

# Current Status and Future of the Scholarly Information Services of NII

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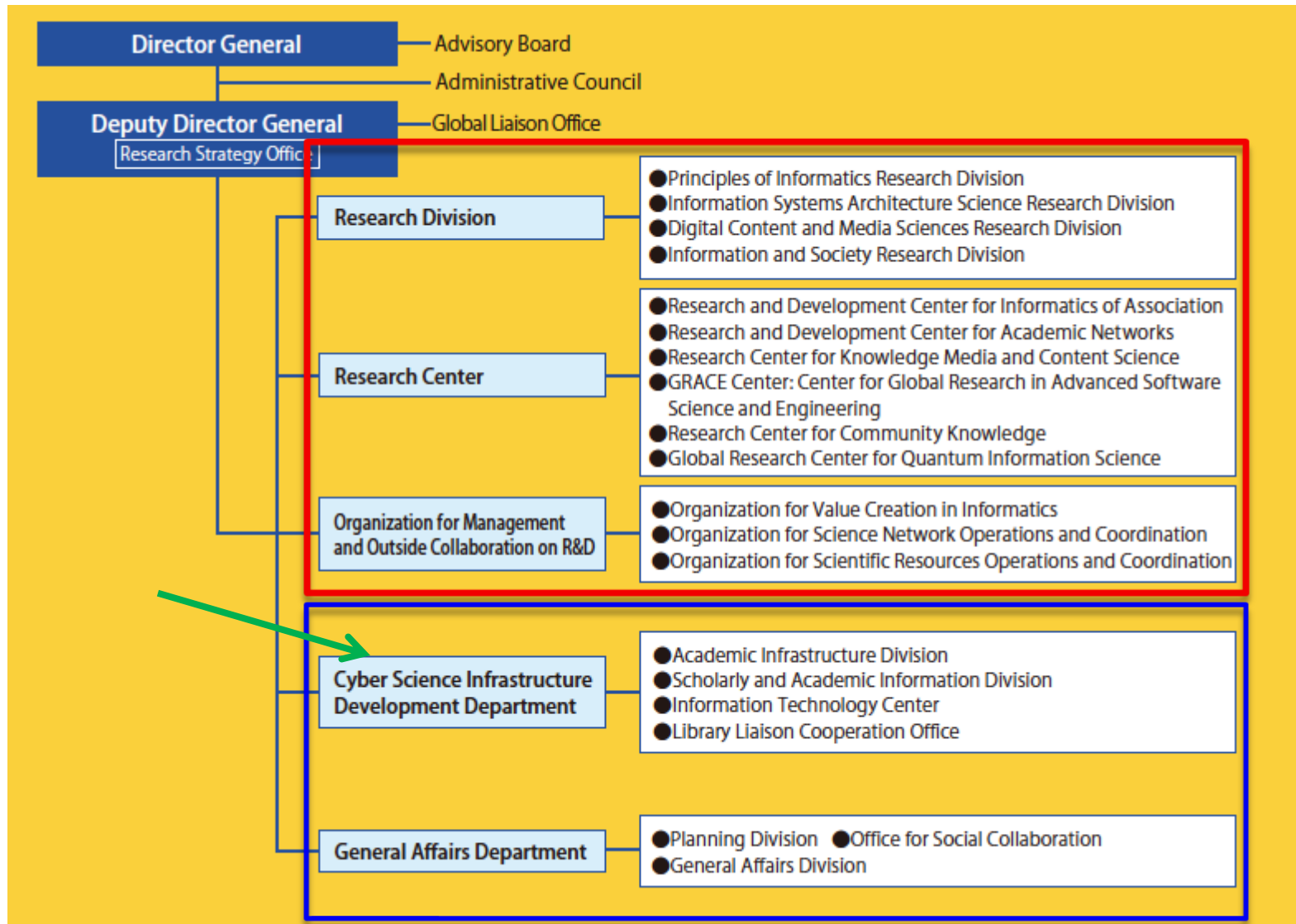
# Outline of NII

# Brief History of NII

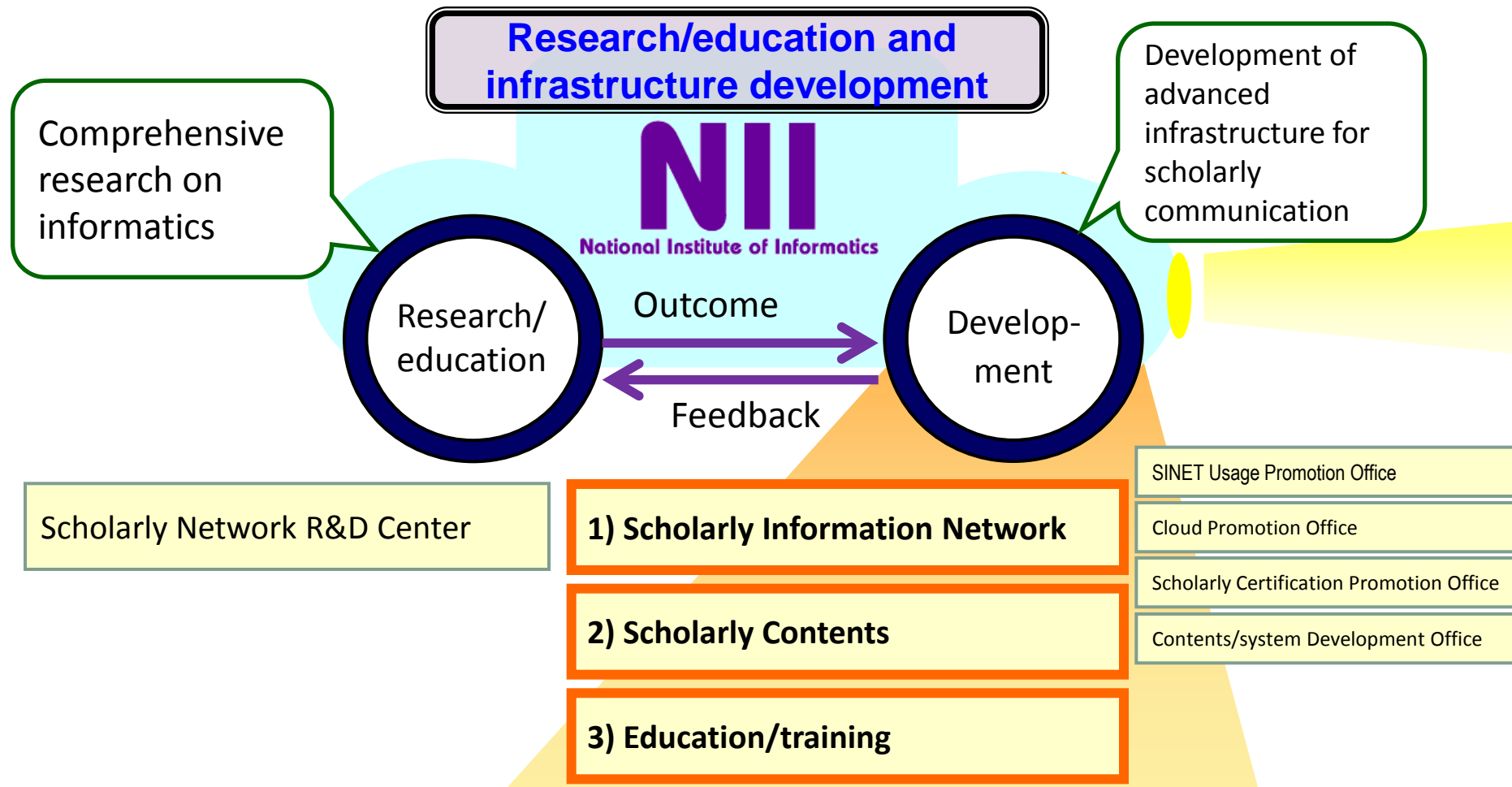
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Year	Event
May 1976	Foundation of Research Center for Library and Information Science (RCLIS), The University of Tokyo
April 1983	Establishment of Center for Bibliographic Information, The University of Tokyo (reorganized from RCLIS)
April 1986	Establishment of National Center for Science Information Systems (NACSIS)
April 2000	Establishment of National Institute of Informatics (NII) (Converted from NACSIS)
April 2004	National Institute of Informatics (a member of Research Organization of Information and Systems)

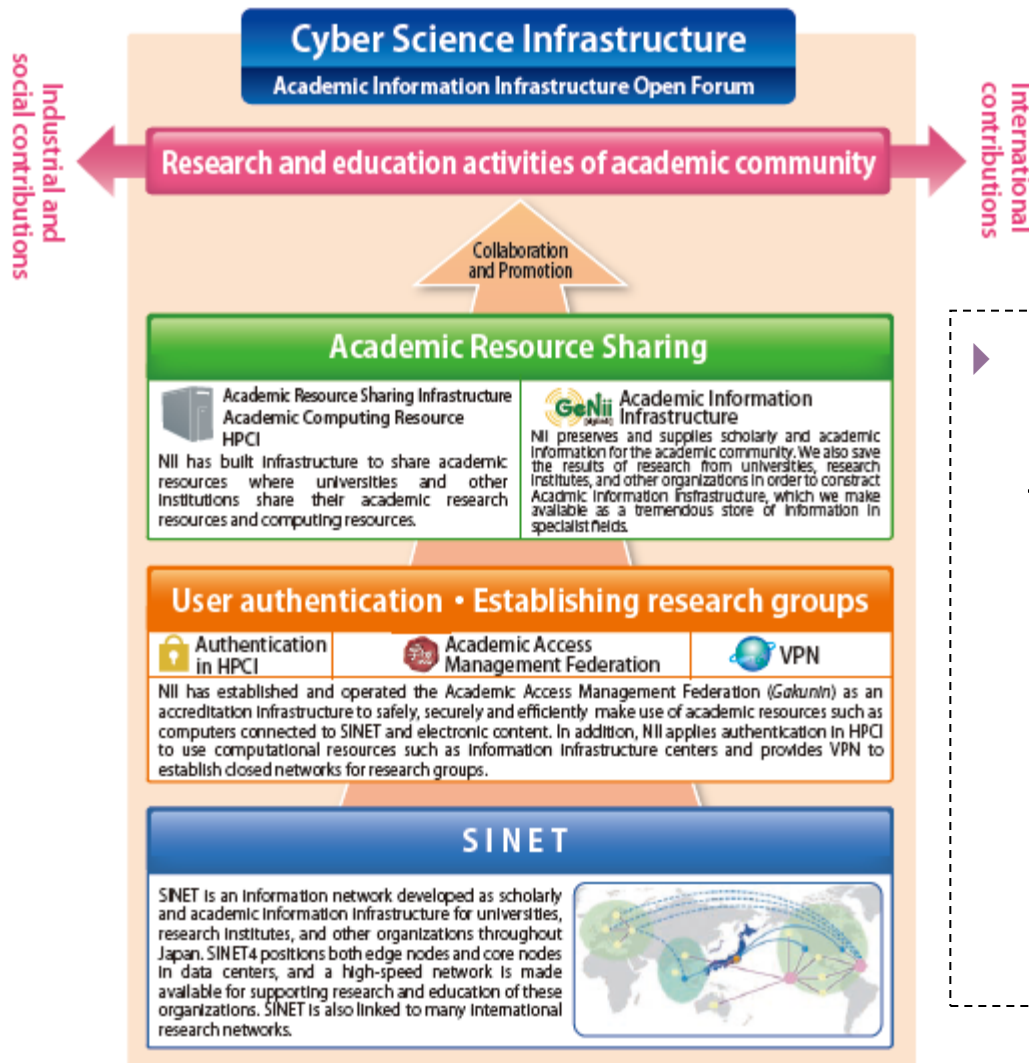
# Organizational Chart



# NII's Two Missions



# Cyber Science Infrastructure (CSI)



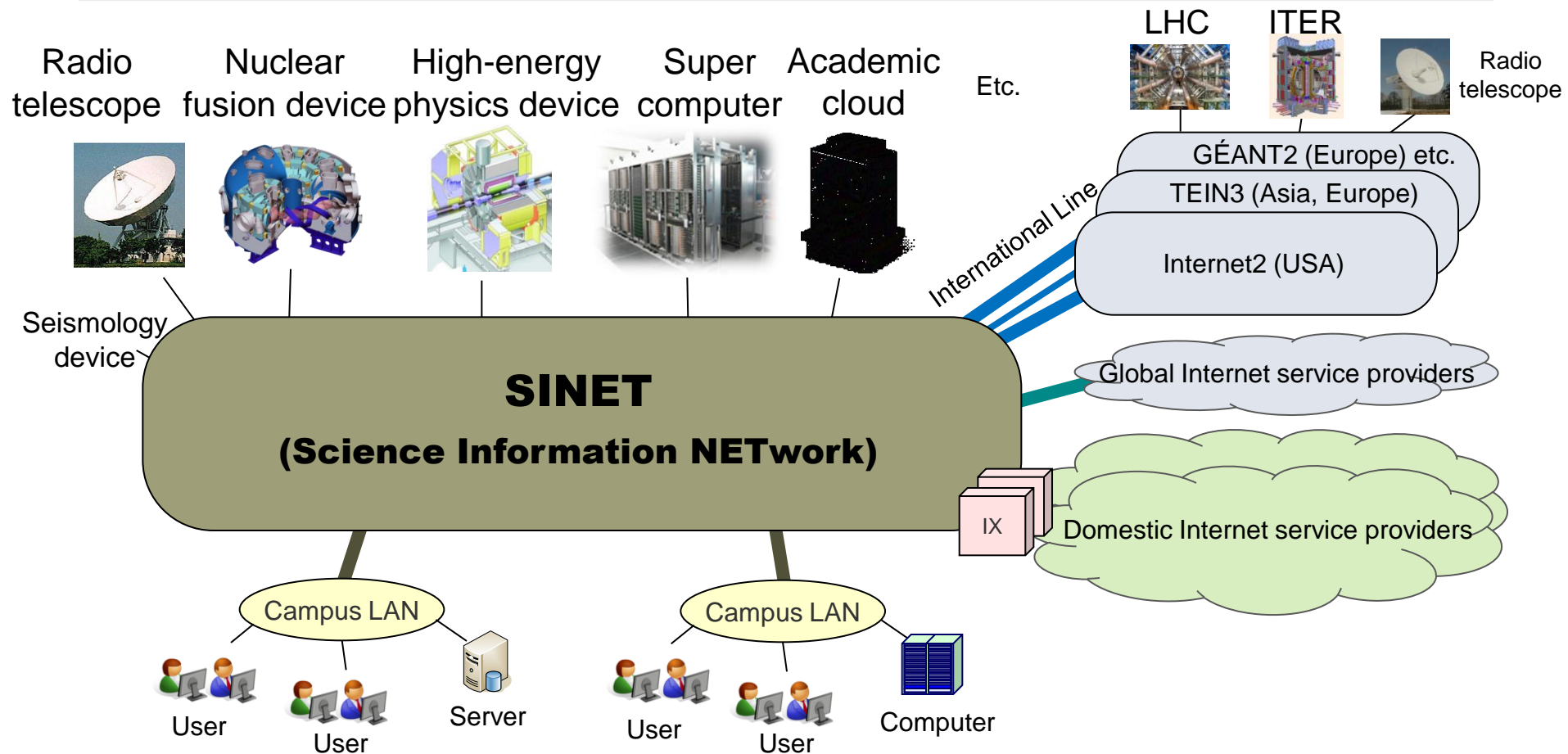
- ▶ “State-of-art scholarly information infrastructure” to connect universities and research institutions via an ultrafast network and share devices (computers, etc.), platform software, contents/databases, human resource, and research groups

# Science Information Network

- SINET4: Japanese Academic Backbone Network

# Science Information NETwork (SINET)

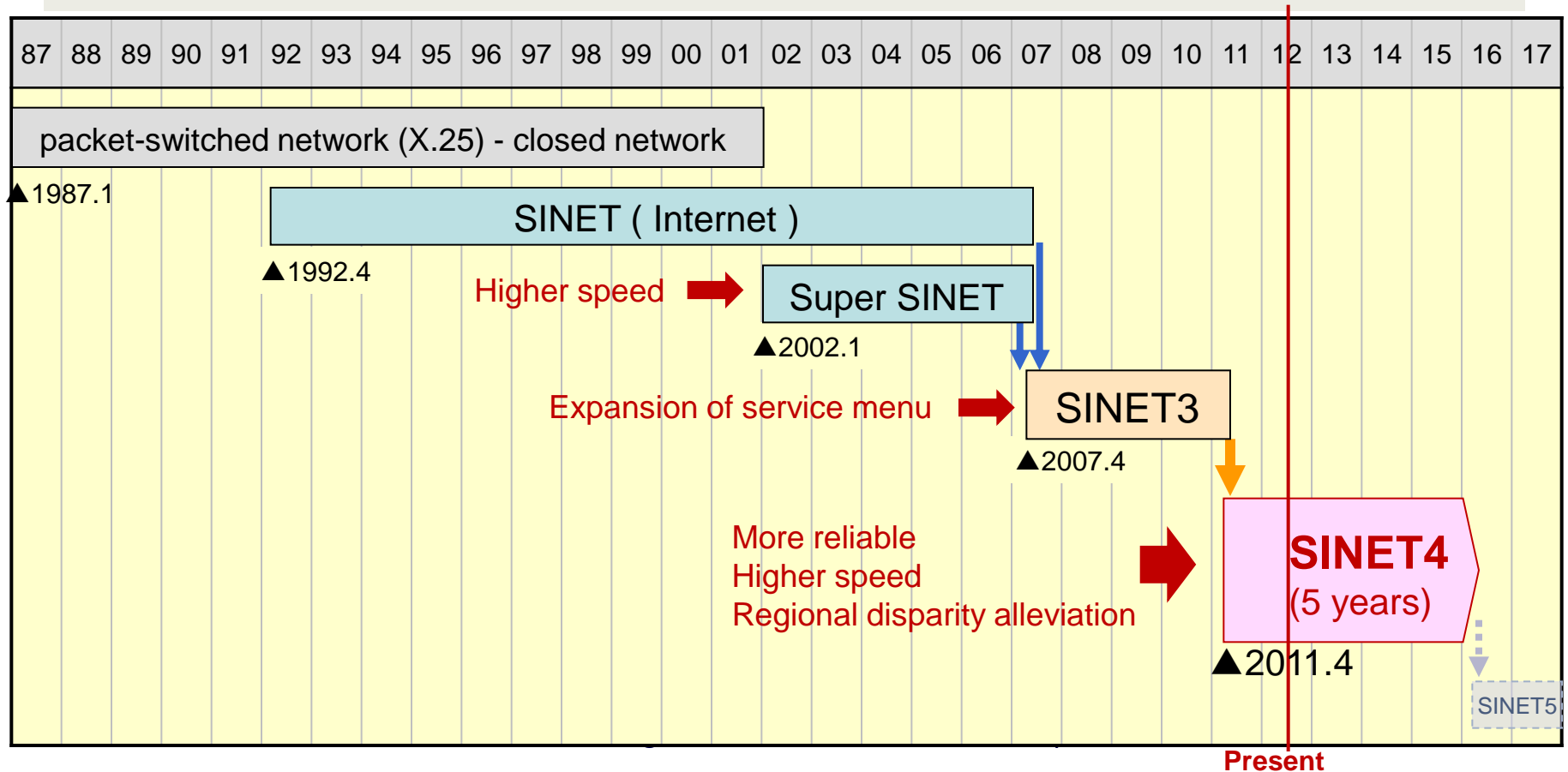
- ▶ SINET is the Japanese academic backbone network for more than 700 universities (including all national universities) and research institutions.
- ▶ It supports lots of leading-edge research activities as well as educational activities.





# Network History and SINET4

- ▶ SINET started operating as an Internet backbone network in 1992, and the third version (SINET3) expanded its service menu gradually over the single network.
- ▶ As the use of advanced multilayer network services has increased nationwide, the network is required to be higher-speed and more reliable. Regional disparities in accessibility to the network must also be alleviated.



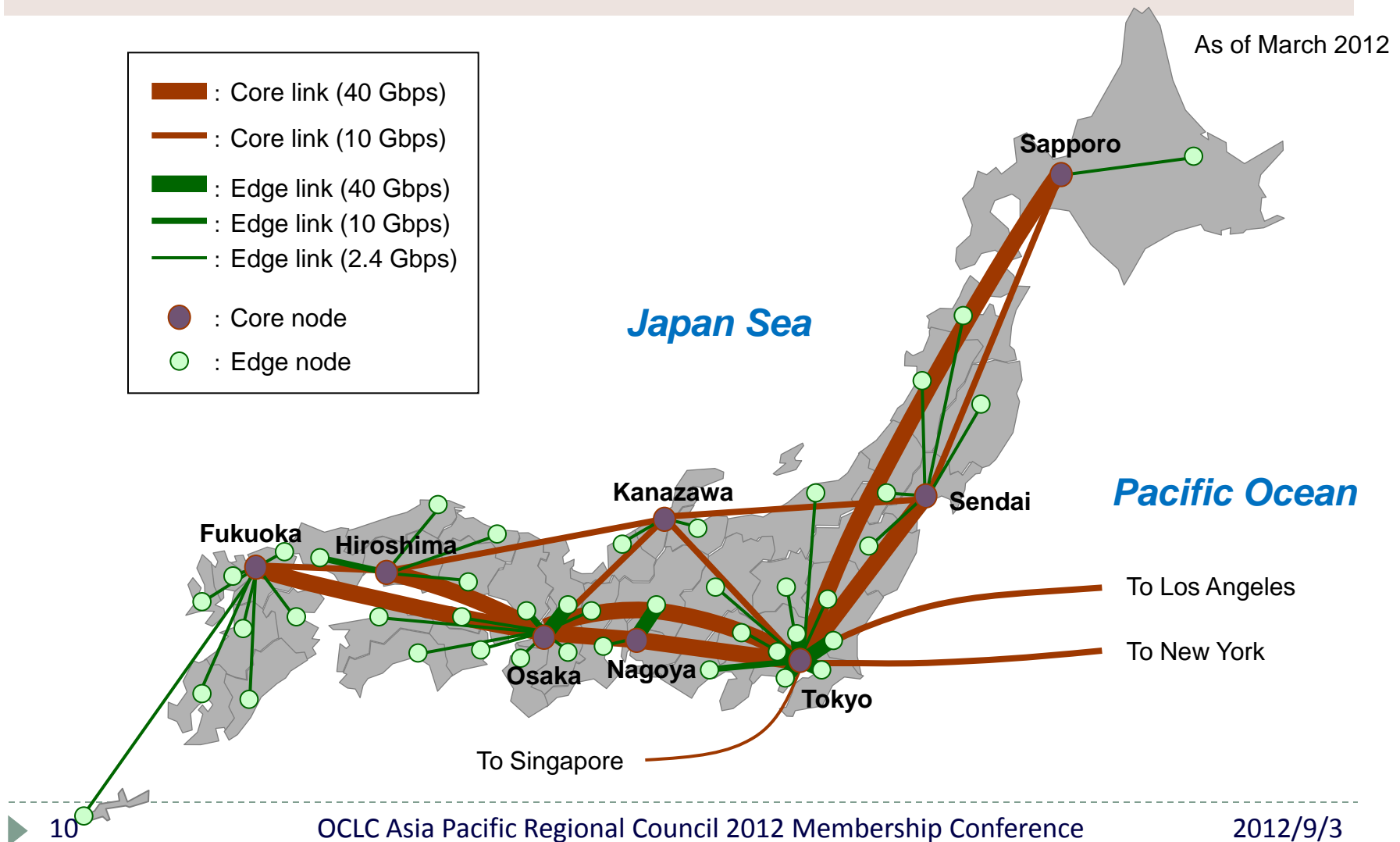
# Services of SINET4

- SINET4 provides the following variety of multilayer network services.

Service Menu		Status	Note
Layer-3 Service	Commercial Internet access	✓	Via IXs and global ISPs
	IPv6	✓	Native/dual-stack/tunnel
	IPv4 full-route information	✓	
	IPv4/IPv6 multicast	✓	
	IPv4/IPv6 multicast (QoS)	✓	
	Application-based QoS	✓	
	L3VPN	✓	
	L3VPN (QoS)	✓	
Layer-2 Service	L2VPN/VPLS	✓	Fastest growing service
	L2VPN/VPLS (QoS)	✓	
	L2VPN/VPLS on-demand	Planned	For several projects
Layer-1 Service	L1 on demand	✓	Over 1,000 paths were setup/released so far
Other Service	Performance measurement	✓	
	Traffic measurement	✓	
	Private Cloud support	✓	

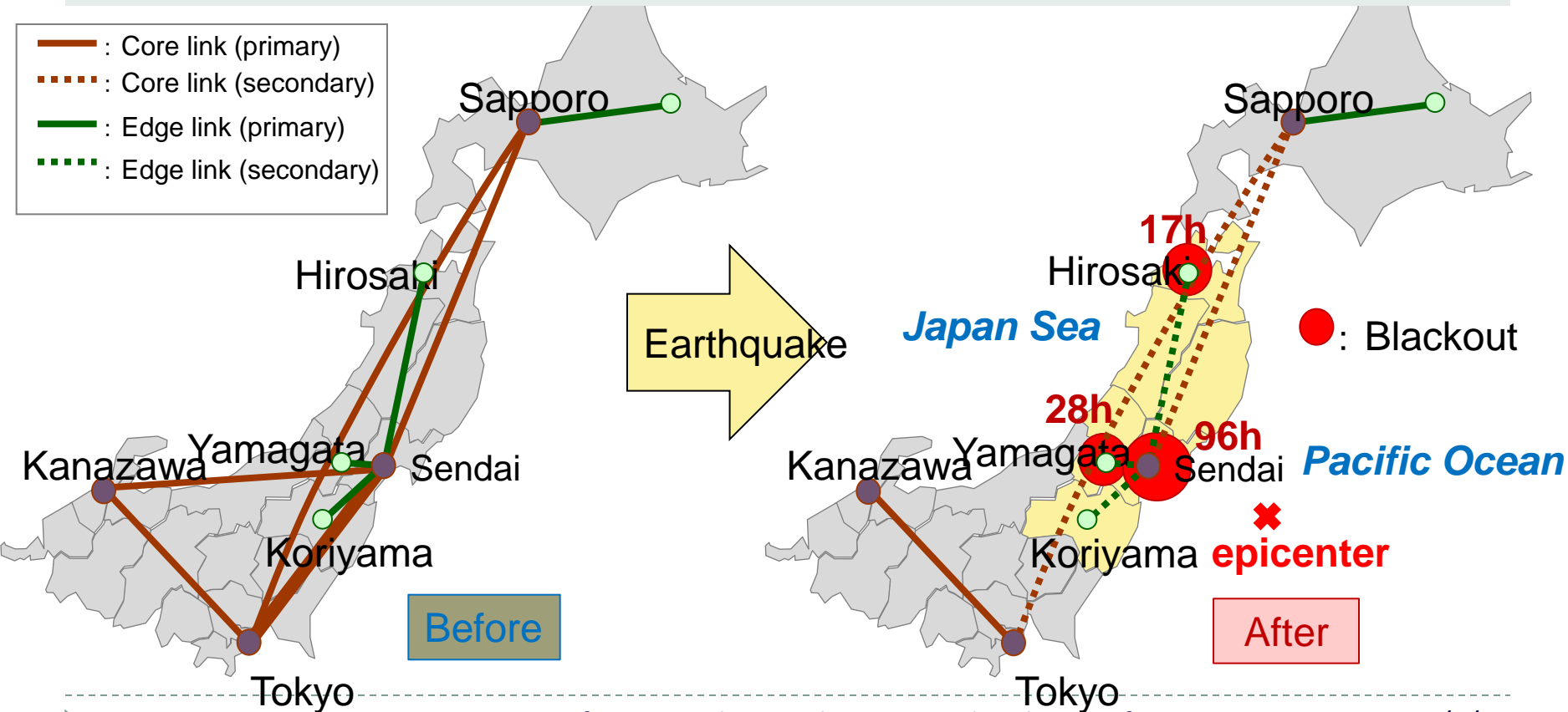
# Network Topology of SINET4

- ▶ The core links form nationwide 40-Gbps (STM256) backbone and are configured to have redundant routes for high service availability.



# Impacts of Great East Japan Earthquake

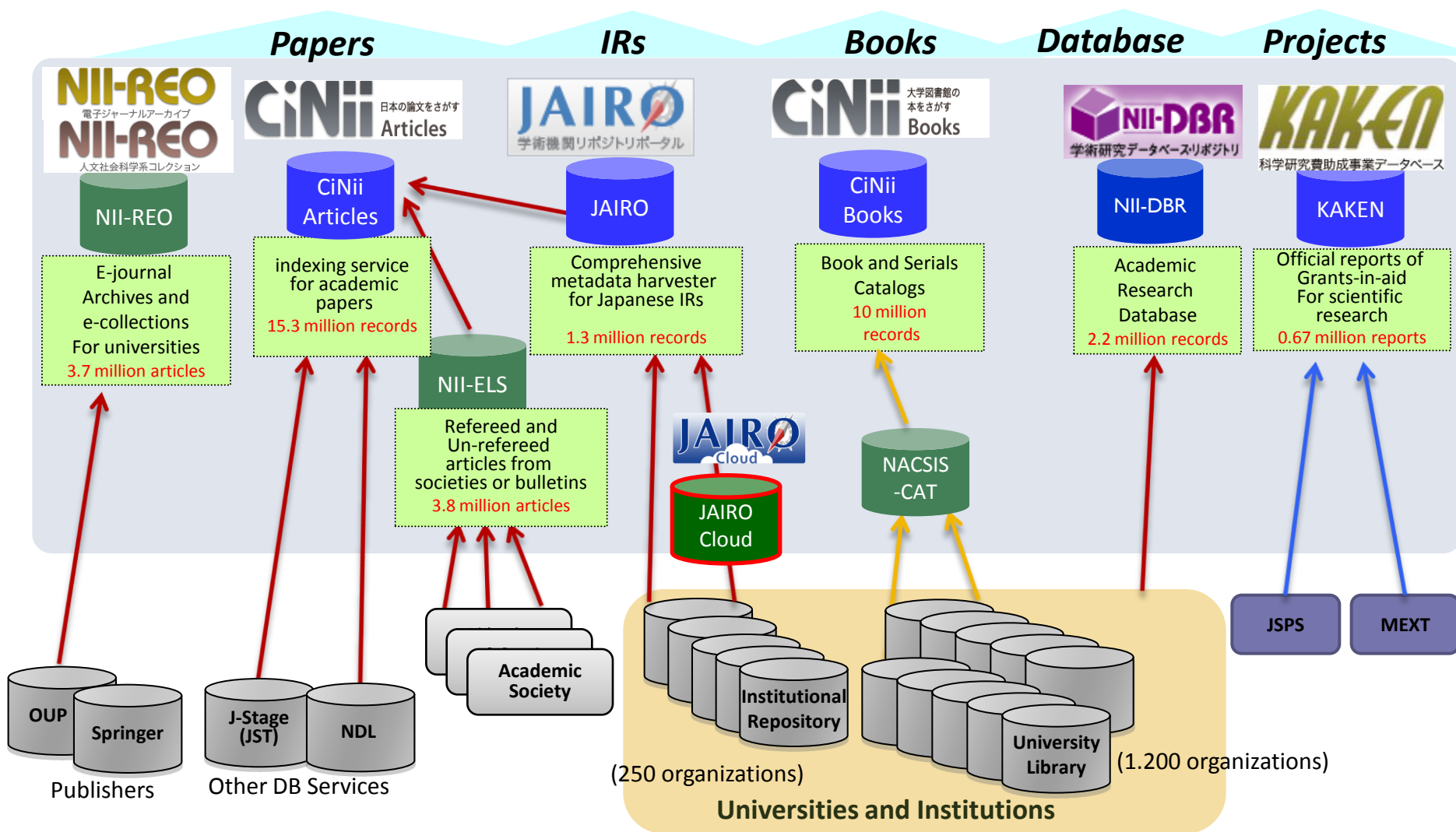
- ▶ Nodes were not damaged even by the earthquake with a seismic intensity of 7 and continued to work even in areas where the blackout lasted for long periods of time (maximum of 96 hours) through emergency power supplies by refueling them until commercial power sources were recovered.
- ▶ Primary circuits of links were severely affected, and two links were down, but the backbone could keep the routes between arbitrary core nodes open; and Sendai and Sapporo were not isolated.
- ▶ The surviving nodes and links diverted the IPv4/IPv6 packets to other routes by OSPF, saved VPN packets by MPLS protection/FRR.



# Scholarly Information Services by NII

▪ Provision of Scholarly Contents

# Big Picture: Scholarly Information Services by NII



# Collaboration with University Libraries

- Union catalog database
- ERDB (under consideration)
- Institutional repositories
- Digital archiving

# NACSIS-CAT

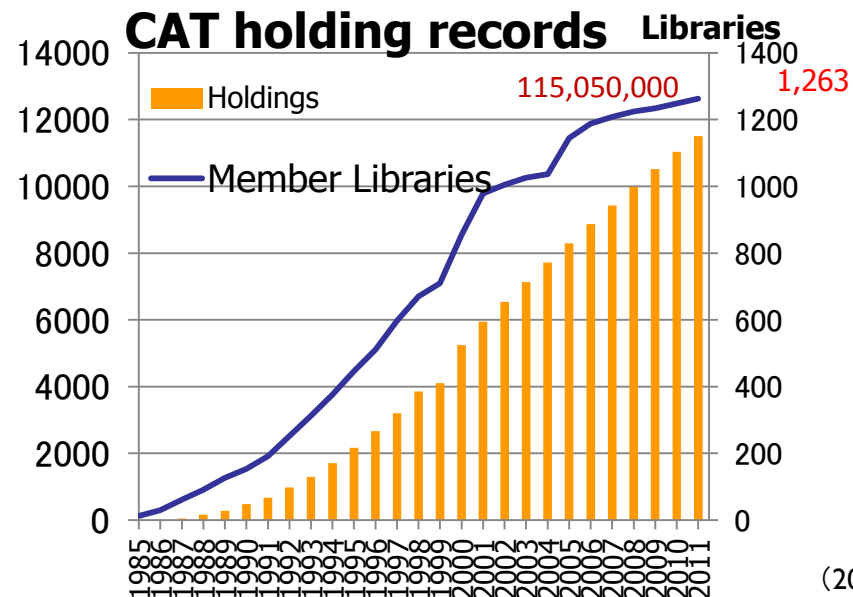
- ▶ Bibliographic records
- ▶ Holding records
- ▶ Name Authority
- ▶ Member libraries
  - ▶ More than 90% universities in Japan
  - ▶ including 128 Foreign universities
- ▶ Related services
  - ▶ Inter-library loan
  - ▶ CiNii Books

10Million

120Million

1.6Million

1,263





# NACSIS-ILL

- ▶ Photocopy requests

851 thousand/year

- ▶ Gradually decreases with availability of E-resources

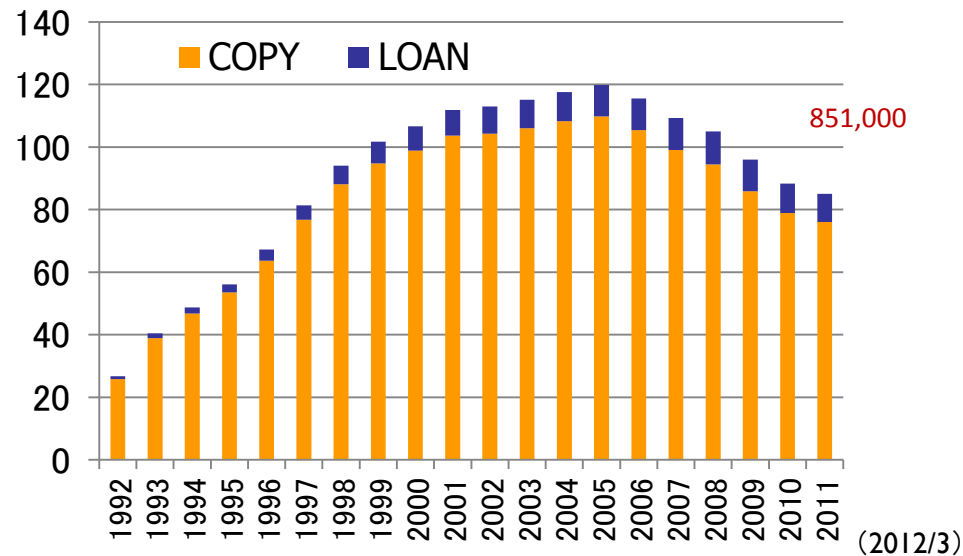
- ▶ Loan requests

90 thousand /year

- ▶ ILL for overseas

- ▶ BLDSC (1994-2010)
- ▶ OCLC (2002- )
- ▶ KERIS (2004- )

ILL records



# CiNii Books



<http://ci.nii.ac.jp/books/>

図書・雑誌検索    著者検索    [日本の論文をさがす »](#)

▼ 詳細検索

タイトル

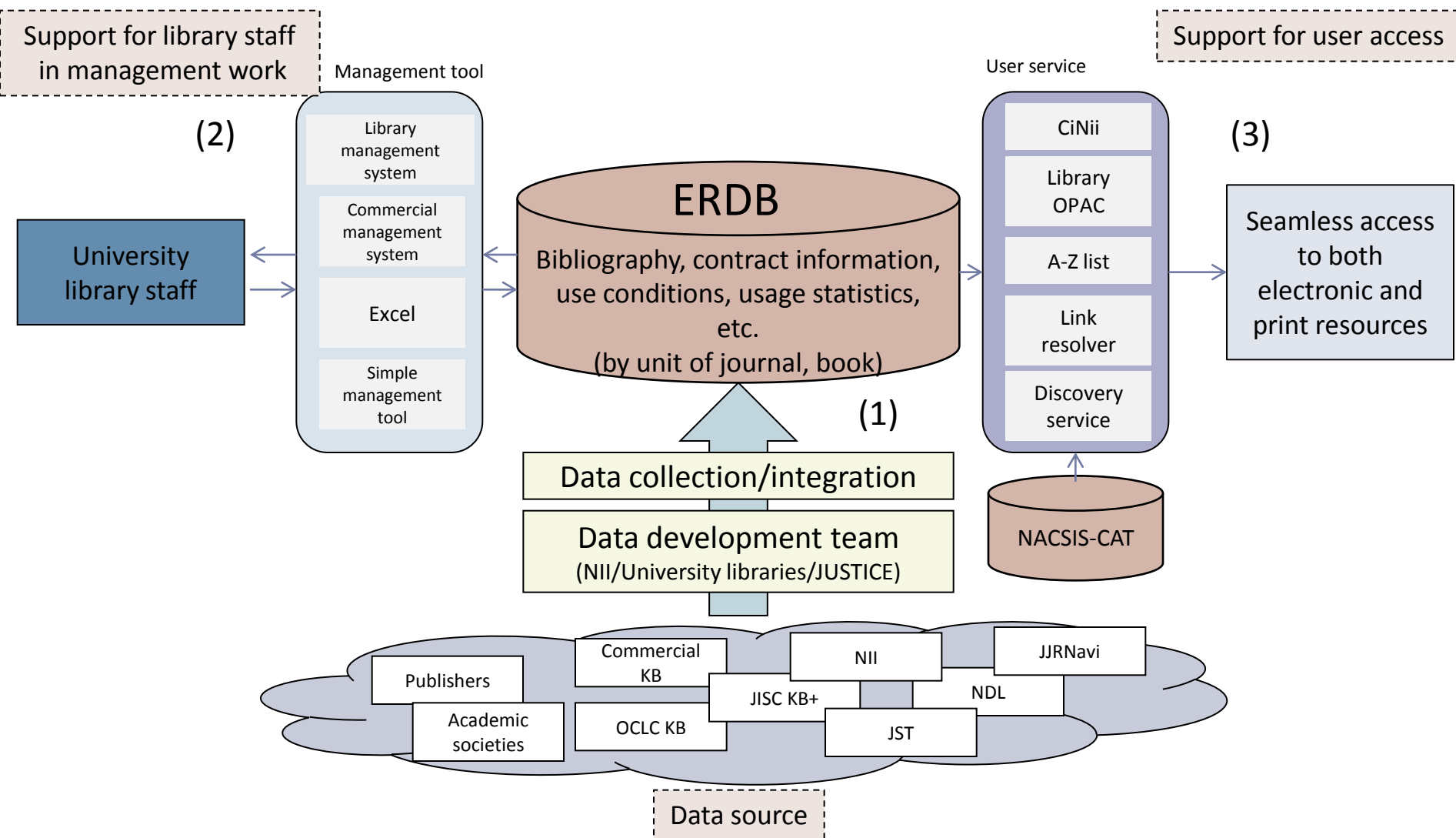
著者名 <input type="text"/>	著者名典拠ID <input type="text"/>	出版者 <input type="text"/>
ISBN <input type="text"/>	ISSN <input type="text"/>	NCID <input type="text"/>
件名 <input type="text"/>	分類 <input type="text"/>	注記 <input type="text"/>
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図書館ID <input type="text"/>	機関ID <input type="text"/>	地域 <input type="text" value="すべての地域"/>

☒ すべての資料    ☐ 図書    ☐ 雑誌    ☐ ローマ字→カタカナ

検索

- ▶ NACSIS-CAT search engine
- ▶ Start of service from Nov. 2011
- ▶ Searchable from library collection information
- ▶ Linked with library OPAC
- ▶ Provision of various Web APIs

# Development of ERDB (Electronic Resources Database)



# ERDB: Providing Support for Management and Access (Scenario)

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## (1) Development of ERDB and data sharing

- ▶ Aggregate bibliographic, contract information, use condition, usage statistics and other data on domestic and foreign electronic resources (journals, e-books, etc.) into an electronic resources management database (ERDB).
- ▶ Data development team comprising of university libraries, JUSTICE and NII will compile the data in advance

## (2) Support for university library operations

- ▶ University library staff will be able to efficiently manage electronic resources by using ERDB data via various management tools

## (3) Support for user access

- ▶ Users will be able to search and gain accurate and rapid access to necessary e-resources through CiNii, library OPAC, A-Z list, link resolvers by linking the data aggregated in ERDB with these applications
- ▶ Seamless access to both print and electronic resources can be realized by providing cross-search with NACSIS-CAT and other existing data

# Institutional Repositories

## What are Institutional Repositories?

Digital archiving systems that universities and other research/education institutions establish to collect, preserve and provide free access to the intellectual products they create.

(Contents archived)

- Academic papers (articles from academic journals, university bulletin, and theses)
- Other information such as technical reports, conference presentations, textbooks, data, etc.

Also contributing to the promotion of open access by providing articles that have been published on foreign journals

### Role of NII

- Support for construction of institutional repositories
- Support for collaboration among institutional repositories
- Provision of integrated search function

### Role of universities

- Construction of institutional repository
- Collection and preservation of information produced by members of the institution
- Information dissemination

Collaboration

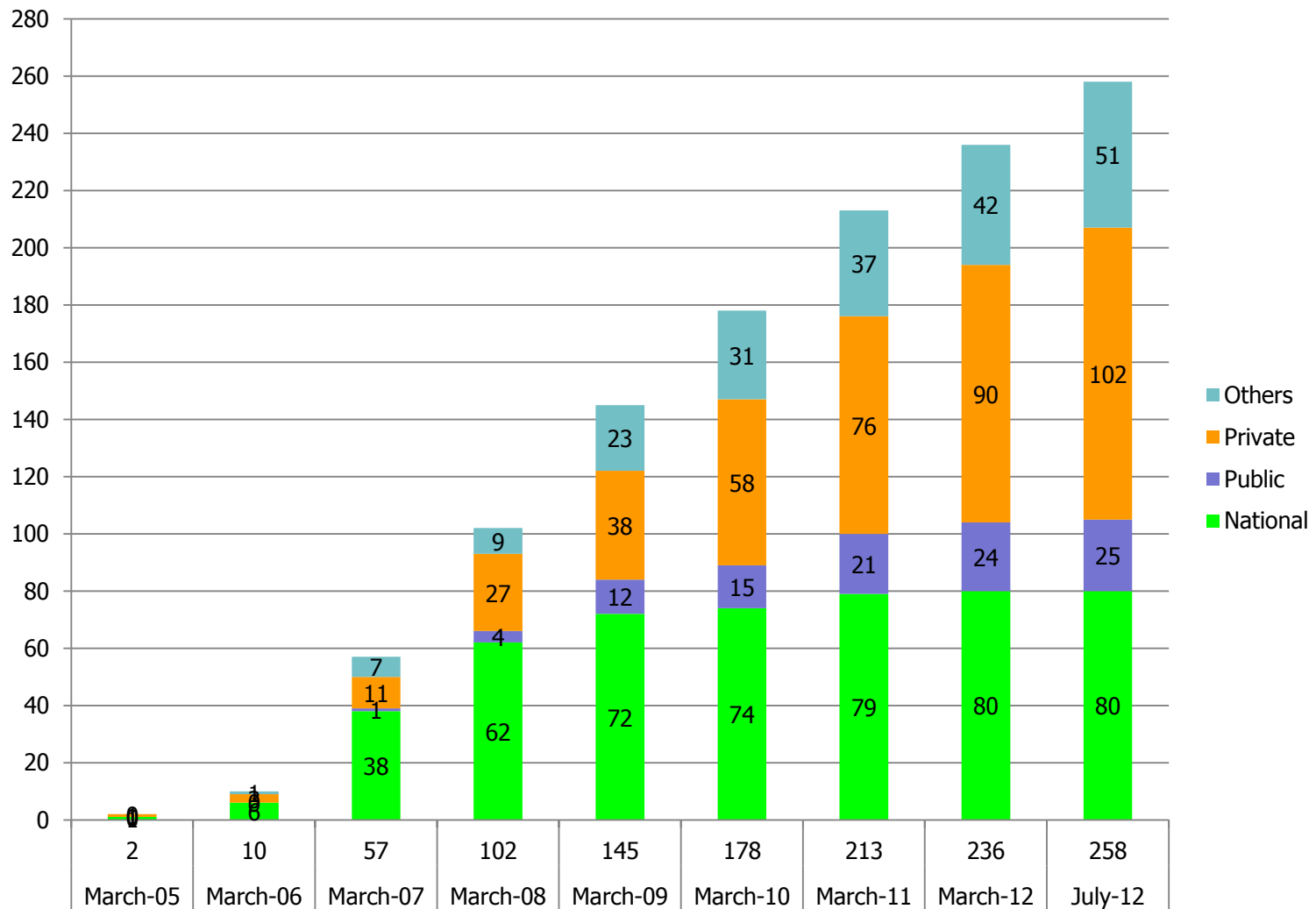


# NII-funded Programs

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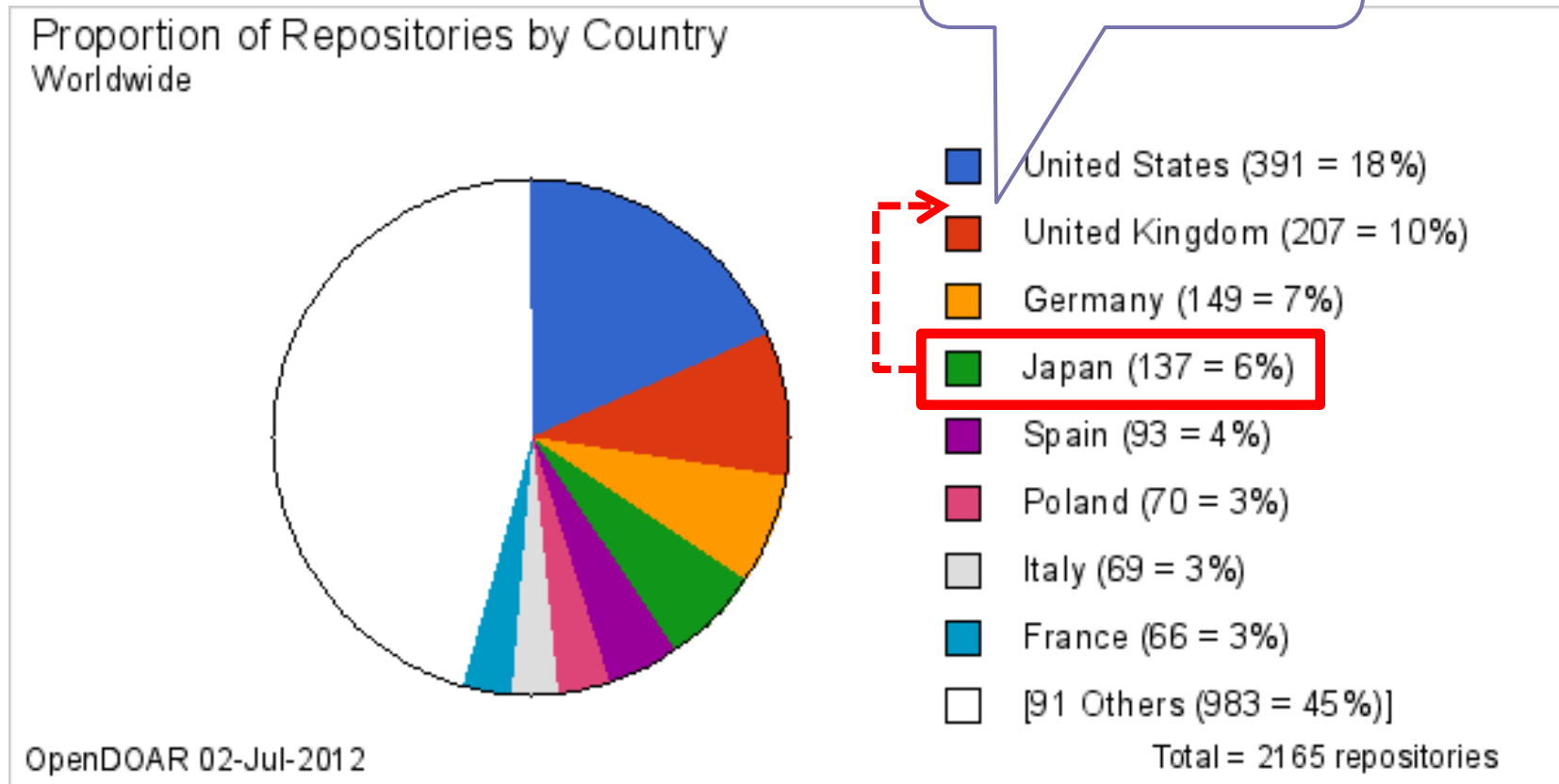
- ▶ 1<sup>st</sup> Period: FY2005-2007
- ▶ 2<sup>nd</sup> Period: FY2009-2009
- ▶ 3<sup>rd</sup> Period: FY2010-2012
  - ▶ 3 Categories of Funding
    - ▶ Area 1: Content development for new IRs (31 institutions)
    - ▶ Area 2: Research and Development (8 projects)
      - Pilot studies to accelerate the deposit of content (e.g. Theses and Dissertations, Government-funded research publications)
      - Development of new value-added services, etc.
    - ▶ Area 3: Support for community activities (DRF, SCPJ)

# Expansion of Japanese IRs (1)



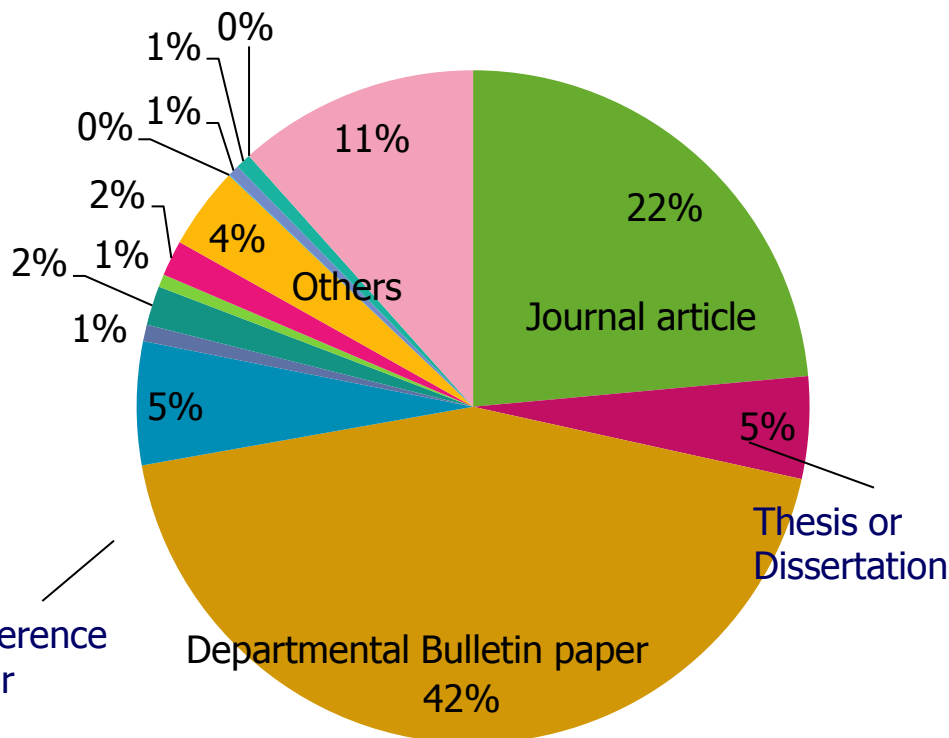
## Expansion of IRs (2)

- World total: 2165
- Japan is the fourth with 137





# Increase of Materials Deposited



content types	Number of records	Ratio of full text
Journal Article	287,061	54.0%
Thesis or Dissertation	69,675	53.8%
Departmental Bulletin Paper	544,724	88.6%
Conference Paper	69,964	20.5%
Presentation	10,163	39.1%
Book	20,519	49.3%
Technical Report	8,235	87.9%
Research Paper	22,694	90.3%
Article	48,058	82.5%
Preprint	348	91.7%
Learning Material	6,786	41.2%
Data or Dataset	52,605	99.6%
Software	25	76.0%
Others	142,118	93.2%
SUM	1,282,975	74.8%

[http://irdb.nii.ac.jp/analysis/index\\_e.php](http://irdb.nii.ac.jp/analysis/index_e.php)

(Last accessed : 2012/03/01)

# JAIRO: Japanese Institutional Repositories Online



<http://jairo.nii.ac.jp/>

2012/03/09 Number of Organizations : 197, Number of records: 1,287,581

## News

- You can search Institutional Repositories in Japan. →more
- JAIRO will be stopped for system maintenance work as follows. (2012/3/7)
- The link to [JAIRO Usage Analysis](#) is added to the top page (2010/11/30)
- Papers associated with the Nobel Prize in Chemistry are available on JAIRO (2010/10/26)

Simple Search

Advanced Search

Search

Limit search  
results by  
content type

Results per page:10

Sort by:Year(Descending)

All

Include Full-text

## Content types

Check ALL

Check Clear

☒ Journal Article (288,127)

☒ Departmental Bulletin Paper (546,991)

☒ Presentation (10,351)

☒ Technical Report (8,236)

☒ Article (48,210)

☒ Learning Material (6,791)

☒ Software (25)

☒ Thesis or Dissertation (69,832)

☒ Conference Paper (70,124)

☒ Book (20,623)

☒ Research Paper (22,743)

☒ Preprint (349)

☒ Data or Dataset (52,605)

☒ Others (142,574)

Limit search  
results by  
organization

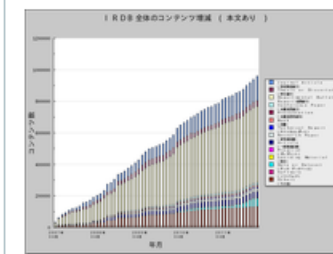
## Organizations

Display

Click on "Organizations" to display or hide the list of organizations.

- NII Institutional Repositories Program
- [Current IRs in Japan](#)

## About contents of JAIRO



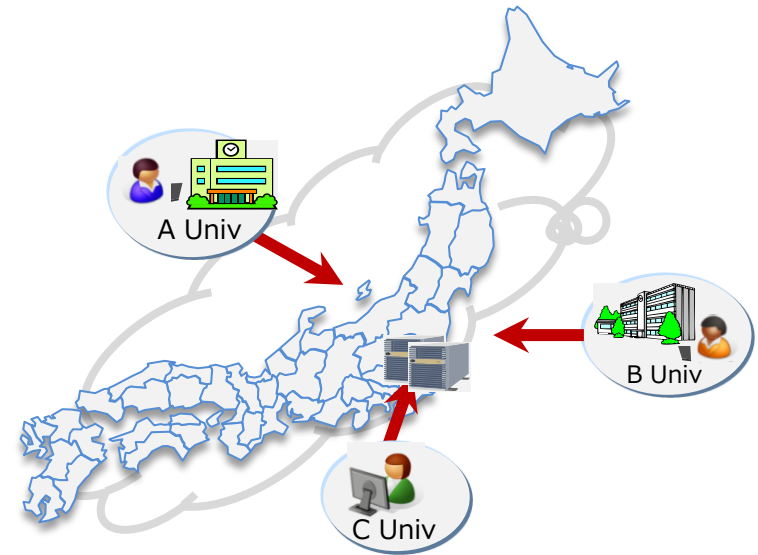
## JAIRO Usage Analysis

### Contents used well

Homma, Tetsushi  
[A Generalized User-Revenue Model of Financial Firms under Dynamic Uncertainty: Equity Capital, Risk Adjustment, and the Conjectural User-Revenue Model](#)  
Working Paper, Faculty of Economics  
University of  
Toyama, ( 229 ), 2009-06-05

### □ Outline

- Almost all national universities in Japan have their own repositories, but implementation rate of local/private universities stay around 10-20%.
- Limited resources and less technical knowledge, however, hamper implementation of IR especially in small universities.
- JAIRO Cloud provides a shared instance of IR system on the virtual server hosted by NII since April 2012.



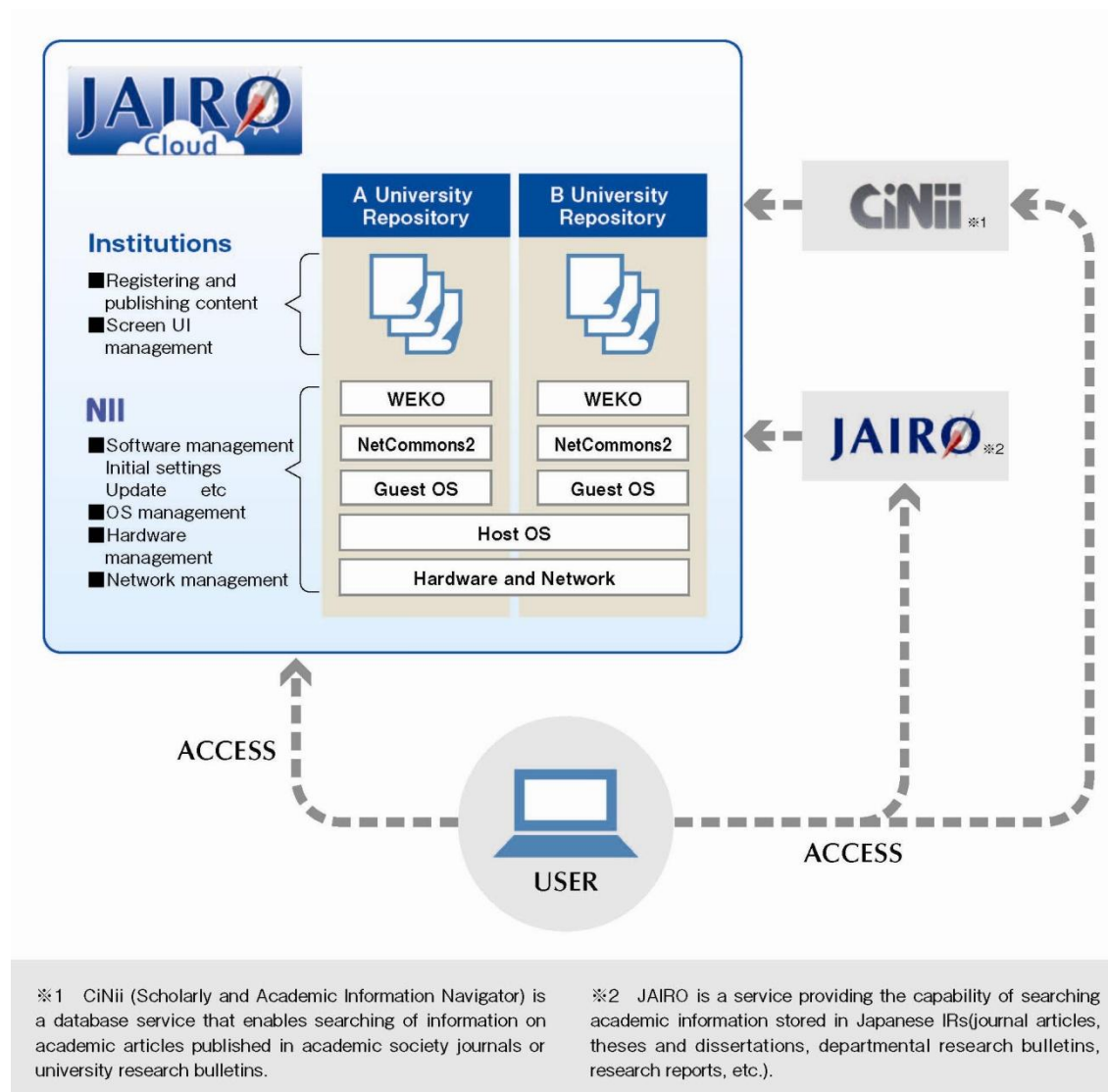
### □ Service Architecture

- NII offers easy-to-navigate IR platform with free-of-charge in initial stage.
- An easy-to-use repository module “WEKO” developed by NII, is used in the service.
- Metadata in JAIRO Cloud and other IRs in Japan can be searchable on integrated retrieval services via API, for instance JAIRO and CiNii by NII.

### □ Future Plan

- NII will aim at new construction of more 200 IRs by the 2017 fiscal year.

# JAIRO Cloud: Service Architecture



# Digital Archiving Project

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## ▶ Light archive

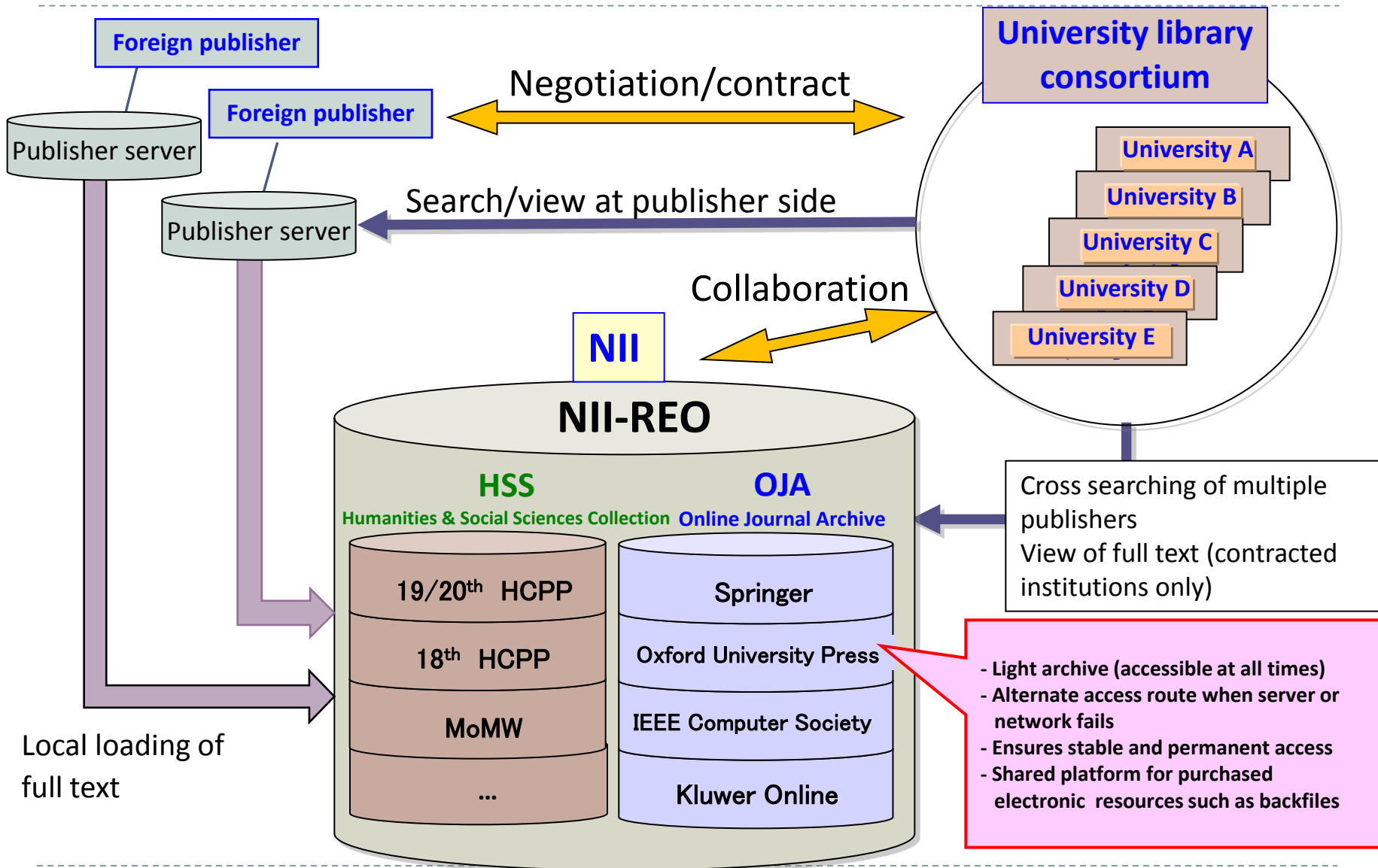
### ▶ NII-REO

- ▶ An archive to store contents jointly purchased by university libraries (local hosting server)
- ▶ Electronic journals, backfiles (Springer, OUP)
- ▶ Humanities & Social Sciences Collection (HCPP, MoMW)

## ▶ Dark archive

- ▶ Collaboration with an international project for long-term preservation of electronic journals
- ▶ Role as an Asian node for CLOCKSS (Controlled LOCKSS: Lots of Copies Keep Stuff Safe)
  - ▶ A joint project run together by publishers and university libraries around the world
  - ▶ Participating Japanese libraries: 30 (as of June 2012)

# Overview of NII-REO

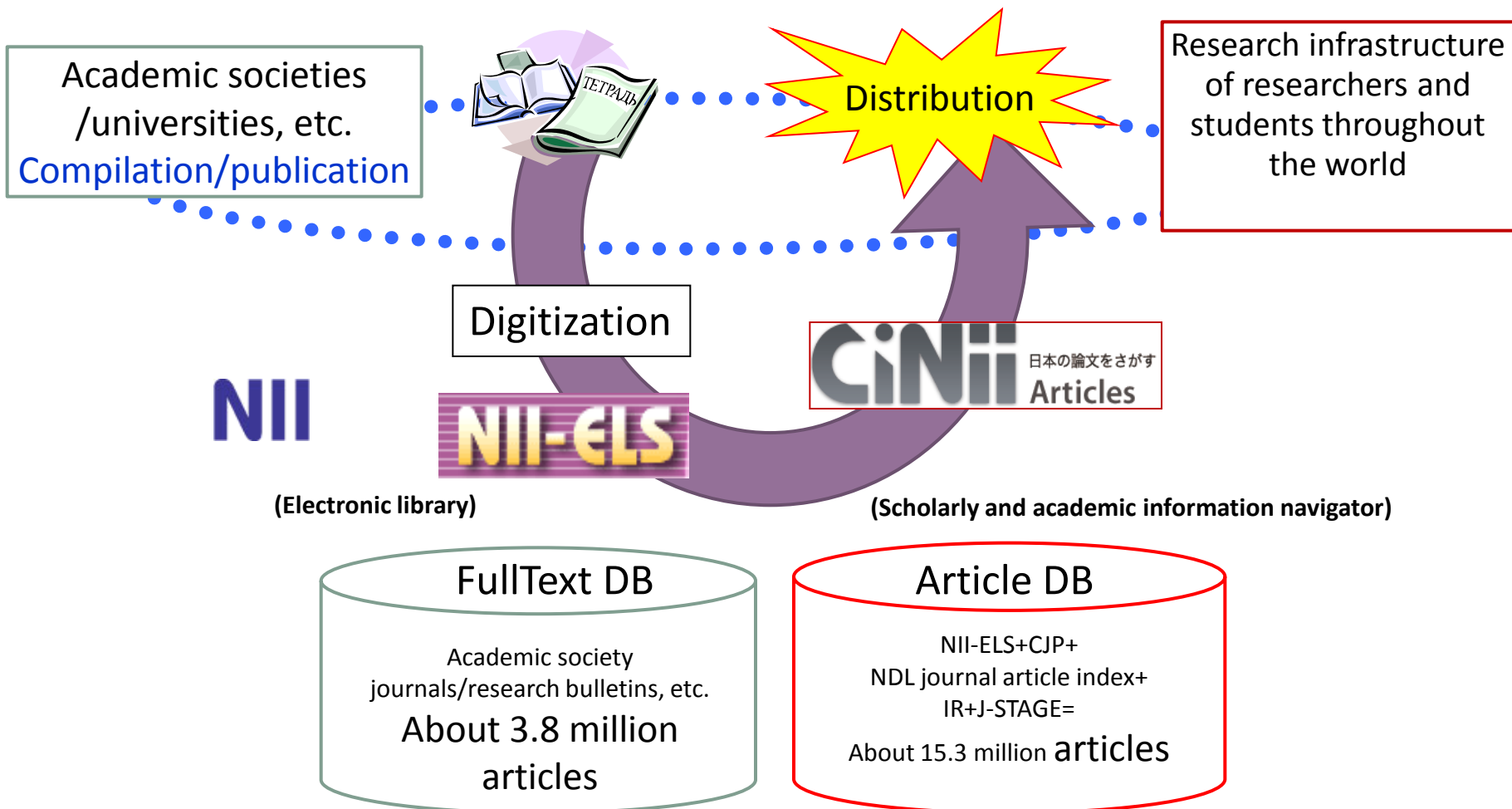


# Collaboration with Academic Societies

- Digitalization and provision of society journals
- SPARC Japan
- Informatics Square (under consideration)
- KAKEN

# ELS & CiNii Articles

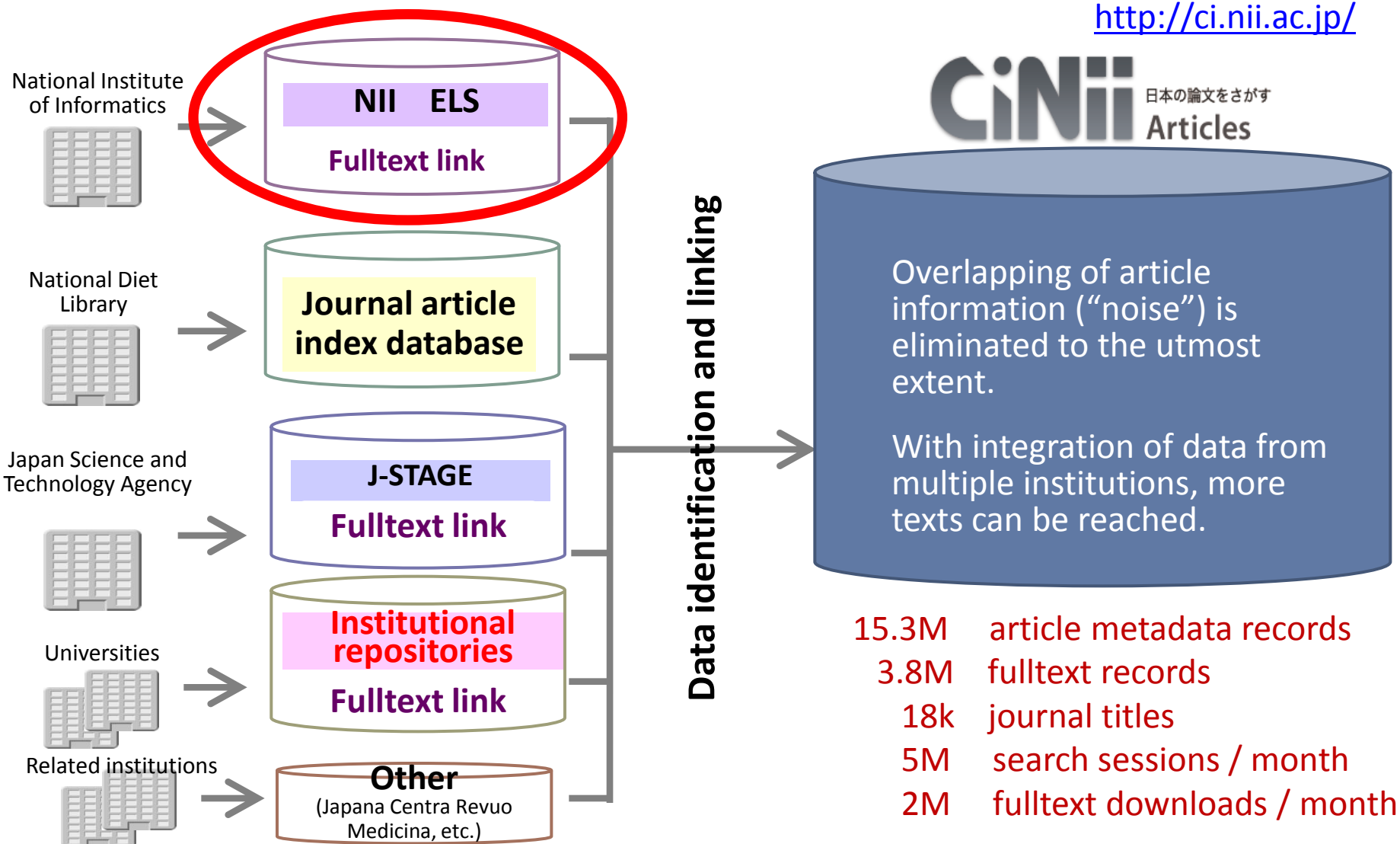
- Article information service that serves as a part of Japan's academic information infrastructure



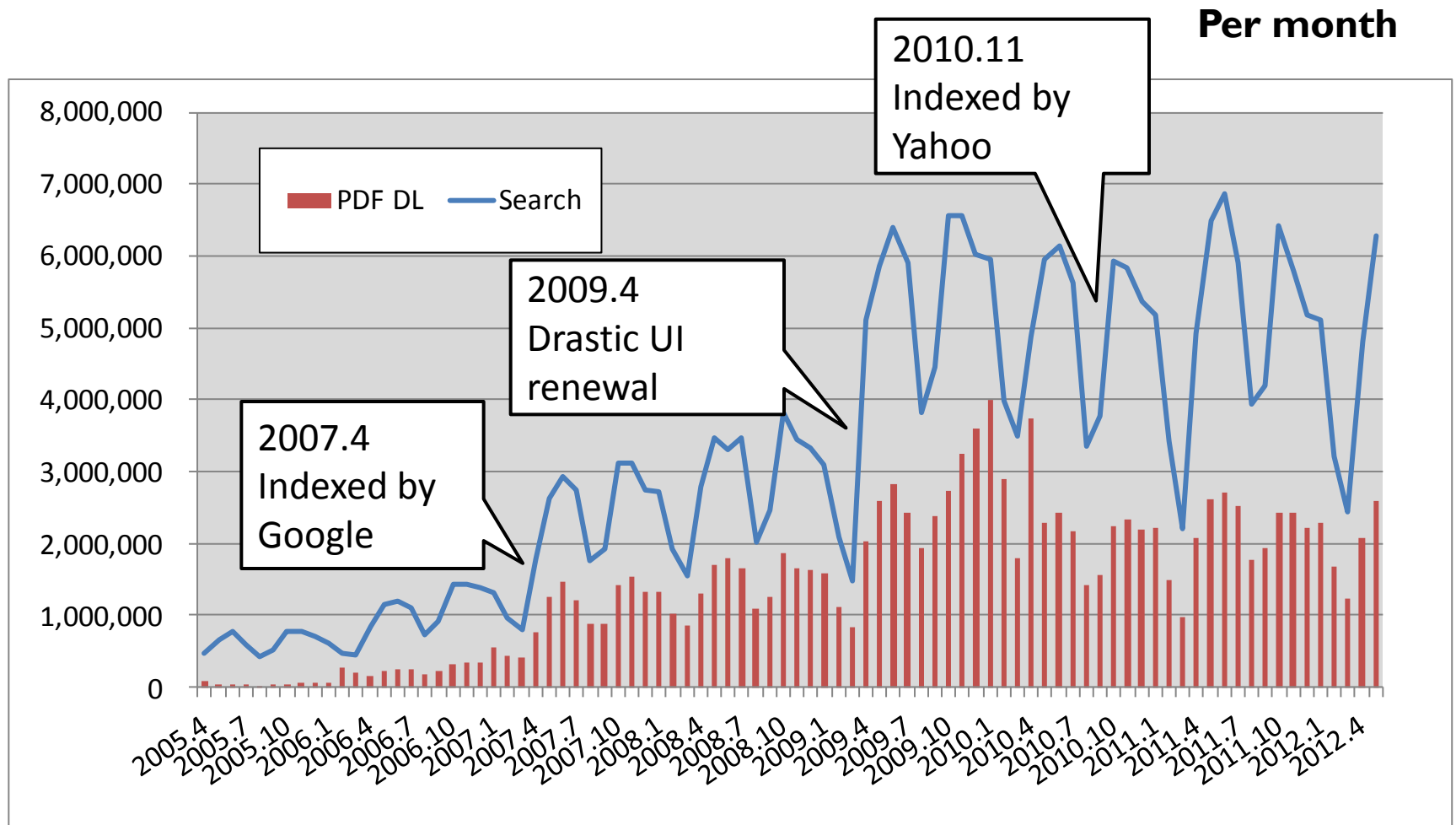


# Metadata Consolidation

<http://ci.nii.ac.jp/>



# CiNii Articles: Traffic



2012/9/3

# SPARC Japan

## Purpose

To promote electronic publishing by academic societies and to establish international recognition of Japanese journals

To enhance international dissemination of Japanese research findings by nurturing world-class journals

## Actual state

NII to support internationalization and digitalization of 45 English academic journals published in Japan as part of the SPARC Japan project

## Challenges

Digitalization and open access need to be further promoted to enhance the dissemination capacity of Japanese journals

Digitalization and publishing of English academic journals have seen certain progress but not open access.

International networking of Japanese publishers has progressed, however publisher-library collaboration and awareness raising among researchers need to be further promoted to achieve open access

## Projects

Providing support for English journals that could compete internationally

### To enhance international dissemination capacity of Japanese academic societies

- Enhance dissemination capacity of leading Japanese journals
- Enhance overseas promotion

Pilot projects to promote open access

Prioritized support

### Support to digital publishing of society journals under international collaboration

- Support for digitalization, internationalization and business model building of academic journals
- Packaging, Supporting dissemination through portal
- International collaboration (e.g. SPARC)
- Projects based on collaboration with university libraries

Collaboration

Public and private universities

JUSTICE (Japan Alliance of University Library Consortia for E-Resources)

SPARC US  
SPARC EU

Japan Science and Technology Agency

## Effects

Formation of an international academic journal community

Training of young experts through implementation of projects

Creation of new business models for academic journals



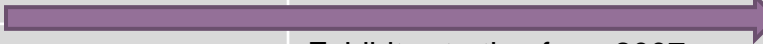

Enhancement of scholarly communication infrastructure through collaboration with university libraries

# Activities of SPARC Japan

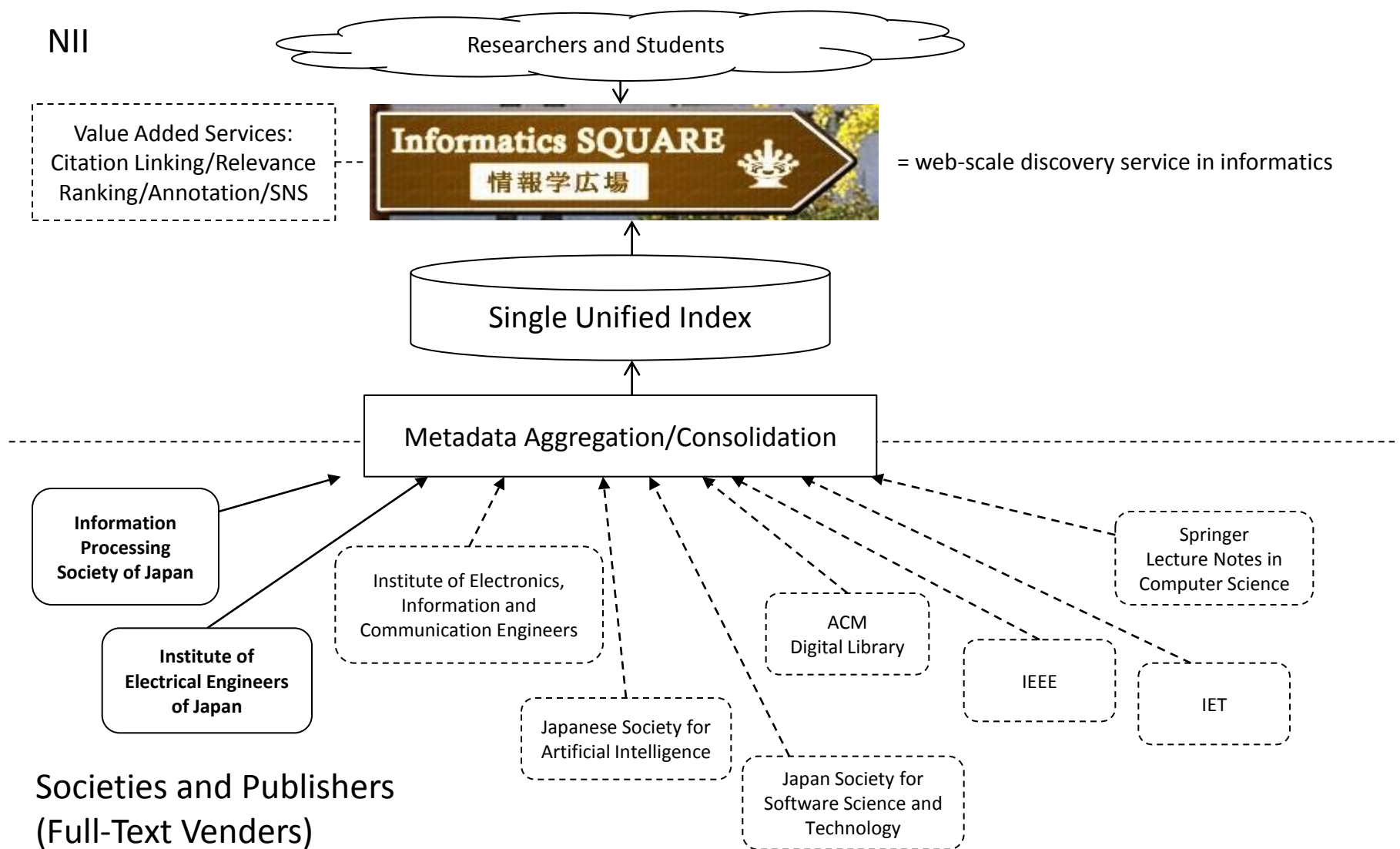
## ► Perspectives

- To promote electronic publishing by academic societies and to establish international recognition of Japanese journals
- To enhance international dissemination of Japanese research findings by nurturing world-class journals
- To improve scholarly communication from an international perspective (promotion of open access)

## ► Activities

	Phase 1: FY 2003-2005	Phase 2: FY 2006-2008	Phase 3: FY 2010-2012
Application of participating journals			
		45 partner journals	
Support for digitalization			
		All partner journals digitalized in English, of which 13 journals are available only in electronic form	
Seminars	Starting from 2005 (10 seminars)	2006-2008 (22 seminars)	2009-2011 (23 seminars)
Joint promotion			
			Exhibits starting from 2007
Newsletters			
		First issue: Feb. 2009	12 issues to date

# Informatics SQUARE (planning phase)



# KAKEN: Database of Grants-in-Aid for Scientific Research

Stores project outlines, reports, and findings of Grants-in-Aid projects

<http://kaken.nii.ac.jp/>

## Academic community / society

Disseminating and returning the benefits of grants-in-aid projects to society

JSPS (Japan Society for the Promotion of Science)

Grants-in-aid  
management database

Information

Reports

Integrated system for  
Online application/registration

Application/  
registration

Research institutions

Researcher

Researcher

Researcher

Researcher

Search/  
retrieve

Link

NII

**KAKEN**  
科学研究費助成事業データベース

**JAIR**

Metadata

Universities

Institutional  
repositories

Findings and related information  
of grants-in-aid projects  
(Published papers, research data,  
software, audio, video  
information, etc.)

Collaboration

Registration of findings  
and related information

Reports of past projects

National Diet Library

Grants-in-aid data

Digitalization of past data

# Education and Training



# Training Programs

## ▶ NACSIS-CAT Training Course

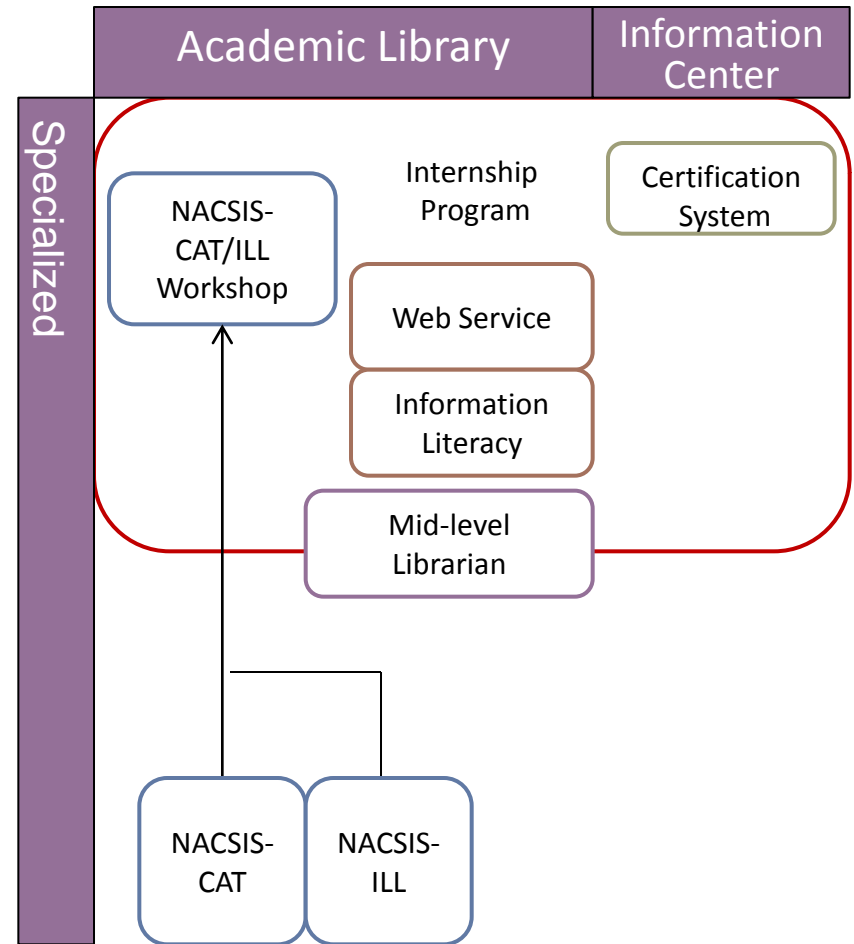
- ▶ Participants: NII staff responsible of catalog information services
- ▶ Aim: Acquire skill and knowledge on operation of union catalog database

## ▶ Specialized Training Course

- ▶ Participants: University staff involved in research support
- ▶ Aim: Acquire skill and knowledge on
  - ▶ Web Service
  - ▶ Information Literacy
  - ▶ Certification System

## ▶ Internship Program

- ▶ Participants: Librarians, staff engaged in the operation of electronic computers and networks
- ▶ Aim: Acquire skill and knowledge to handle advanced scholarly information systems through several months of hands-on training at NII





# Summing-Up: Three Roles of NII

- ▶ Role as a Data Provider
  - ▶ Contents creation in collaboration with university libraries and academic societies
    - ▶ NACSIS-CAT, ELS, JAIRO Cloud, KAKEN, REO
- ▶ Role as a Service Provider
  - ▶ Provision of value-added services to the contents through cooperation with related institutions
    - ▶ NACSIS-ILL, CiNii Articles + Books, JAIRO
- ▶ Role as a Supporting Organization
  - ▶ Provision of training to librarians and society staff, advocacy activities
  - ▶ Commissioning of projects (funding)
    - ▶ Education & Training, SPARC Japan Seminar, Funding Programs

Thank you for your attention!

