The Committee, set up under the Council for Promoting Collaboration between University Libraries and the National Institute of Informatics, wrote up *The Vision on Future Scholarly Information Systems* (hereinafter, ‘The Vision’) in May 2015, and has been reviewing the workflows related to data management and sharing of digital information resources as well as working on restructuring (i.e. streamlining of) NACSIS-CAT/ILL. In this document, we summarise the past reviews and propose the new direction aiming at 2022, challenges to be tackled next, and organisational structure so that we can build a new system in which each institution can selectively implement richer functions such as supporting digital information resources while maintaining the current function of catalogue information service.

For terms used within this document, please refer to the Glossary at the end of the document.

1. **Changes in the Surrounding Environment**

   In response to the Science Council’s report on *Outlook on Scholarly Information Systems* (1980), the operation of the Catalogue Information Service (NACSIS-CAT/ILL) started in 1985 with the aims of creating a Union Catalogue Database and interoperating it between libraries. Since then, a variety of changes has taken place in the environment surrounding scholarly information. Due to the widespread of digital information resources such as e-journals, the way resources are distributed and managed has been transformed significantly, and it has especially become imperative to respond to the premise of increasingly digitised means of information usage by researchers and students and of research and education process.

2. **Previous Reviews**

   Based on the ‘The Vision’, the Committee examined the possibility of constructing both national and individual-library level environment that allow users to discover resources in an integrated manner without distinctly differentiating digital information resources and printed materials and eventually access the required scholarly information (i.e. the environment is called ‘Integrated Discovery Environment’).

   With regards to digital information resources, we examined its mechanism for consistent workflow from contract to usage by promoting data-sharing of domestically-published e-resources through construction and operation of ERDB-JP while reviewing commercial
systems (e.g. Usability Validation of Electronic Resources Management System [Final Report, FY2016] and Ibid. [Final Report, FY2017]). Through the process, we found out that: in order to achieve an effective workflow for digital information resources, it is necessary to have a Central System, on which common data across institutions such as title lists within a package and usage conditions are shared; and it can reduce the duplication of work by appropriately coordinating it with Library Systems, on which each institution manages license information and access information.

With regards to printed materials, as measures to realise streamlined NACSIS-CAT/ILL by FY2020, we are updating the policy for creating bibliographic data, including ‘processing bibliographic data created by external institutions prior to registering it to the system’ and ‘creating a bibliography per publication’ (Streamlining NACIS-CAT/ILL [Final Report], published on 19th October 2018; hereinafter, ‘Final Report’).

Based on these reviews and in order to build the Integrated Discovery Environment, the Committee confirmed that it is necessary to construct a new system environment (i.e. the new Library System Network, an extension of the framework of the existing Catalogue Information Service) that enables the data required for managing and operating both digital information resources and printed materials to be used in an integrated manner through the coordination between the Central System, which is maintained at national level, and the Library Systems, which are operated at each institutional level. During the discussion, we also observed that: there are more options available now to implement the Integrated Discovery Environment with the advent of systems that can handle digital information resources and printed materials without distinguishing them thanks to the technological progress such as the cloud; and there are new potentials for reducing cost and enhancing operation at each institution by creating the new Library System Network through the collective procurement and operation of the system. At the same time, we also confirmed that, during the process, we should aim at constructing a system that allows each institution to selectively implement richer functions (e.g. a function to support the workflow of digital information resources, a system that combines the workflows of digital information resources and printed materials, ILL functions incorporating digital information resources, etc.) while maintaining the existing functions of NACSIS-CAT/ILL such as providing bibliographic information and sharing resources of mainly printed materials.

3. Future Direction

Based on these reviews, we summarised the functions to be achieved by the future scholarly information system and the issues to be considered in the following five points:

(1) Constructing the new Library System Network that realises the Integrated Discovery Environment
In order to realise the Integrated Discovery Environment, we will build an environment in which each institution can selectively implement richer functions while maintaining the existing framework of NACSIS-CAT/ILL. In order to achieve this, we will identify the functions to be supported by the new Library System Network, which will be composed of the Central System centrally provided by the National Institute of Informatics and the Library Systems operated by each institutions and organically-linked to the Central System, and clarify the responsibilities of each party involved.

(2) Building a Sustainable Operating Structure

We will examine the issues such as sustainable framework and cost sharing for operating the new Library System Network.

(3) Challenges for Collective Procurement and Operation of the System

We will conduct a thorough examination of the cost, each institution’s responsibilities, operating body, etc. so that we can evaluate the feasibility of collectively procuring and operating the system, which has previously been procured and operated individually by each institution and the National Institute of Informatics, as an alternative for solving the problems.

(4) Sophistication of Metadata

By collaborating with other institutions (e.g. NDL, publishers), we will comply with the requirements of RDA (Resource Description and Access) and Nippon Cataloguing Rules (2018 Version), and examine how we should respond to new international standards such as BIBFRAME.

(5) Securing Scholarly Information Resources

We will secure the wide range of digital information resources (including digital archives of universities and digitised materials of the past materials) as well as printed materials, and examine the measures to promote access and resource-sharing via the Integrated Discovery Environment.

4. Next Challenges

Among the issues outlined in the section 3, the Committee identified that the following three points are the challenges to be tackled next.

(1) Constructing a model for the new Library System Network that realises the Integrated Discovery Environment

(2) Building a sustainable operating structure

(3) Examining the challenges for collaborative procurement and operation of the system

5. Organisational Structure
Under the collaboration between university libraries and the National Institute of Informatics, we will carry out the tasks outlined in the section 4 under the framework set out below.

1) Under the Committee, we will set up a new organisational structure corresponding to the challenges described above.

2) We will start working on specific issues in order to find solutions to the challenges by cooperating with ‘Japan Alliance of University Library Consortia for E-Resources’, which enhances to secure licensed digital information resources, and ‘Japan Consortium for Open Access Repository’, which reinforces the distribution systems of universities’ research outcomes.

3) We will promote more collaboration with university libraries’ associations and councils and other relevant organisations.

* You can check the progress of the Committee’s work on the following website.
  https://www.nii.ac.jp/content/korekara/about/document/
This Glossary has been created solely for the reason to complement the terms used in this document, and therefore, the definitions may be different from those used in a more general context.

**Integrated Discovery Environment**

It refers to the national and individual-library level environment that allows users to discover resources in an integrated manner without distinctly differentiating digital information resources and printed materials and eventually access the required scholarly information. It can also mean that it allows users to search for the information that was not searchable before and accidentally discover the information that was not intended at the point of initial search.

**Library System Network**

It refers to a network in which libraries coordinate and collaborate with each other via a system. Under the Library System Network built around NACSIS-CAT/ILL, the Library Systems operated by member institutions have been connecting to the Central System (i.e. NACSIS-CAT/ILL) according to the CATP protocol (partially WebUIP, Z39.50) and sharing bibliographic information and holding information. For over 30 years, it has effectively helped to catalogue and interoperate mainly printed materials (Figure 1). In this document, we propose the direction for the new Library System Network that supports both printed materials and digital information resources and the potential of collectively procuring and operating some parts of it (Figure 2).

**Central System**

It refers to the system on which the data and functions required at each institution are centrally managed and operated at national or consortium level. For example, NACSIS-CAT/ILL, IRDB and ERDB-JP operated by the National Institute of Informatics fall under this.

**Library Systems**

It refers to the systems that are independently operated by each institution. The systems fall under this include the library operating systems for the clients of NACSIS-CAT/ILL, and institutional repositories, digital archives, OPACs, link resolvers, and discovery services, which are independently operated by each institution.
• Supports printed materials
• Both Central System and Library Systems are procured and operated individually

Central System
(NII)

Catalogue Information Service
(NACSIS-CAT/ILL)

Library Systems
(e.g. University Libraries)

Library System Network

• Supports printed materials and digital information resources
• Parts of Central System and Library Systems are collectively procured and operated

Central System
(e.g. NII, JUSTICE)

Catalogue Information Service
(NACSIS-CAT/ILL)

Digital Information Resources
- Licenses
- Title lists

Library Systems
(e.g. University Libraries)

Library System Network

Collective Procurement & Operation

• Supports printed materials
• Both Central System and Library Systems are procured and operated individually

Central System
(NII)

Catalogue Information Service
(NACSIS-CAT/ILL)

Library Systems
(e.g. University Libraries)

Library System Network

• Supports printed materials and digital information resources
• Parts of Central System and Library Systems are collectively procured and operated

Central System
(e.g. NII, JUSTICE)

Catalogue Information Service
(NACSIS-CAT/ILL)

Digital Information Resources
- Licenses
- Title lists

Library Systems
(e.g. University Libraries)

Library System Network

Collective Procurement & Operation

Figure 1. The existing Library System Network built around the Catalogue Information Service (NACSIS-CAT/ILL)

Figure 2. The new Library System Network supporting digital information resources and collective procurement and operation (draft)