

A view of International Landscape of Open Science and Research Data Sharing

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Since the G8 Science Ministers' Meeting in UK 2013, Open Science policy and practice have been intensively discussed in related countries. Many bodies have been committing this activity like academic committees ICSU-World Data System (WDS) and Committee of Science and Technology Data (CODATA), RDA (Research Data Alliance), a data consortium in connection to G8 Group of Senior Officials (GSO)'s data infrastructure working group, and recently OECD (Organization of Economic Cooperation and Development) Global Science Forum, etc. In Japan, Cabinet Office of Japan played a leading role in Japan to publish the first national guiding principle of Open Science for Japan (March 2015). In 2016 G7 Science and Technology Ministers' Meeting was held in Japan, including the Open Science session as one of its six main themes.

Open Science is rapidly becoming an important focus of international discussions for its possible big impacts on scientific research, and also citizen, the Society and its economy. Recognising our scientific knowledge basis accumulated on "print technology" basis (books, articles) for more than 300 years, advantage of digital technology and electronic information and communication (ICT) infrastructure is emphasized in terms of high-speed and huge-volume data processing although it has only a 70-year history. Accessibility, sharing, interoperability of data and infrastructure, citability, and reuse are important prerequisites. Regardless of the open or closed policy, the capacity to assess trustworthiness of datasets, to preserve and manage them in an organized way, and to enable professional and non-professional reuse to create new knowledge are important in the context of Open Science.

Long-term preservation of digital data raises questions such as the size of data we should preserve, the preservation period (50-100 years similar to academic articles?), the increasing costs of bigger size of data (at present), and so on. In the scientific research data area, an international enterprise, the World Data Centres, was established by the International Council for Science (ICSU) in 1957-58 to exchange and store important scientific data as data books and microfilms. With the unprecedented technical infrastructure available today over the world and the need for multidisciplinary data integration to solve the most pressing challenges facing humanity, ICSU decided to form the new ICSU-World Data System (WDS) in 2008 based on the strong legacy of its two data organizations in past. The International Programme Office of WDS is now hosted by NICT in Japan, Tokyo. WDS works with its member organizations—holders and providers of data—to secure trustworthy, sustainable and findable data archives.

Libraries in past have been based on the print technology mostly. They selected books, improved preservation, and built the international network of exchange and copy of books. We are now on the starting line to construct a similar infrastructure for electronic data resources in academic fields. These efforts to support and promote best practices, will lead to building a new layer on top of the current ICT technology layers. This change has potential to lead to wide reuse of datasets with greater interoperability. Experiences and best practices in past academia are indispensable important legacy for us to help designing a new academic information infrastructure in this new era.

Keywords: Open Science, Data Sharing, Open Science Data