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The Relationships and Linkages among the Digital Collections at Libraries in Japan

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Abstract:

This paper introduces the current status about the digital collections at libraries in Japan and describes about the relationships and linkages among the digital collections at libraries, and then discusses the future directions about the digital collections at libraries. The service for digital collections in library started with the university libraries in the mid-1990s, and then the class of prefectural library which is a main library in each prefecture started in the mid-2000s. This is to clarify their responsibilities and relationships of the digital collection service on the National Diet Library, university libraries, prefectural libraries, city, town, village libraries, regional repositories and the ADEAC as a cloud service for digital collections operated by a private company. 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. The originality of this paper is why the digital collections at libraries in Japan were properly analysed about the relationships and linkages among their digital collections at libraries, and then discussed based on the results of this study concerning for the future directions about the digital collections at libraries.

Keywords: digital collections, public libraries, university libraries, NDL Search, Japan.

Introduction

The Science Council in Japan published a proposition to improve and strengthen the functions of digital library in university libraries in 1996 (Science Council, 1996). The proposition by the Science Council has impacted university libraries in Japan to start up a service of digital collections on their website before public libraries did. The proposition by the Science Council is considered that one of the reason why the academic libraries started before the public libraries did.

The university libraries in Japan possess many rare books and old documents. They promote the digitalization of rare books and old documents which are kept in their libraries and then put the metadata and image data of the rare books and old documents on their Web site. Currently, many university libraries put the metadata and image data of the rare books and old documents on their Web site. They make many of these digital collections searchable on their Web site.

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 situations 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 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, marketisation 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).

This paper introduced 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.

The Digital Collections of University Libraries, Public libraries, Museum and Archives

The university libraries offer two types of digital collections which are institutional repositories and digital archives held by them. 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 JAIRO(Japanese Institutional Repositories Online) serves the

metadata of digital collections which is collected from each institutional repository of university library to the users.

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).

In the case of university libraries, the metadata of institutional repository operated by each university library is collected into JAIRO and served to the users through JAIRO. JAIRO supplies the metadata of digital collections from institutional repositories to the NDL Search. On the other hand, the metadata of digital archives which mean digital archives of collected materials in each university library put on the NDL Search very little.

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.

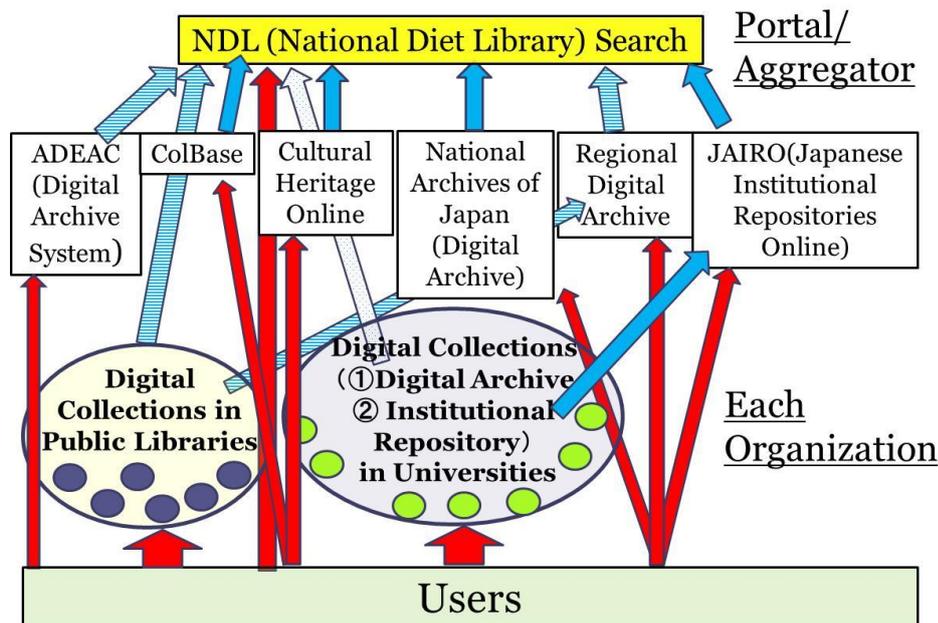


Fig. 1 How to search the digital collections of University Libraries, Public libraries, Museum and Archives.

The Portals and Aggregators of Digital Collections

The portals and aggregators of digital collections are growing recently (Fig. 2). The users can 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.

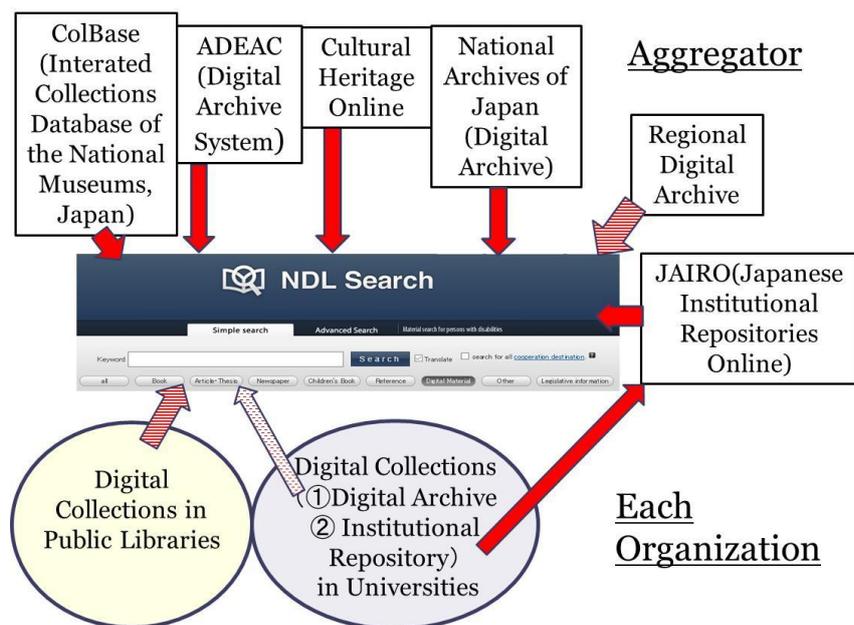


Fig. 2 The relationship between the NDL Search as a Portal and Aggregators of Digital Collections.

1) NDL (National Diet Library) Search

The NDL Search (<http://iss.ndl.go.jp/>) has enlarged the number of libraries and aggregators which supply their metadata to the NDL Search in recent years (Fig. 2). How and where does the NDL Search collect the metadata? It is shown in 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.

Currently, the users can retrieve the metadata of digital collections what libraries are serving themselves in the NDL Search (Fig. 3). 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 materials in each university library put on the NDL Search very little.

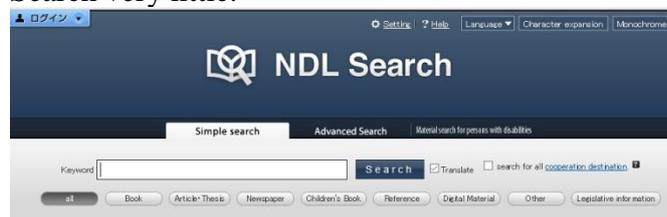


Fig. 3 NDL (National Diet Library) Search

2) JAIRO (Japanese Institutional Repositories Online)

JAIRO (<http://jairo.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 (Fig. 4). The users can search the metadata from all institutional repositories in Japan in a

cross-sectoral manner. As of August 2018, JAIRO allows about 2,947,500 contents in 695 institutional repositories to be searched for.



Fig. 4 JAIRO(Japanese Institutional Repositories Online)

3) Cultural Heritage Online

The purpose of Cultural Heritage Online (<http://bunka.nii.ac.jp/>) is to set up a portal site providing seamless access to heterogeneous digitized cultural heritage objects across a wide variety of digital collections prepared by archives, museums, national, regional and local cultural heritage centres, and other related organizations in Japan for both Japanese and international users(Kando, 2004).

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 (Fig. 5). The metadata of digital contents created by the Cultural Heritage Online provides to the NDL Search.



Fig. 5 Cultural Heritage Online

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 is based on the research and developments from 2010 to 2012 at the Research Division of Collaborations with Society, Historiographical Institute of The University of Tokyo (Ishikawa, 2013).



Fig. 6 ADEAC (Digital Archive System)

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 (Fig. 6). 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 and Akita Prefectural Archives(Fig. 7). 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 (Fig. 7).



Fig. 7 Akita Prefecture Digital Archive

Second, a website of digital collections named as “Academic Knowledge Archives of Gunma Institutes” (<https://gair.media.gunma-u.ac.jp/dspace/mydspace>), which is constituted by Universities in Gunma Prefecture and Gunma Prefectural Library(Fig. 8). The website of “Academic Knowledge Archives of Gunma Institutes” is a good example as the network of digital collections among universities and public libraries at a prefectural level.



Fig. 8 Academic Knowledge Archives of Gunma Institutes by Universities in Gunma Prefecture and Gunma Prefectural Library

The third is a website of “Digital Okayama:A Large Encyclopaedia” which is run by Okayama Prefectural Library (<http://digioka.libnet.pref.okayama.jp/>) (Fig. 9).



Fig. 9 Digital Okayama: A Large Encyclopaedia by Okayama Prefectural Library

The websites of public libraries being set up the digital collections are many instances of cooperation with other museums, archives and universities within the same local government body. The “Digital Okayama:A Large Encyclopaedia” is as one of representative examples of which digital contents are provided by the other organizations or individuals.

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(Fig. 10). 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 cities’ public libraries at a prefectural level.



Fig. 10 Northern Regions Literature Digital Library

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

The survey by the National Diet Library (NDL) in 2010 reported that the websites of digital collections by public libraries had many examples of cooperation with local universities or colleges as described earlier. Especially, the websites were created by utilizing universities’ or colleges’ know-how about system construction, creating contents, cataloging, research on materials. There were the cases to make a commission contract with a local university for constructing the system to provide digital contents, and also creating new contents based on collaborative research with a local university (Digital Library Division, 2010).

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.

The university libraries offer two types of digital collections which are institutional repositories and digital archives held by them as described earlier. The one is the institutional repositories what mean “digital archives of research findings”, and the other is 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 JAIRO(Japanese Institutional Repositories Online) serves the metadata of digital collections which is collected from each institutional repository of university library to the users.

A typical example of the digital archives in a university library is “Kotennseki Sogo Database; Japanese and Chinese Classics” by Yaseda University Library.



Fig. 11 Kotennseki Sogo Database; Japanese and Chinese Classics by Yaseda University Library

The Kotennseki Sogo Database (<http://www.wul.waseda.ac.jp/kotenseki/>) is to provide the widest possible public access to the Waseda University Library's collection of Japanese and Chinese classics, in the form of bibliographical information, related scholarly materials, as well as full-text images. The collection of some 300,000 items, including two National Treasures and five Important Cultural Properties, comprises materials of every conceivable genre(Fig. 10).

The Relation between the NDL Search and Digital Collections of Libraries

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.

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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. How and where does the NDL Search collect the metadata? It is shown in Fig. 1. Currently, the users can retrieve the metadata of digital collections what libraries are serving themselves in the NDL Search(Fig. 2) . 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 libraries in Japan.

Discussion

The users can retrieve the metadata of digital collections what public libraries are providing 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 public libraries in Japan.

The case of “Akita Digital Archive” was introduced that the metadata of Akita Prefectural Library Digital Archive is only serving to the NDL Search as shown in Fig. 7. The metadata of other digital collections 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.

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 public libraries 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 only. 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 and 2.

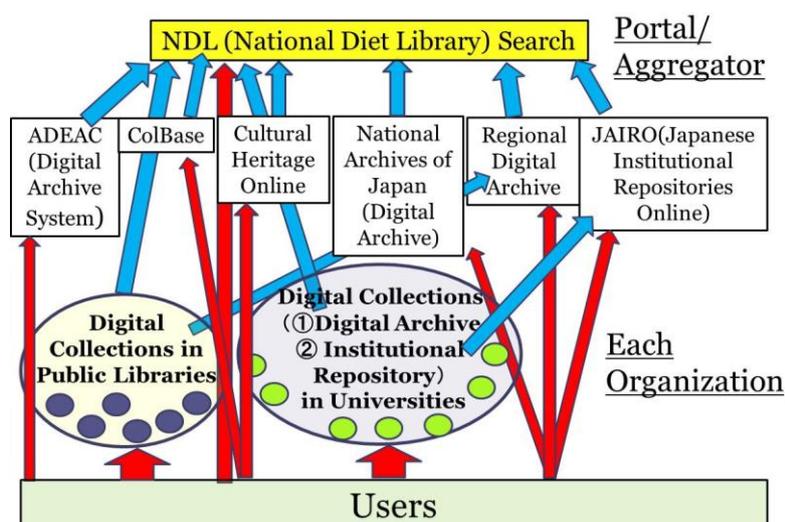


Fig 12 A future direction how to search the digital collections.

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 to the users should be necessary to increase further in the future (Fig 12). At the same time, when we try to access the digital collections, the one-stop access point of digital collections such as the NDL Search is a very important factor to receive relevant search results from the digital collections in libraries(Tanaka, 2016).

Finally, we hope more digital collections of libraries are able to access through the NDL Search, and the digital collections which are served by libraries expand the range of the collections in the future. It will yield more abundant fruit for people.

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