SHARING DATA SETS AS RESEARCH RESOURCES

Center for Dataset Sharing and Collaborative Research (DSC)

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2015.10.21 第2回 SPARC Japan セミナー2015

Background

- Research and Real Application are getting closer in ICT

  → Needs as an Indispensable Research Resources for:

Real and Large Scale Data generated by Real Services

- Incentives for Private Companies to provide data for Academia
  - Social Contribution, Future Collaboration, Recruitment …
- Open Access cannot be a solution for most of such data

If each researcher tries to obtain such a data set …

Users: difficult to know contact, no guarantee for identity, huge cost of crawling, risk of infringement upon others' right …

Owners: made busy dealing with, hard to grasp/evaluate users and usage, suffer damage to business …

Merits of Common Data Sets

- For each researcher:
  - Can ensure **reproducibility and transparency**
  - Easier to **compare** results with other research
  - Easy to **appeal** the research
- For research community:
  - Platform for Comparative Evaluation of Techniques
    - Setting common tasks, defining evaluation methods, accumulating research results, …
  - Enhance **Community** and open up **Cross-Discipline Collaboration**
- For data provider:
  - Make the social contribution known to the public
  - Can appeal openness and fairness

Shared Use of Data Sets

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For Promoting Research in Informatics …

- Providing Data Sets
  - Collecting, Accepting, and Distributing
- Sharing Know-hows from Creation to Distribution
  - Various Know-hows are required for building / providing data sets

    specs, collecting, annotating, distribution method, licensing, user agreement …
- Activating Research by Creating / Connecting Communities (data owners, creators, users)

  → Hosting Ideathons and Evaluation Workshops

  → Promoting Collaborative Research

Data Sets provided by IDR

- Yahoo! Data Set
- Rakuten Data Set
- Niconico Data Set
- Recruit Data Set
- Cookpad Data Set
- NTCIR Test Collection
- Speech Corpus
- Image Database of Japanese Classical Documents (planned)
- *Two more Data Sets in preparation*

Origins of Data Sets

- Real Data generated by Commercial Internet Services
  - Yahoo! Data Set
  - Rakuten Data Set
  - Niconico Data Set
  - Recruit Data Set
  - Cookpad Data Set
  - *Two more Data Sets in preparation*
- Research-purpose Data created by Researchers and Research Organizations
  - Speech Corpus
  - Image Database of Japanese Classical Documents (planned)
- Research-purpose Data created via Evaluation Workshop organized by NII
  - NTCIR Test Collection

Distribution Procedure

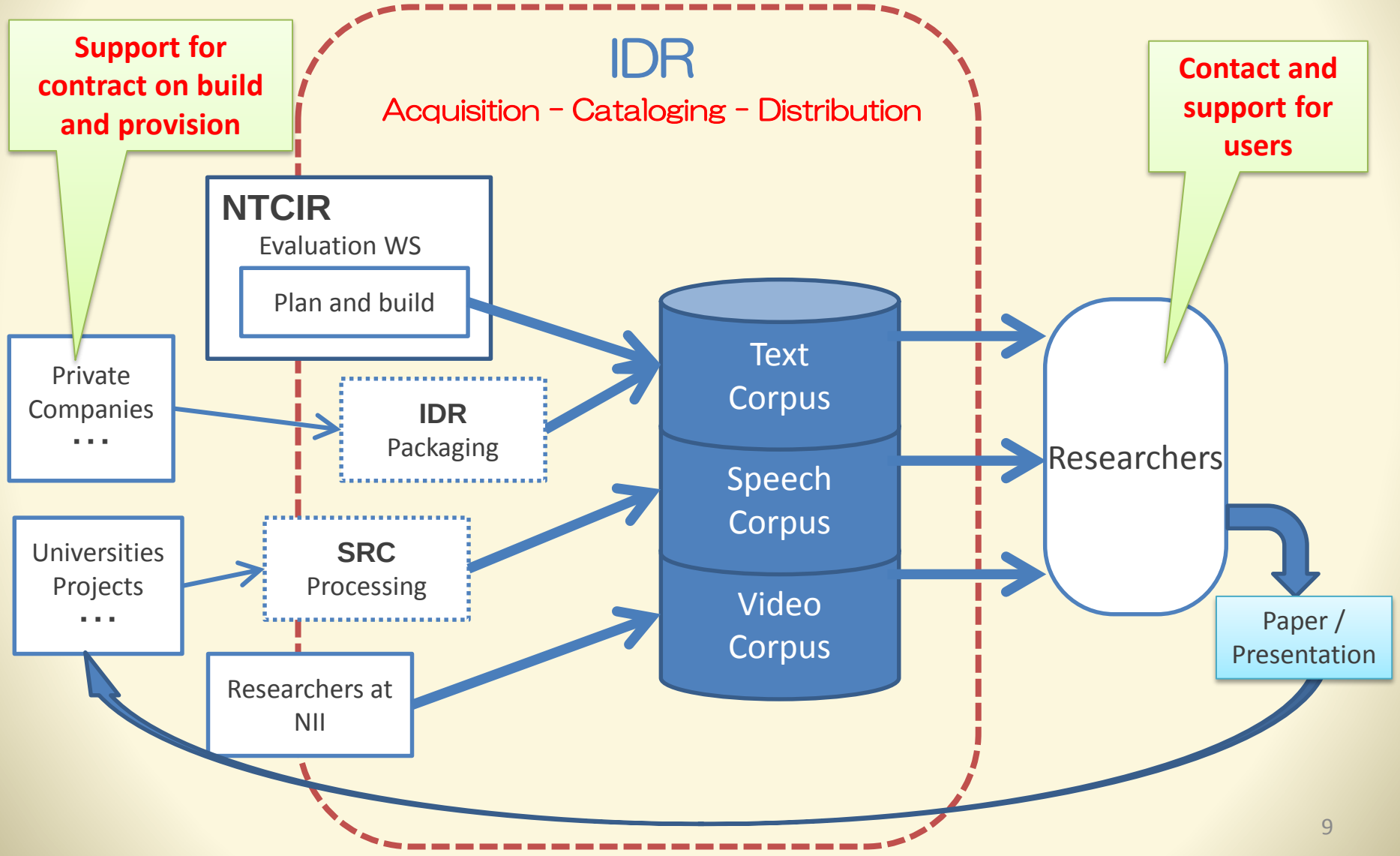
- Contract-based (based on provider's choice)
  - Yahoo! Data Set — Contract with NII
  - Rakuten Data Set — Contract with Provider
  - Recruit Data Set — Contract with NII
  - Cookpad Data Set — Agreement & Aproval by Provider
  - Speech Corpus — Agreement & Aproval by NII
  - NTCIR Test Collection — Contract with NII
    (Web Archive Data, Task Data derived from Yahoo! Data Set)
  - *Two more Data Sets in preparation*
- Registration Only
  - Niconico Data Set — Name (of any type) & optional e-mail, etc.
  - NTCIR Test Collection — Name, Affiliation, e-mail, etc. → move to OA (?)
- Open Access
  - Image Database of Japanese Classical Documents (planned)
    CC BY-SA

Restrictions on Data Usage

- Worries of data providers (especially for private companies)
  - Copyright
  - Privacy and Personal Information of its Service Users
  - Flaming caused by Abuse
  - Damage to Property Value

  → Controlling users and restricting usage are necessary in most cases.
- Restrictions depend on the nature of data and company
  - All prohibit:
    - providing data to third party; commercial use
    - disclosure of identified person/organization even in academic publication
  - Some prohibit:
    - match data with information on the Internet
  - Some require:
    - check the content of publication in advance

Tasks of data set sharing



Approaching to Data Providers

- Offering **Know-hows of Data Provision** to Data Owners and Producers (i.e. potential providers)
  - Reconsideration of Service Users' Policy
    - copyright issues, …
  - Procedure and Content of Contract with Data Users
- Proposing **Ideathon**, etc. for Preparation of Data Set Provision
  - Recruit
  - National Institute of Japanese Literature（国文研）
- Feed-back of Research Results
  - Grasping research and technology trends
  - Knowing active researchers
    → Collaborative Research, recruite of students

Sharing Research Results

- Research Meeting focusing on Data Set

e.g., Rakuten R&D Symposium

http://rit.rakuten.co.jp/conf/rrds4/index_en.html

Sharing Problems and Ideas

- Plan meeting gathering data owner and researcher

- Session in 2015 HCG Symposium
  “Forefront of research using large scale cooking recipe data”
  Dec. 18, 2015 in Toyama
- Ideathon:
  “Workshop on Open Data of Japanese Classical Documents”
  Dec. 18, 2015 in Kyoto

Ideathon held in advance of releasing Recruit Data

https://twitter.com/arg/status/440822789646217216

Creating Communities

- Evaluation Forum using Data Sets (e.g., NTCIR)

Community QA Pilot Task
using **Yahoo! Chiebukuro Data**

http://research.nii.ac.jp/ntcir/ntcir-ws8/yahoo/index-en.html

Cooking Recipe Search Pilot Task
using **Rakuten Recipe Data**

https://sites.google.com/site/ntcir11recipesearch/

Creating Communities

- Accumulating and Sharing Know-hows for Competitions

BIGCHA –
Big Data Programming Challenge using Common Data Sets

- Yahoo!
- Rakuten
- Niconico
- Recruit
- Cookpad
- …

Connecting Communities

- Cross-border Collaboration — Informatics and …
  - Cookpad Recipe Data

    Nutritional Science, Economics, Environmental Studies
  - Rakuten Travel Data

    Tourism Studies
  - Niconico Comment Data

    Musicology, Entertainment studies; Gap of Age

http://www.asahi.com/shimbun/jsec/jsec2013/winner.html

Evaluation Issues

(1) How can we capture the users?
- Easy for contract-based distribution (users report once a year)
- **Difficult to trace the users for registration-only distribution**
- **How can we capture the users of OA data sets?**

(2) How can we capture the research results?
- Request users to report once a year
  (effective for contract-based distribution)
- Ask users to mention in acknowledgment. **But, how can we collect?**
- Better to be cited in the references. **But, what to cite?**
  - **Expectation for Data Journal**

(3) How can we measure the value of each data set?

(4) How can we evaluate the effectiveness of our activity?

We want to shift to OA, but …

Without evaluation, we cannot get funds for our activity.

Future Direction

(1) Sharing Data and Tools based on Cloud-style Environment
- Data sets unable to distribute due to:
  - Huge data size
  - Personal information protection
  - High commercial value

→ Cloud-type Data Sharing Research Platform

→ Evaluation as a Service (EaaS)

(2) Clarifying Social and Technical Problems on Research Use of Privacy Sensitive Data

(3) Research on System Environment for Research using Deep Data based on Customized Licensing Scheme