• NII Research Data Cloud
• RDM Training Course

Research Center for Open Science and Data Platform
National Institute of Informatics
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.
**Collaboration and Promotion in Research and Education**

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

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

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

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

**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
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**

- **J-Stage (JST)**
- **NDL**
- **Academic Societies**
- **Universities and Research Institutions**

- **JSPS**
- **MEXT**

**Linkage to other DB services**

- **Digitization**
- **Compilation**

**Compilation**

- **NACSIS-CAT**

**Digitization**

- **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
- Search/Find
- Data User
- Data Depositor
- Exp/Store
- Archive
- Data User
- Article
- Exp Data
- Public
- Shared
- Private

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

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

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

Discovery Platform
- DOI
- International Metadata Aggregator

Research Data Repository
- Private
- Shared
- Public

Exp Data
- Hot Storage
- Hot Storage
- Hot Storage
- Cold Storage
- Cold Storage
- Cold Storage

Storage Area for Long-term Preservation

Metadata Aggregation
- Re-use

User Flow
- Data Flow
**WEKO3**

- **Current System WEKO2**
  - Journal Article Repository
  - Add Functions more and more
  - Research Data Handling

- **New System WEKO3**
  - Based on Invenio3 which is originally focused as Data Repository
  - Integrate WEKO2 Functions into Invenio3

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**WEKO3**

**Data Repository**

- Invenio

**Strengthen Conventional Functions**

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Realize New Publication Platform based on sophisticated Invenio3 Architecture

(\textit{Invenio3 = our RDM Platform in Architecture})

- Effective Development and Operation
- Domain Use-case by Extensibility

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**Number of Repository in Japan**

- **829 IRs**
- NII Repository Cloud Service
- On-Premise
- Research Data Handling

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[Graph showing the number of repositories by year and service type.

- Mar-05: 2
- Mar-06: 10
- Mar-07: 58
- Mar-08: 101
- Mar-09: 144
- Mar-10: 228
- Mar-11: 260
- Mar-12: 284
- Mar-13: 301
- Mar-14: 316
- Mar-15: 310
- Mar-16: 285
- Mar-17: 256
- Mar-18: 241
- Sep-18: 61

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**Number of Repositories**

- 200
- 300
- 400
- 500
- 600
- 700
- 800
- 900
• **NII Knowledge Graph**
  • Aggregate from various DBs
  • Define Entity Links

• **User Interface**
  • Support Discovery Experience for Research Activity Itself

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**Coverage of Current CiNii**

Conventional Research Output
- DOI, Handle, URI, ISBN, ISSN...
- Book, Paper, Dissertation

Research Project
- Project ID

Research Activity
- Exchange Data with International Discovery Services

Research Data
- DOI, URI...

Researcher
- Researcher ID, ORCID...

Funding Agency
- Crossref Funder, GRID, ISNI...

Research Institution
- Institutional ID, GRID, ISNI...
New Service  

Extension of Open Science Framework developed by COS, USA

- Manage Research Data by Research Project
- Connect Cloud Storage from Various Plugin
- Share Research Data within Collaborators Authn by ID Fed

RDM Platform

NII: Frontend Service

University: Backend Storage

Cloud Storage

Customize selectable Plugin depending on University Environment and Policy

NII Storage

Default (minimum?) Storage by NII

Public Cloud (Provider DC)

Private Cloud (On-premise)

Public Cloud (Provider DC)
New Functions Developed in FY2018

- New Plugin
  - New External Storage
    - ownCloud, S3 Compatible Storage, OpenStack Swift
  - Integration with Publication Platform
  - Integration with Data Analysis Tool
    - JupyterHub
  - Plugin SDK

- Research Data Management
  - Research Footprint Management
  - Metadata Management
  - Workflow Management

- Institutional Management
  - Plugin Selection
  - Statistics
  - Institutional Template
Deployment Plan

• FY2016
  • Initial Development
  • αTesting with major Universities

• FY2017
  • System Development
  • Small Scale Feasibility Study (βTesting)

• FY2018
  • Large Scale Feasibility Study

• FY2019
  • Pilot Operation

• FY2020
  • Production Operation
• NII Research Data Cloud
• RDM Training Course

Research Center for Open Science and Data Platform
National Institute of Informatics
Japan Consortium for Open Access Repository (JPCOAR)

Mission of JPCOAR

1. Reforming scholarly communication system by promoting Open Access
2. Operating JAIRO Cloud jointly with NII
3. Enriching IRs with a wide range of scholarly materials
4. Providing training courses
5. Contributing to international collaboration

- Launched in July 2016
- 580 member institutions as of November 2018
- https://jpcoar.repo.nii.ac.jp/
JPCOAR Organization

Task Forces
- Research Data
- Researcher ID
- Mid-term Plan
- Metadata Schema
- SCPJ

Steering Committee
- Strategy Making and Steering

General Assembly
- Chairperson
- Auditor

Working Groups
- JAIRO Cloud Operation
- Human Resources Development
- Outreach
RDM training courses

...Overview

• Building on existing RDM courses in the world such as MANTRA

• Developed by JPCOAR, the Japan Consortium for Open Access repositories

• RDM Training courses

  ➢ RDM Basics
    • launched November 2017

  ➢ Training Course for RDM Supporters
    • to be launched April 2019

  ➢ RDM training courses for different disciplines?
JPCOAR Research Data TF

• RDM Training Course
  1. Review and Analyze existing Training Materials
     Essentials 4 Data Support, MANTRA, RDM Rose, RDM Support, Research
     Data Management and Sharing (COURSERA)
  2. Define Syllabus
  3. Develop Slides, Scripts and then Video Production
  4. Provide from JPCOAR Site (Slides) and Japanese MOOC (Course)

<table>
<thead>
<tr>
<th>JPCOAR SITE</th>
<th>Access</th>
<th>DL</th>
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<tbody>
<tr>
<td>2017.06</td>
<td>936</td>
<td>903</td>
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<tr>
<td>2017.07</td>
<td>286</td>
<td>342</td>
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<tr>
<td>2017.08</td>
<td>393</td>
<td>318</td>
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<tr>
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<tr>
<td>2017.10</td>
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<td>238</td>
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<tr>
<td>2017.11</td>
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<td>301</td>
</tr>
<tr>
<td>2017.12</td>
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<td>113</td>
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<tr>
<td>2018.01</td>
<td>313</td>
<td>131</td>
</tr>
<tr>
<td>Total</td>
<td>3,589</td>
<td>2,654</td>
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Now Developing Next Version, especially focusing on RDM Supporters

<table>
<thead>
<tr>
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<th>Participants</th>
<th>Completion Rate</th>
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<tbody>
<tr>
<td>RDM Course</td>
<td>2,305</td>
<td>25%</td>
</tr>
<tr>
<td>JMOOC Ave.</td>
<td>4,145</td>
<td>15%</td>
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</table>
Feedback from Learners

👍 • Contents was easy to understand and could learn basic idea of entire RDM.

👎 • Could improve by separating the contents into two different perspectives, that is, researchers and supporters point of view.

👎 • Would like to learn in more detail about copyright.

👎 • Could be better to have more story centric contents.

👎 • MOOC is opening the course only short term. Would like to learn at any time I could find my extra time.
RDM Training Tool based on PPT Slides

Statistics (2017.6〜2018.6)
- Views: 5,144
- Downloads: 3,535

http://id.nii.ac.jp/1458/00000023/
Development of Second Training Course for RDM Supporters (2018)

「Development and Operation of RDM Service」

- **Target**
  - Librarian, URA, Technical Staff

- **Contents**
  - Practical contents for developing the RDM service which can support research workflow.

- **Platform**
  - Prepare LMS (Moodle) which allow learners can use it under institutional management.
# Training Course for RDM Supporters

...Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Contents</th>
</tr>
</thead>
</table>
| Chap1：Introduction      | Learning about the basics of RDM  
  • What is RDM?  
  • The background of why RDM is needed  
  • What are the services of RDM in an academic institution? |
| Chap2：Service Design    | Learning how to design services suited for your own institution  
  • Drafting RDM strategy for your institution  
  • Using the Data Asset Framework |
| Chap3：Support before Research | Learning about the support needed before the start of research  
  • Rules that researchers have to follow  
  • Support for drafting DMPs (data management plans) required by the funding agencies |
| Chap4：Support during Research | Learning about the support needed during active research  
  • Security policies for different research data  
  • Preserving data and the role of institution  
  • Finding data needed  
  • Support for analyzing and visualizing data  
  • Handling of data at research publication  
  • Redesigning of DMP |
| Chap5：Support after Research | Learning about publishing data after research  
  • Points needed to be checked before publishing data  
  • Choosing the right data repository for publishing data  
  • Metadata, PIDs, licenses for publishing data |
| Chap6：Daily Support     | Learning about daily RDM support  
  • Running training courses  
  • Website for RDM  
  • Counseling of RDM  
  • PRs and advocacy for RDM |
Feasibility Study for New Course

• Periods
  • August – October, 2018

• Participants (17 Institutions)
  • Hokkaido University, Tohoku University, Tsukuba University, Chiba University, University of Tokyo, Niigata University, Shinshu University, Kyoto University, Kyushu University, Kagoshima University, Waseda University, Toho Medical Center, National Institute of Informatics, National Institute of Polar Research, National Institute for Environmental Studies, Panasonic Corporation Morinaga Milk Industry Co LTD.

• Evaluation Points
  • Developed Contents
  • System Environment
  • Operational Workflow etc.

Production Operation will start from April