Enabling Cross-Search across Social Science Data Archives in Japan —Initiative as part of National Endeavor to Establish Open Science Infrastructure

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Today's Talk

1. Status Quo and Issues of SSDAs in Japan
2. Policies and Platforms for RDM in Japan
3. System Configuration Options for Cross-searchable SSDAs in Japan
4. Pilot Study and Future Prospects for Cross-searchable SSDAs in Japan

1

Status Quo and Issues of SSDAs in Japan

Status Quo of Social Science Data Archives in Japan

- Several small SSDAs existing
  - Not inter-connected
    - ✓ Not cross-searchable
    - ✓ Not even connected organizationally
  - Facing extinction
    - ✓ Run by very small number of people
    - ✓ Often times vague funding

Social Science Data Archives in Japan

- General SSDAs
  - SSJDA @ U Tokyo
  - RUDA @ Rikkyo Univ
  - SRDQ @ Osaka Univ
  - SORD @ Sapporo Gakuin University <- stopped
- Thematic SSDAs
  - RIWQC-DA @ Japan Woman's Univ
  - JPSC @ Institute for Research on Household Economics
  - JILPT-DA @ Japan Institute for Labour Policy and Training
  - JHPS/KHPS, JCPS, GEES @ Keio Univ
  - JEDI @ Hyogo Univ of Teacher Education <- stopped
- Governmental Survey Micro Data
  - Hitotsubashi Univ
  - KUMiC@ Kobe Univ
  - Hosei University

Expectations

1. Make SSJDAs in Japan cross-searchable
   - Make Japanese SS-related data findable.
   - Enhance visibility of Japanese SS-related data domestically and internationally.

2. Provide stable data preservation platform
   - Data rescue
   - Establish organizational procedures for users to request data

2

Policies and Platforms for Research Data Management (RDM) in Japan

Policy Trends on RDM and Open Science in Japan

- June 2013
  - A joint statement by the G8 Science Ministers on making research data open
- March 2015
  - Cabinet Office, "Promoting Open Science in Japan“
- January 2016
  - "The 5th Science and Technology Basic Plan" ⇒ Open Science has been promoted in order to reinforce the intellectual infrastructure
- February 2016
  - Council for Science and Technology, "Promoting Open Access to Academic Information"
- July 2016
  - Science Council of Japan (SCJ), "Recommendations Concerning an Approach to Open Science that Will Contributes to Open Innovation"

Open Science Report from Japanese Cabinet Office (2015)

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.

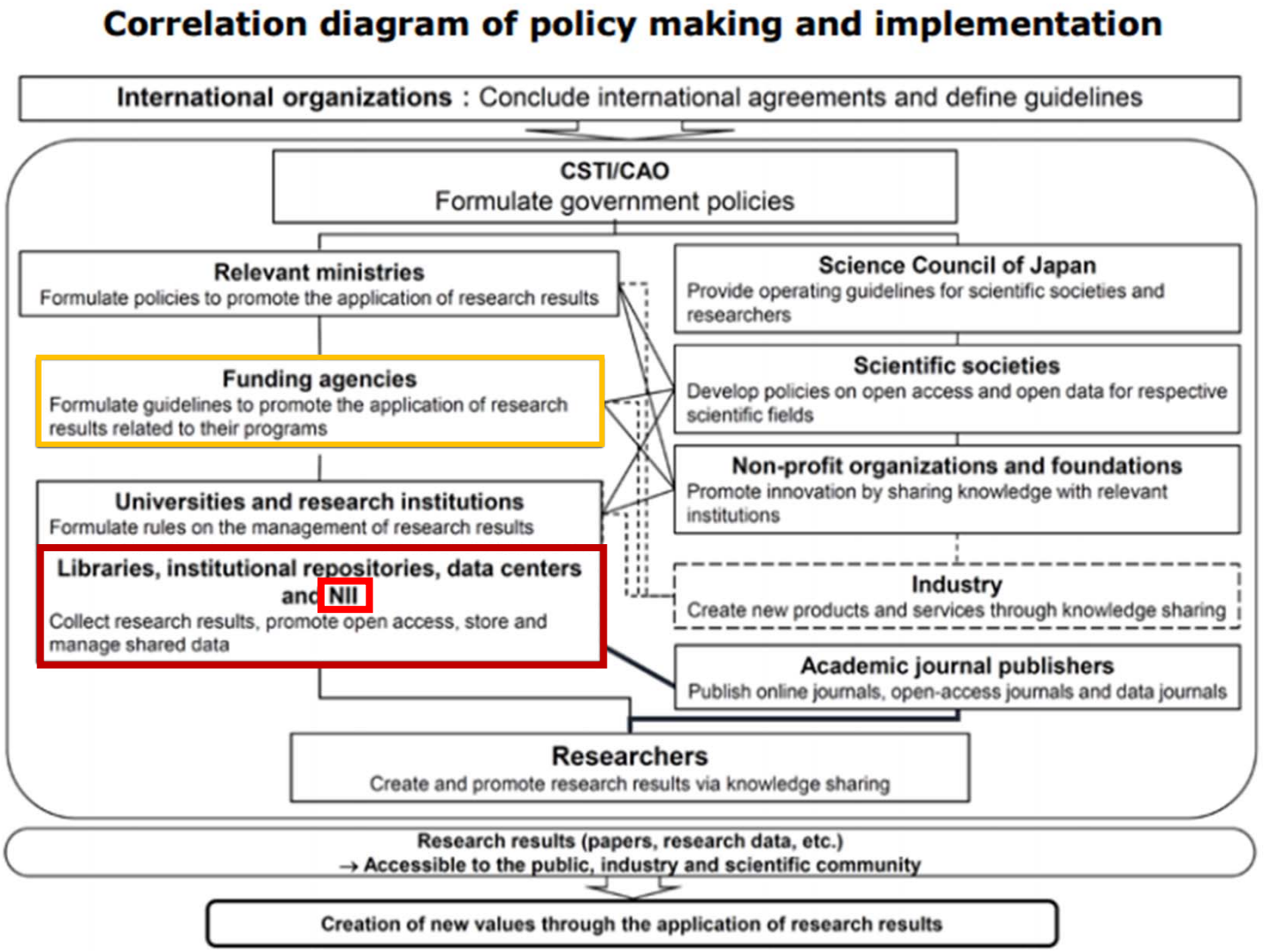
II. The Need to Promote Open Science

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

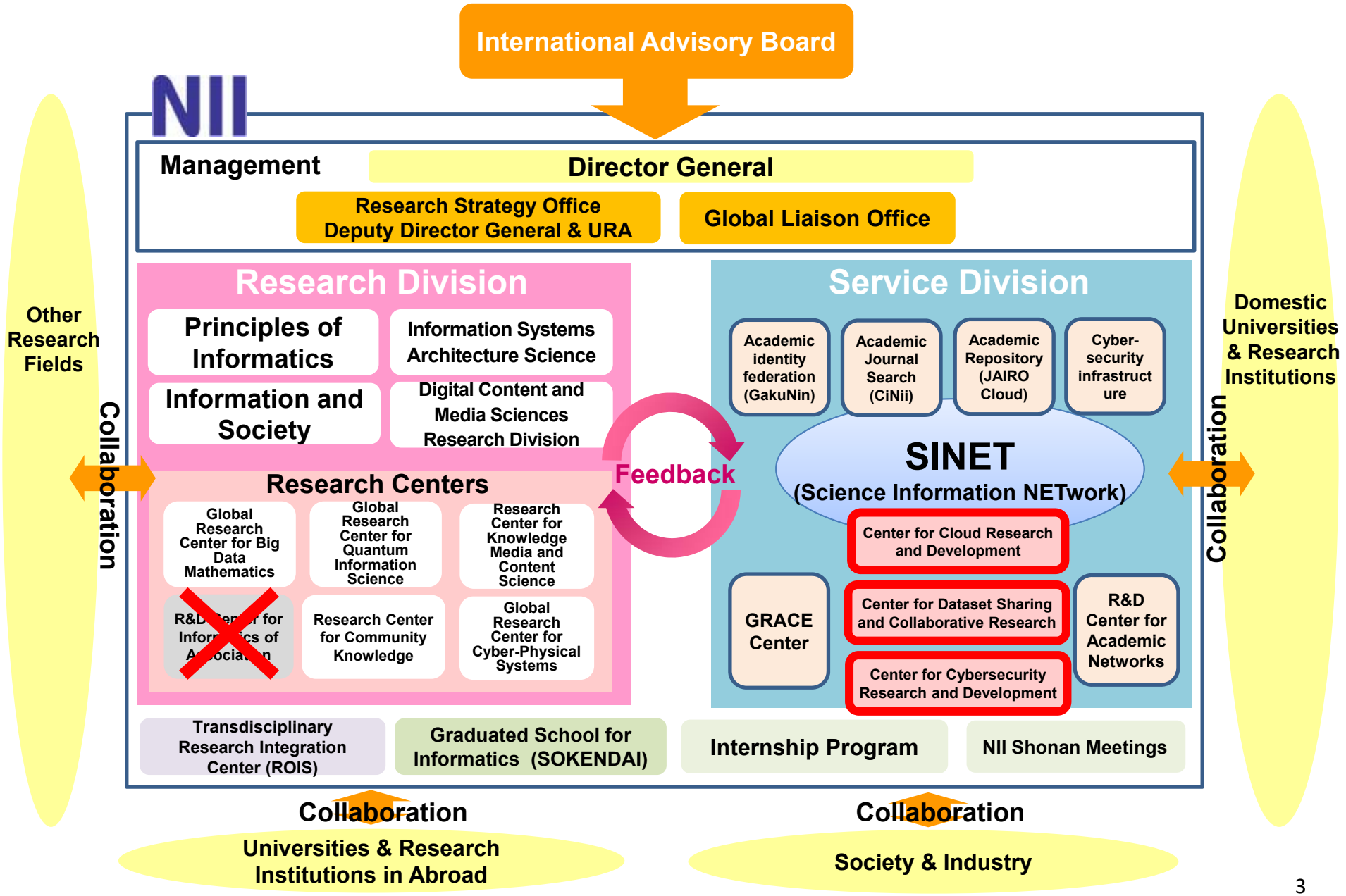
http://www8.cao.go.jp/cstp/sonota/openscience/150330_openscience_summary_en.pdf

Framework of the Open Science in Japan



http://www8.cao.go.jp/cstp/sonota/openscience/150330_openscience_summary_en.pdf

NII's R&D Systems



SINET5

21st Century Academic Information Infrastructure for Advancing Open Science

Collaboration and Promotion in Research and Education

SINET5

Resource

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

CiNii

JAIRO Cloud

Federation

- Collaborative enhancement of authentication between universities

GakuNin Federation

eduroam

Cloud

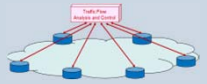
- Dramatic cost reduction and enhancement of research and education environment by tailored cloud services

GakuNin-Cloud Direct Connection

Security

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

Flow Analysis

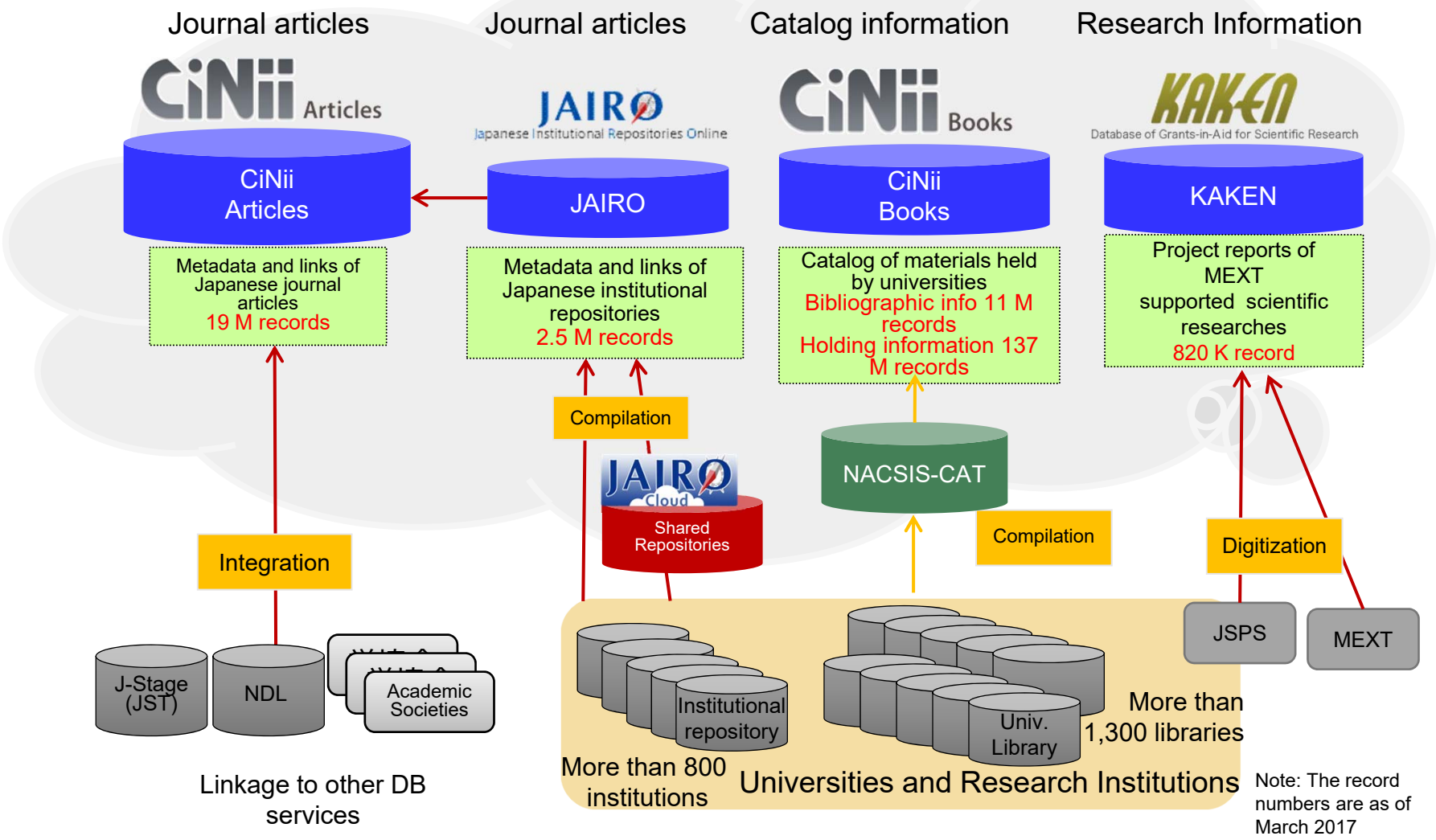


VPN

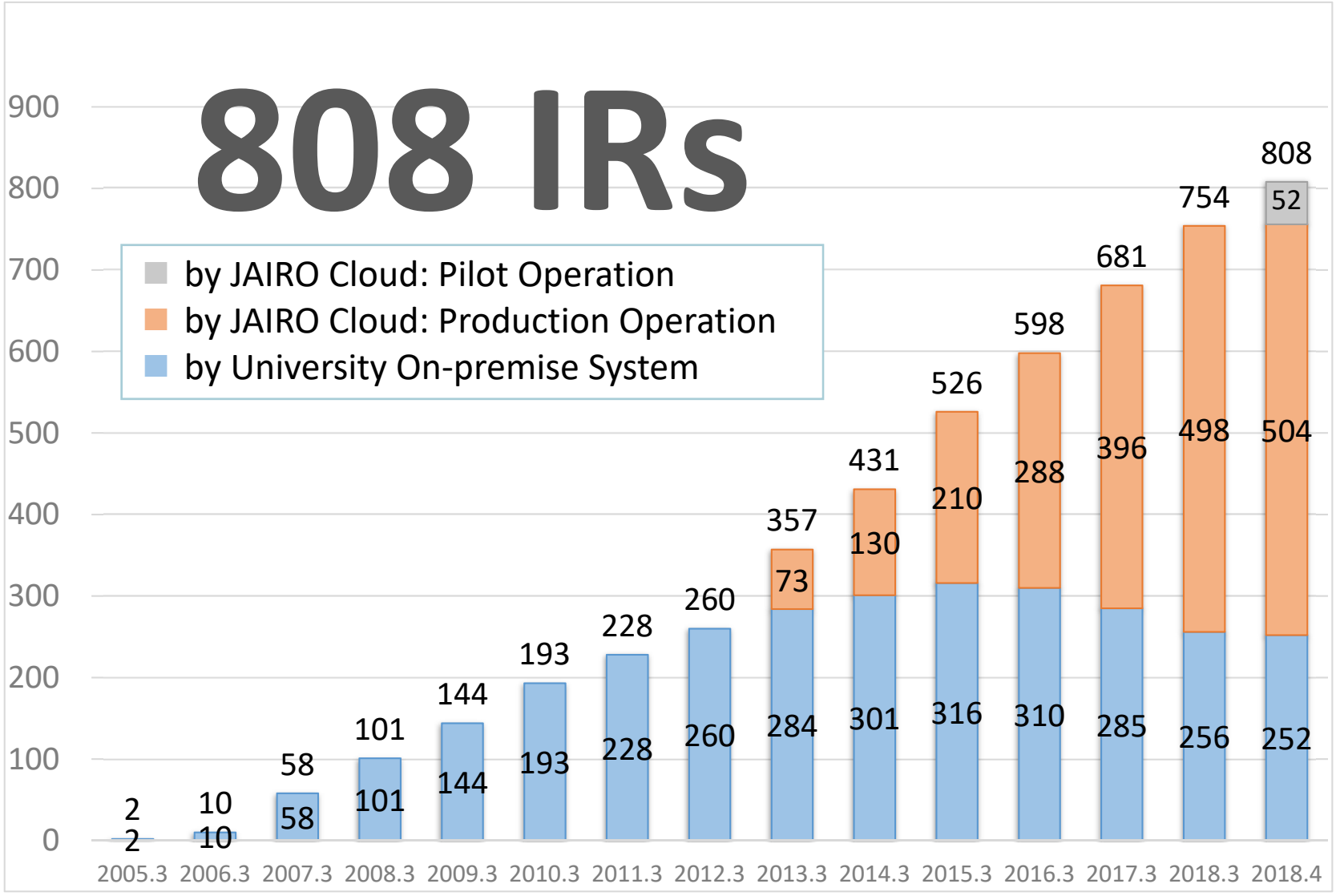
Network

- 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

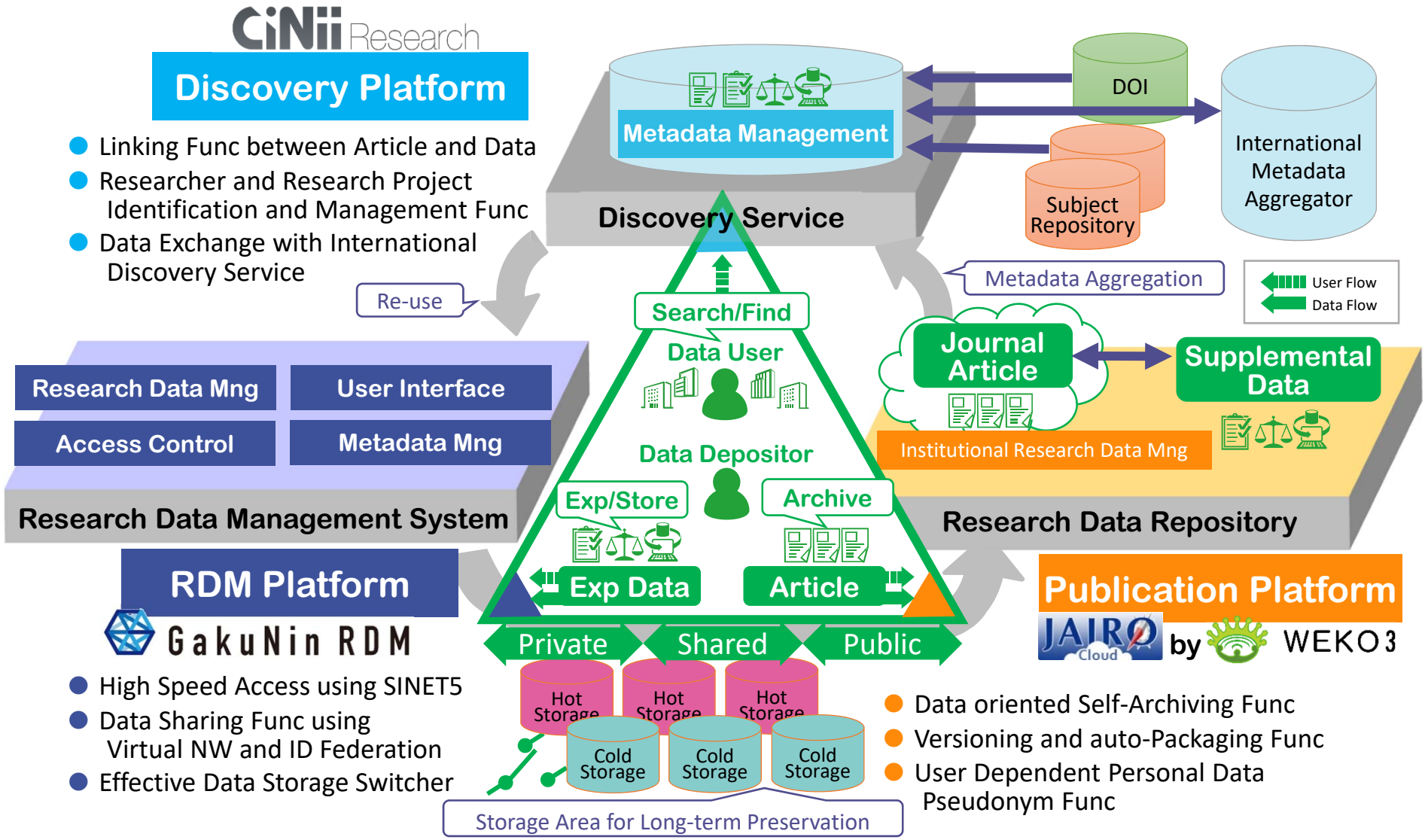
Scholarly Information Infrastructure



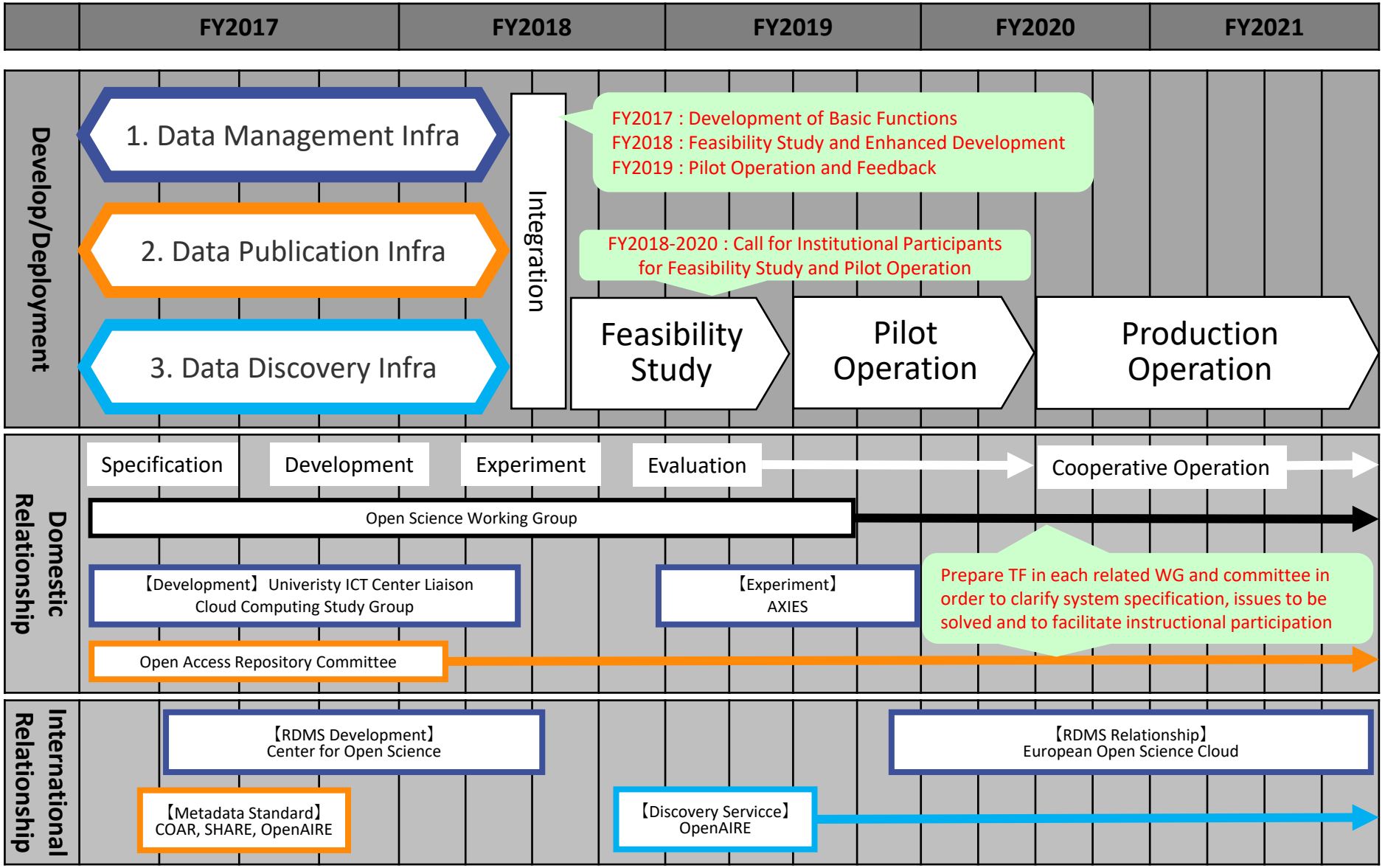
Number of Institutional Repositories in Japan



Research Data Infrastructure for Open Science



Planning


FY2017
FY2018
FY2019
FY2020
FY2021
Develop/Deployment
1. Data Management Infra
2. Data Publication Infra
3. Data Discovery Infra
Integration
FY2017 : Development of Basic Functions
FY2018 : Feasibility Study and Enhanced Development
FY2019 : Pilot Operation and Feedback
FY2018-2020 : Call for Institutional Participants for Feasibility Study and Pilot Operation
Feasibility Study
Pilot Operation
Production Operation
Domestic Relationship
Specification
Development
Experiment
Evaluation
Cooperative Operation
Open Science Working Group
【Development】 Univeristy ICT Center Liaison
Cloud Computing Study Group
【Experiment】
AXIES
Prepare TF in each related WG and committee in order to clarify system specification, issues to be solved and to facilitate instructional participation
Open Access Repository Committee
International Relationship
【RDMS Development】
Center for Open Science
【RDMS Relationship】
European Open Science Cloud
【Metadata Standard】
COAR, SHARE, OpenAIRE
【Discovery Servicce】
OpenAIRE

3

System Configuration Options

for Cross-searchable SSDAs in Japan

Cross-searchable SSDAs in Japan …Basic Concept (1)

- Use the NII Open Science Platform as data integrating mechanism.
  - However, as the OS platform is not yet available, use the existing platforms designed for research publications.
- SSDA Partners
  - Social Science Japan Data Archive (SSJDA)
    - Run by the University of Tokyo
  - Rikkyo University Data Archive (RUDA)
    - Run by the Rikkyo University

Cross-searchable SSJDA in Japan …Basic Concept (2)

- Register only the metadata on the NII platforms while leaving the survey data at the original SSDA.
  - Search results will redirect users to the original SSDA.

This will…

- Keep sensitive data at original SSDA.
- Utilize user consulting functions at SSDA.

Various Implementation Options

1. Institutional Repository Layer

- ✓ Where the metadata of SSDAs are going to be registered.

2. Discovery Layer

- ✓ Various academic information discovery services are available in Japan.

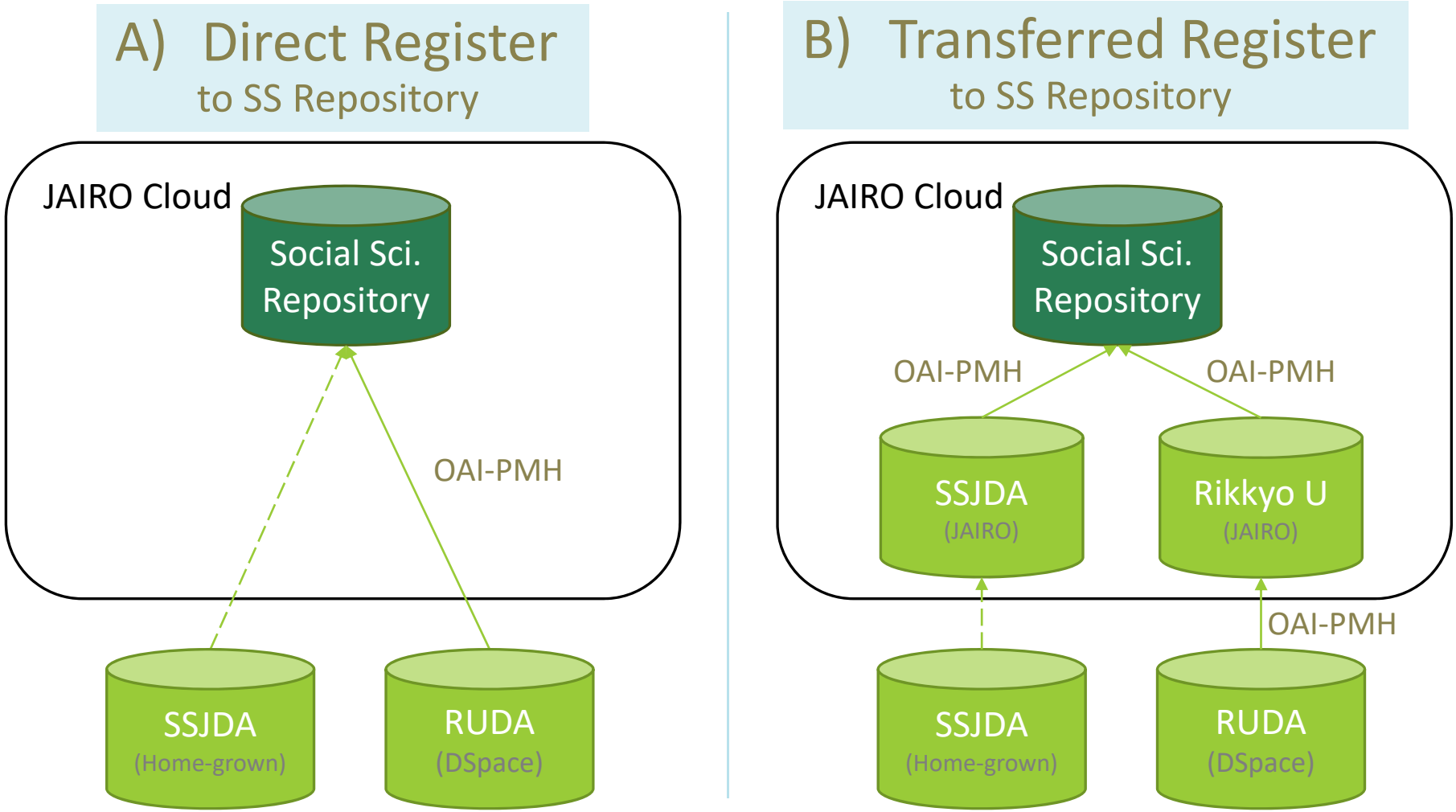
3. Metadata Schema

- ✓ What metadata schema to use for common SSDA.

4. DOI Stewardship

- ✓ Various options for institutions to provide DOI stewardship.

Various Implementation Options
…Institutional Repository Layer



Various Implementation Options …IR Layer…Pros and Cons

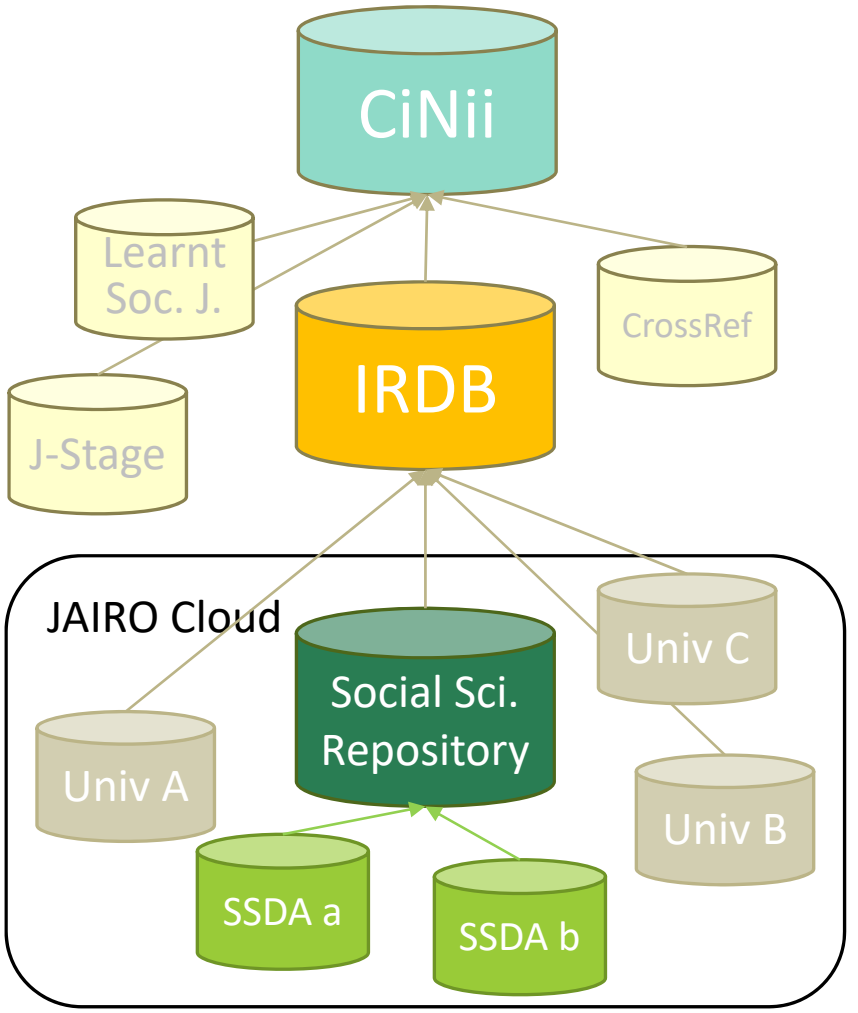
A) Direct Register

- PRO—Simple !
- CONS– Need administrative body for central repository in the long run.

B) Transferred Register

- PRO 1—Able to use stewardship of SSDA or university library at affiliated institution.
- PRO 2—Able to use OAI-PMH in the second stage for SSJDA.
- CONS 1–Administrative burden to maintain additional institutional repository whether managed by SSDA or university library.
- CONS 2–Additional fee for IR cloud service.

Various Implementation Options
…Three Discovery Layer



D) Cross-Academic Resources discovery

C) Cross-IR discovery

B) SS-specified discovery

A) Single SSDA discovery

Various Implementation Options …Discovery Layer…Pros and Cons (1)

A) Single SSDA discovery

- PRO—Good to promote the particular SSDA.
- CONS– Does not serve the cross-search purpose.

B) Social Science-specified discovery

- PRO 1—Searches only SSDA data and serves the SS academic community.
- PRO 2—Plan to provide refined search according to metadata schema used.
- CONS– Will not be known to people outside SS community.

Various Implementation Options …Discovery Layer…Pros and Cons (2)

C) Cross-IR discovery

- PRO—Searches basically open accessed resources.
- CONS 1– Not very meaningful to search only IRs.
- CONS 2– IRDB search not well known by researchers.

D) Cross-Academic Resources discovery

- PRO 1—CiNii a well-known brand for academic search in Japan.
- PRO 2—Able to be used inter-disciplinary.
- PRO 3—Able to search for various academic resources (articles, books, data, etc.) in linked manner in future.
- CONS 1–Does not serve research data yet.
- CONS 2–Cannot refine search for SS-specific needs.

Metadata Schema

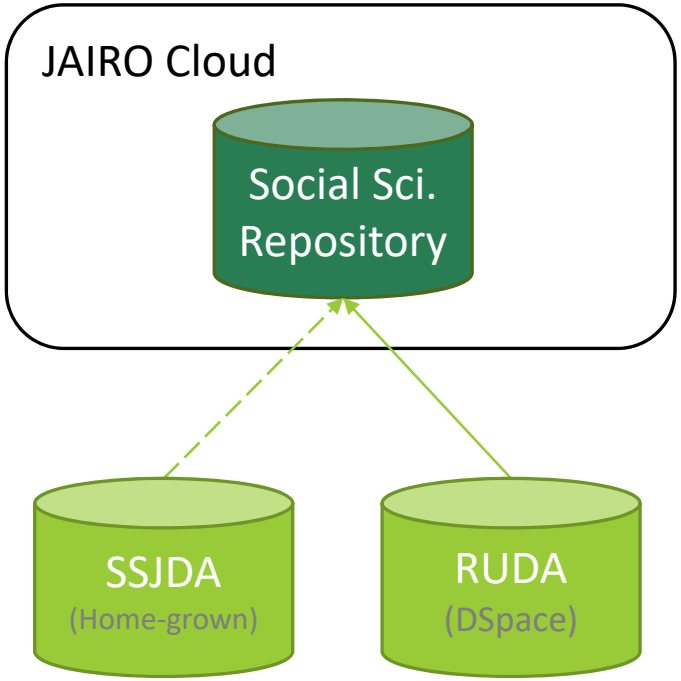
- Implementation
  - JAIRO Cloud allows to use user-defined metadata schema.
    For the pilot study of cross-searchable SSDA, a metadata schema similar to DDI2.5 is used.
  - For harvesting, it uses junii2, a schema similar to Dublin Core.
    The metadata used at registering is mapped to junii2.
    - ✓ Junii2 will be upgraded to JPCOAR schema which is adjusted to research data use and not just for publication.
- Issue
  - Existing SSDAs use usually self-defined metadata schema and are difficult to adjust to common standard.
    - ✓ Common metadata (fine)—Need much effort to register all datasets.
    - ✓ Common metadata (rough)—Original information-level downgraded.
    - ✓ Allow to use self-defined metadata—Search accuracy goes down.

Adding DOIs

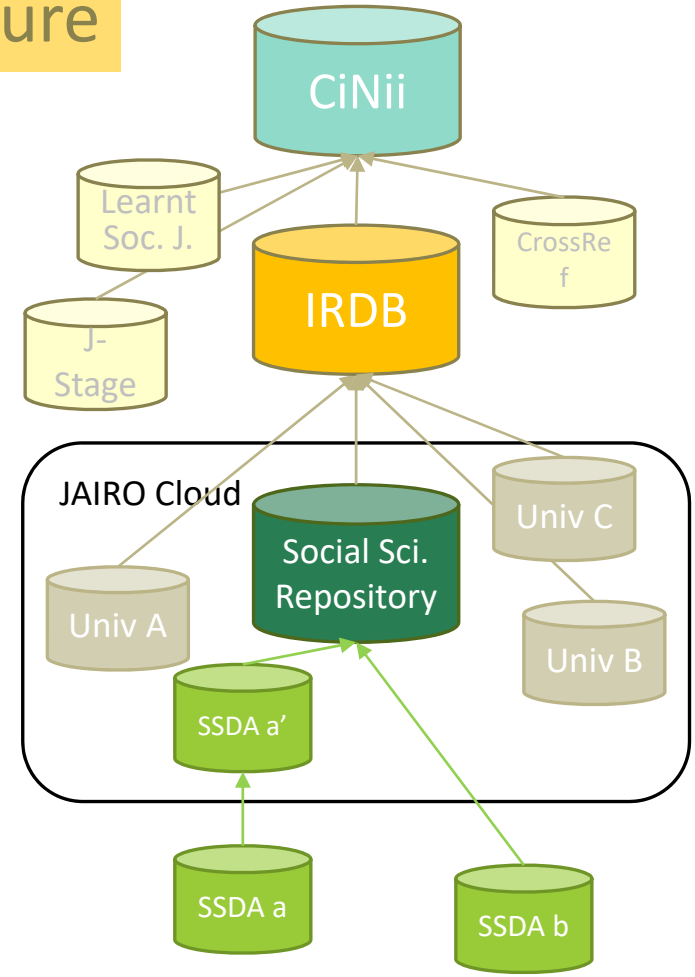
- Implementation
  - Prefix—Able to obtain from Japanese registration agency Japan Link Center (JaLC).
  - Suffix—Able to obtain at JAIRO Cloud systematically.
  - Harvesting to IRDB and CiNII—need to be an associate member of JaLC and apply for data provision.
- Issue
  - DOI can only be added to datasets which can assure long-term data provision.
    - ✓ Each SSDA—Usually on weak grounds
    - ✓ SSDA affiliated institution—long lasting; however not sure if the institution will maintain SSDA assets forever.
    - ✓ Cross-searchable SSDA—Administrative body not determined. Also if existing, not able to assure its long-lasting existence.

Cross-searchable SSDAs in Japan
…System Configuration

Pilot Study



Future



4

Pilot Study and Future Prospects for Cross-searchable SSDAs in Japan

Social Science Data Archives to post datasets at pilot study

- SSJDA @ U Tokyo
  - Roughly 1600 datasets in data archive
  - Post 3 datasets for pilot study
- RUDA @ Rikkyo University
  - Roughly 50 datasets in data archive
  - Post 10 datasets for pilot study

※ This time, has taken the lead to formulate metadata for common registering, similar to DDI 2.5

SSJDA @ U Tokyo

SSJDA Direct
Social Science Japan Data Archive

Japanese

Center for Social Research and Data Archives,
Institute of Social Science, The University of Tokyo

Data Search

Full Text :

Depositing Institution :

Topic (Click here for details) : Not Specified

Unit of Analysis (Click here for details) Not Specified

Survey Title :

Survey Year :
FROM: TO:

For Educational Purposes Not Specified

Sort by: Survey No.(in ascending)

Search Reset

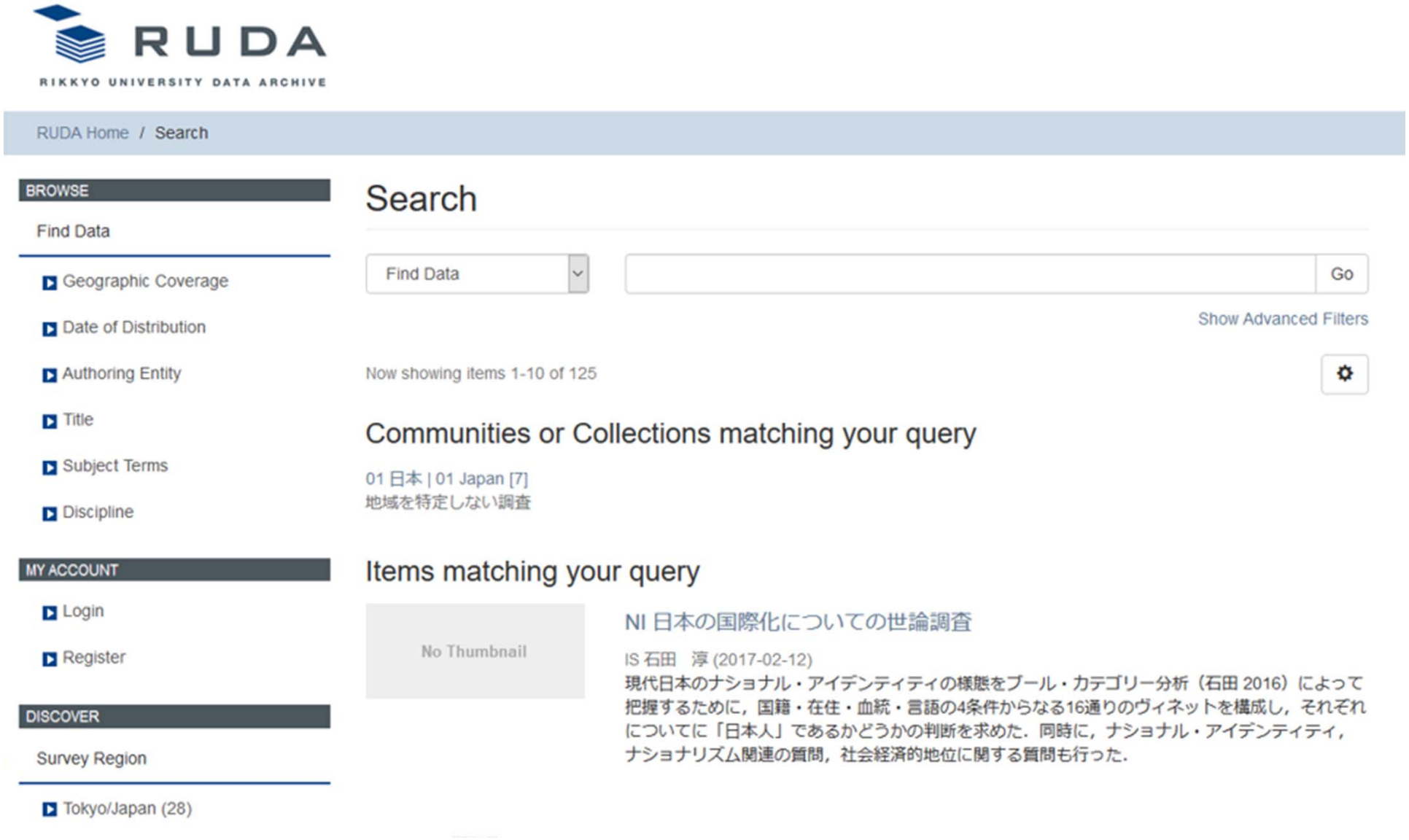
* Click on the survey title to display a description of the data.

<< < 1 2 3 4 5 6 7 > >> **Total: 1308**

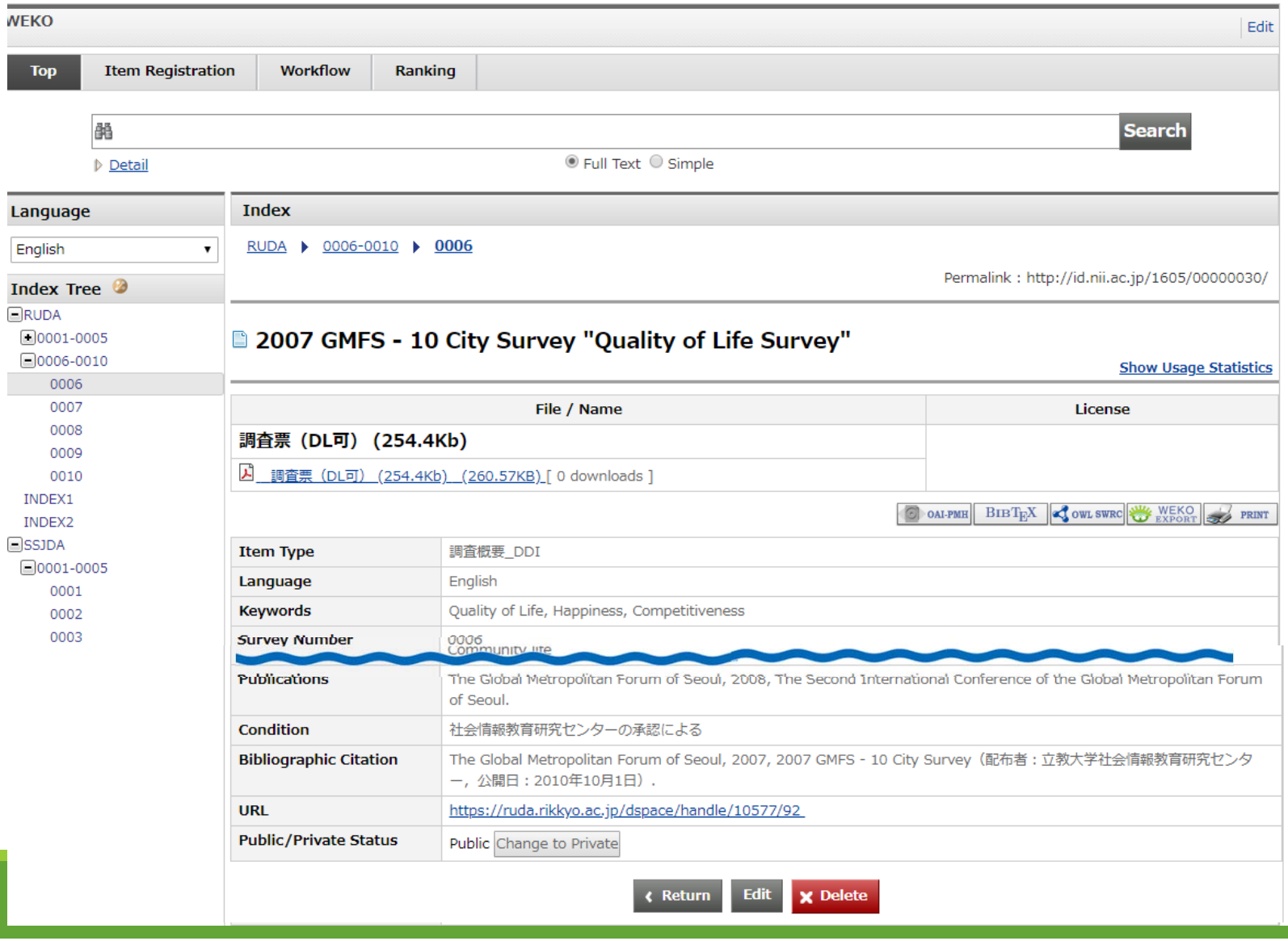
– List of Data –

Survey No.	Survey Title	Depositor (Former Name)	Topic	Nesstar
0001	Labor Market Research among New Graduates (Junior High School), 1953	Institute of Social Science, The University of Tokyo	Employment/Labor	--
0002	Fact-finding Survey on Wage Setting among Small and Medium-sized Enterprises, 1995	Research Institute for Advancement of Living Standards	Employment/Labor	--
0003	Survey on Young Workers' Professional and Academic History, 1995	Research Institute for Advancement of Living Standards	Employment/Labor Education/Learning	--
0004	Questionnaire Survey on Daily Life among Elementary and Junior High School Students, 1995	Research Institute for Advancement of Living Standards	Society/Culture Education/Learning	--
0005	Questionnaire Survey on Volunteer Activities, 1995	Research Institute for Advancement of Living Standards	Society/Culture Security/Crime/Disaster	--

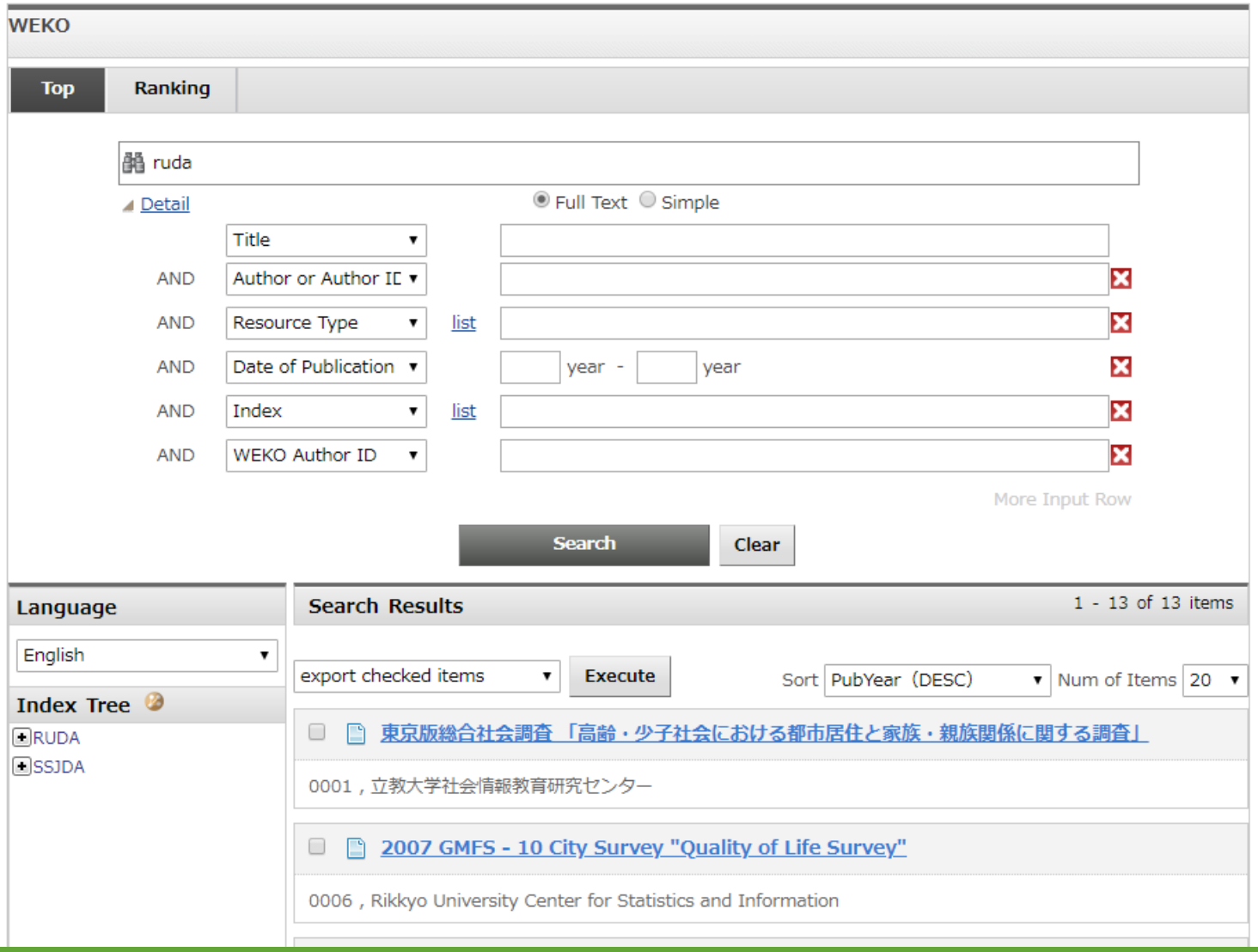
RUDA @ Rikkyo University



Registered survey image



Search image



Issue 1…Administrative body for cross-searchable SSDA

- Issue
  - Need for a body which would oversee the cross-searchable SSDA.
- Needed attributes
  - Sustainable body
  - Setting the standards for cross-searchable SSDA and maintaining it to certain degree
  - Assisting other SSDAs to register their datasets
- Options
  - Steering Committee by member SSDAs
  - One dedicated institute
    - ✓ a. new body, b. one SSDA taking up the role

Issue 2…Metadata Schema for cross-searchable SSDA

- Issue
  - What metadata schema should be used?
- Facts
  - Most SSDAs use home-grown metadata schema.
  - To establish cross-searchable SSDA, a common metadata schema is desired.
  - DDI, which would be an option, is not well-known in Japan.
- Options
  - DDI-like metadata
  - Dublin Core-like metadata
  - Home-grown metadata for each SSDA

Issue 3…Contents quality standardization for cross-searchable SSDA

- Issue
  - How should the contents quality be standardized?
- Facts
  - Even if same metadata label is used, different SSDAs have different arrangements in the usage.
    - ✓ Metadata “Key Word“—Free KWs versus Choice from categories
- Options
  - Use the original SSDA’s contents—Easy to implement. However, not useful for cross-search
  - Standardizing to common quality—Data registering burden. However, refined search possible.

Other Issues for cross-searchable SSDA

- Who is going to register the datasets?
  - For established SSDAs, need efforts to adjust datasets quality to common standard but lack of manpower.
  - For long tail datasets, if we allow self-archive the quality would not be sustained.
- How do we adopt datasets of SSDAs which have stopped providing service?
  - How do we transfer the rights of the original data provider? With whom do you negotiate?
  - Who is going to do the work for registering datasets? Who is going to pay for the work?

Future prospects

- A new move
  - A report by the Science Council Japan: “For the promotion of scholarship—A recommendation for humanities and social sciences”
  - Funding from JSPS: “Humanities and Social Sciences Data Infrastructure Establishing Program,” (2018-)
- Future steps
  - Hope for the steering committee of JSPS program to be able to take leadership, have various SSDAs to join discussion for future vision.
  - This bottom-up pilot study will serve to materialize the initiative of the JSPS program.