently, the metadata which was acquired by the NDL Search is not all of what the digital collections served by libraries in Japan.

### **Discussion**

The users can retrieve the metadata of digital collections of local history resources what public libraries and cultural organizations are providing to the NDL Search and Japan Search as shown in Fig. 3. Recently, the NDL Search and Japan Search are enlarging the number of libraries and aggregators which supply their metadata to the NDL Search or Japan Search, however, the metadata which was acquired by the NDL Search or Japan Search are not all of what the digital collections of local history resources served by public libraries and cultural organizations in Japan.

The “Akita Prefecture Digital Archive” is only providing the metadata of Akita Prefectural Library Digital Archive to the NDL Search. The metadata of other digital collections of local history resources that Akita Museum of Modern Art Digital Archive, Akita Prefectural Museum Digital Archive and etc. can not retrieve on the NDL Search.

The users have now multiple access pathways to the digital collections of libraries as shown in Fig. 1. The first pathway is to access each website of library searching and/or reading the digital collections directly. The second pathway is to access the digital collections through the “NDL Search” as a portal site for library users which collects metadata (Ohba, 2015). The third pathway is to access the digital collections through a cloud service as ADEAC which

expands the access points to the digital collections such as cross-search and full-text search and also provides a wide variety of display functions such as multi-display, simultaneous display, 3D display screens and high-resolution display. Nowadays, the users should approach the digital collections at libraries through using several strategies.

Nowadays, there are public libraries over 3,000 and university libraries over 750 in Japan. It is considered that the number of libraries which provide the digital collections of local history resources to the users should be necessary to increase further in the future. At the same time, when we try to access the digital collections of local history resources, the one-stop access point of digital collections of local history resources such as the NDL Search and Japan Search is a very important factor to receive relevant search results from the digital collections of local history resources in libraries(Tanaka, 2016).

Finally, we hope more digital collections of libraries and cultural organizations are able to access through the NDL Search and Japan Search, and the digital collections of local history resources which are served by libraries and cultural organizations expand the range of the collections in the future.

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