Linked Data and IIIF for Promoting Open Science in Historical Research Resources in Japan

Makoto Goto
m-goto@rekihaku.ac.jp
National Museum of Japanese History, Japan

Ayako Shibutani
shibutani@rekihaku.ac.jp
National Museum of Japanese History, Japan

The National Museum of Japanese History (NMJH) is using digital technology to establishing its core research project, Constructing Integrated Studies of Cultural and Research Resources. This project offers unique insight into a variety of studies and Japanese historical resources through multidisciplinary collaboration with universities, museums, and other institutes. This paper introduces the initial application of Linked Data and IIIF (International Image Interoperability Framework).

Researchers working in the humanities and sciences with a focus on history need to collaborate with their peers in relevant fields to produce more diversity and substance in academic data. The plan for a new academic field is to construct a "research circulation model" that links academic studies and resource information through advanced cooperative studies. Although institute resources encompass a wide variety of materials, the poor quality of the current infrastructure has hampered researchers' access to original data and convenience in producing the primary evidence for research results.

The number of researchers specializing in the study of China, Korea, and Taiwan is increasing due to the rapid growth in the networks of historical resource information in these countries. In contrast, the number of their peers in Japan is decreasing, in part because of Japan's non-digitized and partially closed systems. This trend is particularly apparent in the younger generation, which is accustomed to using the internet. In our poster, we show an example of our collaborative studies with relevant local and international institutes. The name authorities and concept label authorities in the translation are related to the entities mentioned in the RDF (Resource Description Framework). In addition to preservation of data in the case of disaster, the poster presents our development of a support system in the affected areas and an advanced sharing infrastructure.

RDF is a de facto standard since it is easy to add and edit metadata. It also enables the addition of multiple metadata to a single data element. Giving each resource its own address produces a permanent link to permanent data. This is an advantage for any researcher or institute that uses the data as an academic resource. Linking one resource to multiple relevant resources enables one to find information resources consecutively, as well as resources followed by historical studies. Research results must refer to original resources. In addition to fundamental data, division of systems and RDF can share complex data and advanced applications. Our RDF-based prototype is currently being tested, but it can connect internal and external databases by linking their URLs.

To achieve the current results from resources in Japan, we also constructed an initial application of Linked Data and IIIF. It has five features. First, each resource has its one own address, which enables access to its resources from Google and other search engine results. Second, the application can access resources that follow another resource, such as a resource ☾an institute ☾another resource. Third, for smart device applications, spatial information is added to the resources. Fourth, the system and the data are separate. If a system is replaced or updated in the future, the data should remain usable. If an institute provides infrastructure data, other institutes or researchers can use the data to create applications. In doing so, the access path to the institute needs to be confirmed. Finally, RDF data are applied to the database.

We are currently implementing all the functions and testing for real data, including 150,000 triples of our museum collection, 20,000 triples of related de facto data, and approximately 500 IIIF images. We plan to integrate the data sets of other Japanese universities by August 2017, and the application will be fully launched at the beginning of 2018.

Here, we discuss links using Ukiyo-e of Japan. The Ukiyo-e material enables access to information concerning its holding institute as well as access to other collections. Its spatial information is also added to the resources. If, for example, Mt. Fuji is drawn on the Ukiyo-e, this application can show its spatial information. The application also connects to image

data using IIIF (providing both Image API and Presentation API) from RDF data.

We are now constructing a system to connect information about the Ukiyo-e artist to information about his work. Some of these links include metadata, such as FOAF (Friend of a Friend) in the information about people, and other links use vocabulary defined by our project.