Getting the Engagement of Different Stakeholders within the University for Research Data Management —An attempt by AXIES

NATIONAL INSTITUTE OF INFORMATICS
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FSCI Flash Talk
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Today’s Talk

1. Introduction to NII and its Services
2. Open Science and RDM drivers and status-quo in Japan
3. Engaging the Academia in Japan with RDM
Introduction to NII and its Services
• The National Institute of Informatics (NII) seeks to advance integrated research and development activities in information-related fields, including networking, software, and content. NII also promotes the creation of a state-of-the-art academic-information infrastructure.
21st Century Academic Information Infrastructure for Advancing Open Science

Collaboration and Promotion in Research and Education

**Resource**
- Promotion of academic information circulation and open access
- Collaborative promotion of institutional repository expansion

**Cloud**
- Dramatic cost reduction and enhancement of research and education environment by tailored cloud services
- GakuNin-Cloud Direct Connection

**Federation**
- Collaborative enhancement of authentication between universities

**Security**
- Network flow analysis and dynamic control
- Raise of security level for SINET users
- VPN

**Network**
- Nationwide 100-Gbps backbone network and scalable network expansion
- High-speed direct international lines to USA, Europe, and Asia
- Introduction of new technologies such as SDN in response to user needs
NII is the Japanese NREN

- SINET is a Japanese academic backbone network for more than 800 universities and research institutions, and for about 3 million users.
  - SINET covers 100% of national, 78% of municipal, and 55% of private universities.

<table>
<thead>
<tr>
<th>Number of Organizations</th>
<th>National Universities</th>
<th>Municipal Universities</th>
<th>Private Universities</th>
<th>Junior Colleges</th>
<th>Colleges of Technology</th>
<th>Inter-Univ. Research Institutes</th>
<th>Labs and Others</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>86 (100%)</td>
<td>71 (78%)</td>
<td>348 (55%)</td>
<td>62 (18%)</td>
<td>55 (97%)</td>
<td>16 (100%)</td>
<td>179</td>
<td>817</td>
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(As of March 2015)

• SINET node
• Domestic line (100Gbps or more)
• International line (100Gbps)
• International line (10Gbps)
Scholarly Information Infrastructure

- **CiNii Articles**
  - Metadata and links of Japanese journal articles
  - 19 M records

- **JAIRO**
  - Metadata and links of Japanese institutional repositories
  - 2.5 M records

- **CiNii Books**
  - Catalog of materials held by universities
  - Bibliographic info 11 M records
  - Holding information 137 M records

- **KAKEN**
  - Project reports of MEXT supported scientific researches
  - 820 K records

**Integration**

**Compilation**

**Digitization**

**Linkage to other DB services**

- J-Stage (JST)
- NDL
- Academic Societies

**Universities and Research Institutions**

- More than 800 institutions
- More than 1,300 libraries

**Note:** The record numbers are as of March 2017.
NII Research Data Cloud

Discovery Platform
- Linking Func between Article and Data
- Researcher and Research Project Identification and Management Func
- Data Exchange with International Discovery Service

Discovery Service
- Metadata Management
- DOI
- International Metadata Aggregator
- Subject Repository
- Subject

User Interface
- Access Control
- Metadata Mng
- Research Data Mng

Research Data Management System

RDM Platform
- High Speed Access using SINETS
- Data Sharing Func using Virtual NW and ID Federation
- Effective Data Storage Switcher

GakuNin RDM

Research Data Repository
- Private
- Shared
- Public
- Exp Data
- Exp/Store
- Article
- Archive

Publication Platform
- Data oriented Self-Archiving Func
- Versioning and auto-Packaging Func
- User Dependent Personal Data Pseudonym Func

.Storage Area for Long-term Preservation
- Hot Storage
- Cold Storage
- Cold Storage
- Cold Storage

International Metadata Aggregator
NII, the leading voice in digital transformation in higher education Japan

NII in strong collaboration with all ICT centers and university-libraries across Japan
Open Science and RDM
Drivers and Status-quo in Japan
Drivers for RDM in Japan

- General agreement to promote Open Science
- Policies by the funding agencies and international journals
- Research frauds and the “10 years research data preservation rule”
- “Research reproducibility” issues
- Need to promote data-intensive science
- “Society 5.0” vision

⇒ Strong need for RDM
Promoting Open Science in Japan
Opening up a new era for the advancement of science

Executive Summary
Report by the Expert Panel on Open Science, based on Global Perspectives
Cabinet Office, Government of Japan
March 30, 2015

It is vital for Japan to participate in international discussions and to demonstrate a proactive approach to the promotion of open science. The Expert Panel on Open Science based on Global Perspectives has discussed various relevant issues of immediate importance for Japan. Based on these discussions, the Panel presented the guiding principles for promotion of open science in Japan.

I. The Importance of Open Science
"Open science" refers to a new approach to promoting innovation through knowledge creation in science and technology. This will be realized by facilitating access to and use of publicly funded research results such as scientific papers and their underlying data by the scientific community, industry and the general public. The concept of open science is spreading rapidly. At the G8 Summit held in June 2013, G8 Science Ministers issued a joint statement that endorsed the need for increasing access to publicly funded research, including peer-reviewed published research and research data. The statement triggered discussions in various forums worldwide.

Research community, and to the decline of Japan’s international competitiveness. Japan should keep pace with the global advancement of open science in a collaborative yet also strategic manner, so that the value of Japan’s latest research and development activities can lead to business activities at the next stage.

II. The Need to Promote Open Science
Open science may change scientific research. It will not replace traditional research methods, but will add new tools that help to advance science. It will make research results widely available in digital formats to all users including the scientific community, industry and the general public. This will enable additional value to be extracted from science and technology information, which will not only improve our knowledge, but will also reform innovation strategies.

For the scientific community, the acceleration of data-driven activities is expected to lead to new collaborations and to the prevalence of new research methods among researchers within the same research discipline and beyond. Industry and individuals are also expected to gain as they develop new products and services as a

Framework of the Open Science in Japan

Correlation diagram of policy making and implementation

International organizations: Conclude international agreements and define guidelines

CSTI/CAO
Formulate government policies

Relevant ministries
Formulate policies to promote the application of research results

Funding agencies
Formulate guidelines to promote the application of research results related to their programs

Universities and research institutions
Formulate rules on the management of research results

Libraries, institutional repositories, data centers and NII
Collect research results, promote open access, store and manage shared data

Science Council of Japan
Provide operating guidelines for scientific societies and researchers

Scientific societies
Develop policies on open access and open data for respective scientific fields

Non-profit organizations and foundations
Promote innovation by sharing knowledge with relevant institutions

Industry
Create new products and services through knowledge sharing

Academic journal publishers
Publish online journals, open-access journals and data journals

Researchers
Create and promote research results via knowledge sharing

Research results (papers, research data, etc.)
Accessible to the public, industry and scientific community

Creation of new values through the application of research results

In reality, the major driving force for RDM is scientific misconduct prevention

  「研究活動における不正行為への対応等に関するガイドライン」
  - Strengthening the guideline in 2006.
  - Holds institutions to be responsible for research transparency and preventing scientific misconduct.

  日本学術会議「(回答)科学研究における健全性の向上について」
  - “Ten-Years Preservation Rule for Research Data”
    研究データ10年保存ルール
Vision 2025: Research Data at your fingertips
...by the Alliance of German Academic Organizations

Alliance of German Academic Organizations:
DFG, DAAD, HRK, Max Planck, Fraunhofer, Leibnitz, Helmholtz, Leopoldina, Humboldt-Stiftung, German Council of Science and Humanities

Open Science in Japan still at its infancy

- OS in Japan in mainly **driven by policymakers and infrastructural work by NII.**
  - The term OS is becoming familiar but most people do not understand what it means.

- Strong emphasis on research data preservation to prevent scientific misconduct.
  - In this case, data does not need to be open.

- Need to merge these two issues and direct RDM in Japan for positive purpose.
Engaging the Academia in Japan with RDM
Necessity to engage the Japanese academia into Open Science

1. The idea of OA and OS not well understood.

2. RDM in an academic institute involves multi-stakeholder approach.
   - Meaning, nobody takes leadership to start OS.
   - Hiring RDM manager does not work if there is no RDM policy justifying his/her work.

3. Need to direct RDM at Japanese universities to positive direction.
   - Implementing RDM for the sake of scientific misconduct prevention does not make researchers happy.
Multi-stakeholder Approach needed to implement RDM at universities

- Grad students, technicians, lab manager, etc.: data generation, RDM
- Departments, Labs
- Univ-wide Service Units
- Multi-stakeholder Approach
- Univ-wide policies & strategies
  - Research Integrity
  - Research VP
  - Library
  - CIO
- Research Admin Office
- Research Support Unit (URA Station)
- Univ. Library
- ICT Center
- Dept. admin offices: coordination
- Data Protection
- Data Curation
- Learnt Societies
- I want to make the university research competitive!
Why an RDM Charter?

- Participants at AXIES-RDM session started to claim,
  - "We need a charter in order to convince the university administration and to get the researchers and staff engaged!"

- AXIES
  - Academic eXchange for Information Environment and Strategy
  - Community of CIOs and ICT centers of universities in Japan.
  - Counterpart to EDUCAUSE in the US
“RDM Charter for Academic Institutions”

RDM Charter
- Not for researchers, but
- For academic institutions!

Purpose of RDM Charter
- Give university administration ideas and options to implement RDM in respective institutions.

Don’t dare to tell me how to manage my data! I know what I’m doing!
RDM implementation in an academic institute
“RDM Recommendation for Academic Institutions” ...Main Text

1. Need for RDM at academic institutions
   - Research data used at every research process in every discipline
   - Researcher who manages research data controls research competitiveness in the digital age

2. Infrastructure for RDM should be provided by institution
   - Inefficient if every researcher cares for his/her own environment

3. Efficiency that the RDM infrastructures are common across institutions and AXIES role

4. Expectation that this recommendation will be referred at academic institutions
“RDM Recommendation for Academic Institutions”...Composition

- The Recommendation
  - Addresses the viewpoints why academic institutions needs to take RDM seriously.
  - Viewpoints in bullet points:
    I. Role of academic institutions in RDM
    II. Policies and organizations for RDM needed in acad. Institutions
    III. RDM procedures in acad. Institutions
    IV. RDM Purpose options in acad. Institutions
    V. Digital platform functions needed for RDM in acad. Institutions
    VI. Human resources development for RDM in acad. Institutions
    VII. Reuse and service options of research data in acad. institutions

- Appendix
- Glossary
- References
Various RDM implementing purposes in an academic institution

- **Competitiveness**
  1. Raising visibility of acad. Institution
  2. Attracting top researchers and collaborators
  3. Research evaluation within the institution

- **Accountability and Compliance**
  4. Complying to funding agencies’ mandates
  5. Complying to scientific misconduct guideline

- **Outreach and Education**
  7. Outreach to industries and society in general
  8. Provide education and training for data-intensive work
Next Steps of AXIES

☐ GOAL

➢ Make sure that RDM platform is not just provided as system but make it work within institution!

☐ Activities

➢ Designing questionnaire survey template
➢ Establishing RDM case studies
➢ Developing RDM policies and guidelines

Calling universities for collaboration!