Guidelines on University Research Data Policy Development

AXIES

Academic eXchange for Information Environment and Strategy

Introduction

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Universities are beginning to consider developing a research data policy.

Research funding agencies in Japan are not as demanding as their overseas counterparts when it comes to requirements for research data management. Hence, this phenomenon likely reflects the sense of crisis that those universities have. With academic research relying more and more on research data, it is likely that universities are becoming aware of the need to work actively on research data management in order to ensure compliance as an organization as well as to maintain and improve their research capabilities. It is also essential that universities establish their own archives to retain research data and to take over the products of academic achievements after the resignation or retirement of the researchers.

On the other hand, universities that took the lead in making research data policies are facing various difficulties. This is because many are unfamiliar with research data management issues they need to navigate through: collecting examples in and outside Japan as points of reference, calling on relevant internal departments to cooperate, determining officers who should assume leadership, and how the formulation of a research data policy should be internally positioned, among others. Since research data management requires a multi-stakeholder approach that involves multiple departments and officers, reaching a common understanding within each university to proceed with discussions entails enormous tasks. I hear that there has been a case where the plan to draft a policy had to be aborted, even when it was initially prompted by the internal needs for research data management.

In response to member universities' calls for guidelines designed to lead university staff to reach a

common understanding and for minimizing duplications of efforts at each university, the Research Data Management Subcommittee (RDM Subcommittee) of the Academic eXchange for Information Environment and Strategy (AXIES) has put together these Guidelines on University Research Data Policy Development The subcommittee already prepared the Recommendations for Research Data Management at Academic Institutions (the "AXIES-RDM Recommendations") in May 2019. These Guidelines flesh out the Recommendations to help establish research data management within each university.

To draw up the Guidelines, members of the universities in Japan that had completed or were working on their own policies engaged in intense discussion, referring to policies on research data management that overseas universities had made. There are two types of research data policies made by overseas universities: 1) policies based on the movement toward Open Science in recent years, and 2) policies based on actions universities take to ensure institutional compliance. These Guidelines center mostly on the concept of 1). Yet some universities may consider the concept of 2) in the coming years. When a university develops a research data policy, it is advisable to fully discuss why the policy will be made in the first place before launching the effort. The discussion should consider the climate surrounding the university, the strategies the university pursues, and the needs related to research data management.

While the AXIES-RDM Recommendations are intended for academic institutions that include both universities and research institutes, these Guidelines are exclusively for universities. This is because there already are guidelines laid out by the Cabinet Office for national research and development agencies. The mission of these agencies is to conduct research and development based on the government's plans. Universities as the centers of academic studies, on the other hand, conduct research as the work of researchers. This means that national research and development agencies and universities have significantly different views of data that are generated and used for research. Hence, their research data policies greatly differ in nature. I hope that the Guidelines will serve as a helpful signpost for universities.

These Guidelines were prepared during the coronavirus pandemic. At universities, online classes and conferences have become commonplace, and digital academic resources other than research data are rapidly increasing. Nagoya University was a second university in Japan that made its own policy after Kyoto University. The policy it developed is called the Academic Data Policy, which covers not only research data but also educational content. In addition, the 6th Science, Technology and Innovation Basic Plan, which was approved by the Cabinet in March 2021, has this target: "By 2025, 100% of all universities, inter-university research institute corporations, and national research and development agencies with institutional repositories will establish data policies."

Succession of academic work is beginning to evolve, and the evolution will be built upon a wider range of academic information than ever, which includes research data, program codes, and

educational content, in addition to conventional research papers and textbooks. I hope that the Guidelines will serve as a frame of reference for universities with a mission to be a cradle and inheritor of researchers and academic information in this time of change.

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1. Notes on the Use of the Guidelines

The Guidelines on University Research Data Policy Development (the "Guidelines") were prepared by the Working Group for University Research Data Policy (URDP[1]-WG). This working group is part of the Research Data Management Interest Group (RDM IG) of the Academic eXchange for Information Environment and Strategy (AXIES). When a movement toward university research data policy development began to grow, universities had no guidelines as a frame of reference, whereas guidelines for national research and development agencies were already in place [5]. This was why these Guidelines were born. The Guidelines serve as the first step to fleshing out the Recommendations for Research Data Management at Academic Institutions (the "AXIES-RDM Recommendations" [27]) that were put together in May 2019.

To prepare these Guidelines, we first referred to policies related to research data management that were set out by overseas universities (References 1 and 2), and then invited volunteers from universities in Japan that had completed or considering making their own research data policies to join the URDP-WG, and engaged in intense discussion with them as to issues facing universities that are working on a research data policy (References 4 and 5). The details of the analysis of overseas universities' policies are presented mostly in Chapters 3 and 4, and the issues raised by the URDP-WG in Chapters 1, 2, and 5.

Please note that the Guidelines have been prepared with the best efforts based on limited knowledge and experience. Your understanding is greatly appreciated. Please also keep in mind the following while you use the Guidelines.

◆ **Please refer also to the AXIES-RDM Recommendations and "Case Studies on Institutionalizing Research Data Management at Japanese Universities."**

These Guidelines are made in the simplest form possible, so that they are easy to read and use. For this reason, the Guidelines do not go into detail about the purpose of the policy to develop, what an organizational structure for research data management within an institution should look like, and how to examine the policy, among others, which universities may discuss in the process of policy development.

The AXIES-RDM Recommendations, [27] which were prepared earlier, describe in detail the idea of research data management and how research data management should be organized within

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[1] URDP: University Research Data Policy

universities. Moreover, "Case Studies on Institutionalizing Research Data Management at Japanese Universities," a document scheduled to be prepared, will include case studies presented by members of the URDP-WG. The latter document will illustrate, from multiple perspectives, the challenges that universities face when they promote research data management. These challenges reflect differences in approaches between universities as well as staff's positions.

Please refer to these documents as well in order to have a detailed image of the promotion of research data management at universities.

◆ **The details and structure of a policy may change as research data management within each university evolves.**

The Guidelines are made simple because the discussion as to research data management in Japan is still in its infancy. To be more specific, the explanations of the policy components in Chapter 4 cover only the items that form a skeleton. Furthermore, the policies that are referred to are largely "1) Policies based on the movement toward Open Science" above (see Section (2) of Chapter 2 and Chapter 3).

However, different types of policies may emerge as discussion advances in the years to come or universities take different views. It may be useful to develop a first policy as an early edition and continue revising it as necessary.

◆ **Instead of writing down everything in a policy, prepare explanatory documents, university-wide action plans, and departmental implementation guidelines separately.**

As shown in Section (1) of Chapter 4, research data policies are classified into the types of unstructured policies (X) and structured policies (Y and Z). The Guidelines provide explanations based on the Z)-type policy structure, which defines the "roles and responsibilities" of universities and researchers in the process of research data management. The Guidelines also recommend that, in the final stage of policy development, the policy in the works be made as simple as possible so that university-wide agreement can be reached and the policy be finalized in the "X)-type unstructured form."

Kyoto University and Nagoya University took the lead in Japan in making research data management policies. The policies they developed were simple and brief, and various issues that surfaced in the process of policy development were presented in the "Explanations and Supplements." That is, these universities combine the body of a policy with the "Explanations and Supplements" to constitute the whole policy.

The Guidelines also recommend that each university prepare "Explanations and Supplements"

along with the body of its policy. According to Kyoto University and Nagoya University, the "Explanations and Supplements" have a vital role in ensuring the workability of their policies, which portray the idea of how to handle research data only in an abstract and conceptual way. It would be ideal if the "Explanations and Supplements" include details about internal discussion, though preparing this type of document requires a great deal of effort. Note that the "Explanations and Supplements" would reflect ideas and environments unique to each university, and so providing a general description thereof would be almost impossible. Hence, the Guidelines do not cover how to prepare "Explanations and Supplements."

It is hoped that the formulation of a policy combined with an "Explanations and Supplements" will be followed by the development of a university-wide action plan and guidelines for departmental implementation designed for the implementation of research data management. A university-wide action plan shows what roles relevant administrative departments and other internal stakeholders should play, along with what they should do by when, in order to embody the policy. Guidelines for departmental implementation should describe how each department is to implement the university-wide policy. These documents will help create and operate a framework for research data management within universities.

◆ **A formulated policy should be a stepping stone to the establishment of a research data management framework within university.**

The focus of these Guidelines is on the formulation of a policy. Needless to say, however, making a policy is not the goal. It is vital to implement the policy to manage research data.

It is also possible that these two phases are worked on at the same time, or that implementation begins before policy development is complete, instead of making a policy and then implementing it. Either of these approaches works in order to flesh out the policy when the image that university staff has of research data management is unclear. It is also effective to conduct a survey of researchers in order to unearth their needs related to research data management within each university. The questionnaire created by the AXIES-RDM Subcommittee (template) [28] is available for comparison with those prepared by other universities in and outside Japan. Considering the use of it is encouraged.

2. Things to take in mind when developing a university research data policy

The following should be considered when a university develops a policy.

(1) Why a policy should be developed

Universities are only vaguely aware of the need for a policy while they work on one, and they are unclear about what the policy covers and which departments will be involved in the policy. It is vital for each university to set out its own vision of research data management through discussions within the university.

Although the purport and focus of a policy (please see Section (2) of Chapter 2, Chapter 3, and Sections (3) and (4) of Chapter 4) vary between universities, the reason why a university-wide policy is needed is invariable: each university needs to ensure that it manages research data as a responsible institution. Today, universities are held accountable as legal entities for any inappropriate management of research data. For example, any university research project that uses public funds, such as Grants-in-Aid for Scientific Research, must be carried out under the supervision of the university. It is the university that is responsible for handling requests for information disclosure. Moreover, a researcher who is to be transferred from a different university may be unable to bring his or her research data if the new workplace has no research data policy is in place. This is because, without a policy, there would be no grounds for transferring the obligation to manage research data that the researcher had at the former workplace.

It is also important to discuss a research data policy not only in terms of each university's supervisory responsibility, but also as the basis for systematic actions that are taken based on the awareness shared among faculty and staff as well as relevant departments within the university. The departments involved in research data management may define their work according to the policy, if it is available. The policy also enables people who generate, process, and manage research data in the course of research to take advantage of these acts for their performance evaluation.

Research data has conventionally been managed according to each researcher's or lab's own style, method, and/or custom. Hence, a research data policy must be designed to make research data management systematic and consistent and to further advance research activities. It is hoped that establishing a research environment for research data management will help invigorate research within each university.

(2) Types of university policies on research data

As shown in Chapter 3, an analysis of overseas research data policies categorizes these policies as follows: 1) policies based on the movement toward Open Science, 2) policies based on actions

universities take to ensure institutional compliance, and 3) policies that combine 1) and 2).

Moreover, universities might already have policies related to research integrity in place such as the "ten-year research data retention rule" (Category 4)). There are also examples in which research data are made publicly available according to university libraries' open access policies, so that people who need open access to research outputs are allowed to use institutional repositories. These open access policies would be in Category 5)).

Table 2.1: Types of University Policies on Research Data

> **(Research data policy)**
>
>   1) Policies based on the movement toward Open Science
>
>   2) Policies based on actions universities take to ensure institutional compliance
>
>   3) Policies that combine 1) and 2)
>
> **(Other policies on research data)**
>
>   4) Rules and policies for the sake of research integrity ("ten-year research data retention rule")
>
>   5) Open access policies related to institutional repositories
>
>   6) Other

These Guidelines have been prepared based on policies in Category 1). The reasons behind this include the following: many universities in Japan have apparently begun to consider setting out a policy due to the Cabinet Office's discussions on Open Science and research data management ([1] - [6]); the structure of 1) "Policies based on the movement toward Open Science" is for general use, regardless of what concept policies represent (see Introduction and Section (1) of Chapter 4); and 2) "Policies based on actions universities take to ensure institutional compliance" require clear attributions of research data as a basis, which are not fully in place in Japan.

It is possible that each university sets out a policy that is different than other universities' policies according to its own stance. The details of a policy may be reviewed and updated as discussions and research data management mature within a university. Starting with 4) or 5) may also be a good idea if there are only limited infrastructure and resources for research data management.

(3) Consideration for Researchers

It is expected that researchers will react negatively to discussions about university-wide data policy development. There will likely be opposition to top-town control, insistence that they have managed their research data on their own, and a misconstruction that all research data must be openly available and offered free of charge unconditionally, and so on. These concerns must be addressed by giving detailed clarifications.

It should be made clear, first and foremost, that researchers have managed their research data and always will, and that, in principle, researchers will choose whether or not to publish their research data, where and how long it will be publicly available if published, and whether the data will be offered for a fee or free of charge.

It is significant that universities set their research data policies. Given that all academic fields handle numerous data today, it is efficient and appropriate that each university as an institution (rather than each researcher) offers an environment where research data are properly managed, retained, and published as necessary (see the AXIES-RDM Recommendations [27]). A policy is needed to guarantee that this environment is in place. A university research data policy typically sets out that the university provides an environment for research data management, and those researchers manage research data in their labs and research activities.

How research data should be shared has been increasingly aligned with the FAIR Data Principles (Findable, Accessible, Interoperable, and Reusable) [42] in recent years. Research data belong primarily to the researchers who have generated them. Also, since research data may contain sensitive information (e.g., personal data), a proper and legitimate procedure should be followed to share the data, instead of unconditionally offering open access thereto. However, such a procedure cannot be followed if the presence of the data is not known to external entities. This is why research data should be prepared to be offered in accordance with the FAIR Data Principles. Considering that ere is a certain cost to generate research data and process them in such a way that makes them available for use by external entities, gratuitous access is not always required.

All this should be made clear so that researchers will understand the need for a policy. It should be noted that, if a university seeks a more active part in research data management, the university should be aware that such a part entails greater supervisory responsibility and costs, including management of the intellectual property of research data.

(4) What is research data management?

The term "research data management" has not been fully defined anywhere in the world. Any actions related to research data handling may constitute research data management. A research data manager may be not only a researcher, but research support staff, the library or administrative department of the researcher's university, or the university as an institution.

This obscure idea of "research data management" may become clearer when you think of whole research as a three-phase process--a pre-research, ongoing, and post-research phases--and define what should be done for data handling in each of these phases.

A pre-research phase may require managing access to data within a university or laboratory and working out a data management plan (DMP) that research funding agencies have begun to require

in recent years. An ongoing research phase may involve providing data storage and tools for data management and analysis, handling confidential data, data formatting, and data sorting, among others. A post-research phase may entail sharing and publishing research data; long-term archiving; procedures required for transfer, resignation, and retirement of researchers; managing research data as academic assets; preparing research data for 10-year storage; providing a repository where data as supporting evidence for papers are stored and accessed; and publicizing research data and providing the data to external entities, among others.

When a university manages research data as an institution, some of these actions are selected to present the university's stance, along with the relationship between the institution and researchers, in an organized way. Given that research data management is a still-evolving area, it also includes other processes of research data handling that universities will need to consider. "Research data" may range from numerical data generated and acquired from experiments, observations, and surveys to collected material and historical documents coupled with image and text data thereof, and other various documents incidental to the research (see Sections (5) and (6) of Chapter 4).

(5) Universities' positions on research data management

Universities may manage research data for various purposes (see Chapter II of the AXIES-RDM Recommendations [27]). Managing data may help a university to raise its profile and boost its research capabilities, or to promote the sharing of and open access to research data as an academic institution with a mission of preserving knowledge for posterity. Or a university may choose to emphasize research integrity as part of its responsibility.

To establish the purposes of research data management, each university must consider what its features are, what stance it takes, and what resources are available for its research data management, and so on. Universities tend to gravitate toward keep the purposes to the minimum, such as ensuring research integrity. It should be noted, however, that research data management that emphasizes the controlling side of it may compel researchers to limit their research activities. Universities are advised to set out a constructive policy that benefits universities and researchers as much as possible.

In recent years, many businesses, including commercial publishers, offer platforms designed to manage research data and other academic resources. Universities should tactfully and carefully take advantage of these offerings so that they will not rely too much on the services. Otherwise, they might find themselves in a situation where they need to pay fees to retrieve their valuable academic resources.

(6) Differences in research data management between universities and national research and development agencies

The Cabinet office has already issued the Guideline for Establishing Data Policy at National Research and Development Agencies [5] intended for national research and development agencies in Japan. However, the mission of national research and development agencies pursue greatly differs from that of universities. Hence, it must be acknowledged that these agencies handle and view research data they generate differently than universities do their data.

The mission that national research and development agencies primarily pursue is to promote research and development according to measures announced by the government. Since these agencies are financed by the government, they are, in principle, responsible for managing research and development outputs and required to use these outputs to benefit society, unless there are any special restrictions.

The primary mission of universities, on the other hand, is to pursue education and research as the centers of academic studies. Moreover, many research projects undertaken by universities are financed by research funds granted to individual researchers (e.g., Grants-in-Aid for Scientific Research provided by the Japan Society for the Promotion of Science (JSPS)). This means that universities' institutional responsibility for managing research outputs and using them for the good of society is not as evident as the responsibility of national research and development agencies. That said, universities' research projects are, for the most part, also financed by public funds. Therefore, universities are accountable for their research outputs and expected to use those outputs to benefit society.

As these facts show, research data management by universities as institutions is more broadly defined than its counterpart by national research and development agencies. Universities are expected to balance their responsibility to society with their strategies so that they find a way that is most suitable for them to manage research data as institutions.

University departments may also set out their policies and/or guidelines based on their own stance if circumstances require, such as that, as with research institutes attached to universities, their mission is similar to that of national research and development agencies, and that certain data must be handled according to the characteristics of the academic field where they belong, unless those policies and/or guidelines go against university-wide policies or guidelines.

(7) Positions on research data ownership

The column in Section (3) of Chapter 3 provides the positions taken by overseas--mainly American--universities on research data ownership. Universities in Japan have not fully discussed research data ownership, and they will unlikely be able to adopt the same positions. In Japan, at present, it would be appropriate to define researchers as the owners of the research data that they generate, according to custom.

As illustrated in Section (1) of Chapter 2, the reason why each university needs a policy is that having a policy obliges a university as an institution to responsibly manage its research data. That is, universities should be capable of taking certain actions to manage research data generated within them. Universities are advised to have established procedures and stance that enable them to take immediate action as necessary, while ensuring that researchers have the ownership of their research data.

When a researcher generates, processes, manages, and retains research data, his or her university may define the data as academic assets on the ground that the researcher has a position at the university that provides the research facilities he or she uses. In that case, however, the university should be aware that it is fully responsible for the management of the research data as well as for the costs that accompany the obligations.

Each university should also be clear about what to do with research data generated by its researchers who are to resign or retire, given that a good part of the data has been generated in publicly funded projects. More specifically, universities are advised to actively retain research data that may be useful for posterity and make them available to third parties. What to do with the ownership of research data, and how to manage the data after the researcher who have generated them resign or retire, are determined according to the agreement reached by the researcher and university. To avoid problems with the use of research data after the passing of the researcher, it is advisable to transfer all rights related to the ownership and management of the data to the researcher's university, while crediting the researcher as the original generator. The transfer may be made after a certain period following the resignation or retirement of the researcher.

(8)   Title of a research data policy

These Guidelines use the term "research data policy" stated in the policy guidelines [5] that have been set out by the Cabinet Office for national research and development agencies. Yet research data policies have been given various titles, including "Research Data Management Policy," "Policy for Open Access to Research Data," "Research Data Management and Publishing Policy," and "Academic Data Policy" (see Section (2) of Chapter 4 and Reference 1).

It is desirable that each university gives its policy a title that represents the purport of the policy it has made.

(9)   Research data and researchers covered by a policy

As shown in Section (6) of Chapter 4, there are various ways to define the research data and researchers covered by each policy. For example, research data may be classified as digital or non-digital, sorted by generator, or may contain research-related details that are not in the form of data, such as papers, research notes, and/or documents related to a research grant. It is advisable to

fully discuss which angle to adopt to define the scope of a policy within each university in order to make the final decision that best represents the purport of the university's policy.

Recent years have seen a dramatic increase in the numbers of joint research projects that use cloud storage or other similar services, and of joint research projects over a specific time period. These projects have obscured who the owners of the research data they use and who are responsible for managing the data. Some research data were not adequately managed after the joint research projects that used them ended. Each university's policy should cover these projects if the university's researchers are involved therein so that actions are taken to prevent the research data from being spread beyond the projects.

3.   Types of university research data policies

The Guidelines analyze the overseas universities' policies listed in Reference 1 ([71]-[93]) and describe the types and structures of these policies in this and next chapters.

The overseas universities listed in Reference 1 are either flagship universities or universities that are progressive in the matter of research data management in each of the major countries. Please note that, while those universities have been chosen across different countries, the list does not indicate these schools represent the world average. Some countries such as Britain, the Netherlands, and Australia have numerous universities with their own policies, whereas others have only a few universities that have established policies, and the number of samples from each of these major countries is almost the same.

(1)   Two trends in research data policies

As Table 3.1 shows, overseas research data policies are broadly divided into two types. Some universities have policies that combine the positions that these two takes.

Table 3.1: Types of Research Data Policies and Countries that Use These Types of Policies

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1)   Policies based on the movement toward Open Science

    ➤ This type of policy establishes a research data management framework within an institution that is needed to facilitate the movement toward Open Science (e.g., sharing academic information, requests from research funding agencies, and ensuring the reproducibility of research).

    ➤ Countries: European countries, Australia, Asian countries

2)   Policies based on actions universities take to ensure institutional compliance

    ➤ This type of policy establishes who owns research data, and where and how the data are retained or transferred according to the need of each university to manage documents.

    ➤ Country: The United States

3)   Policies that combine 1) and 2)

    ➤ This type of policy clarifies the position on who owns research data, while it basically follows the movement toward Open Science.

    ➤ Universities: University of Sydney, University of Queensland, Nanyang Technological University

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(Source) Analysis of the university policies listed in Reference 1 ([71]-[93])

Type 1) aims to define how the university should manage its research data in the context of Open

Science. The introduction in this type of policy tends to include background information about the policy as shown in Table 3.2. While many of those policies do not provide background information, their contents clearly indicate that the universities aim to define how they manage research data in that context. Policies of this type are adopted in Britain and other European countries.

Table 3.2: Statements Included Introductions in Policies Set in the Context of Open Science (Examples)

○ The university is responsible for preserving academic outputs as an institution that creates and passes knowledge to the next generation.

○ Knowledge that comes from the university should be shared across humanity to the greatest extent possible.

○ The university should fully manage its research data for the sake of sound development of academia (e.g., ensuring the reproducibility of research).

○ The policy has been made partly because research funding agencies require research data management.

○ The policy has been set also for the sake of research integrity and ethics.

(Source) University of Cambridge, University of Oxford, etc. [72] [74]

On the other hand, many university policies on research data developed in the United States are geared to institutional compliance [80] [83] [84] [85]. Introductions in these policies, which often state an ideal along the lines of "We are responsible for preserving academic data as a university that creates and preserves knowledge for posterity," almost invariably include the words "research data ownership." These words are rarely included in policies based on the movement toward Open Science.

Table 3.3: Introduction in Harvard University's Research Data Ownership Policy (excerpt)

Ultimately, the University is responsible for complying with laws, regulations, and requirements of its research sponsors,   many of which apply to research data.

To ensure its ability to satisfy those requirements, the University asserts ownership over research data generated at Harvard [...] under the auspices of the University, or with University resources. Although the University is the owner of all such research data, sound management practice and common sense call for the University and researchers to work in partnership to fulfill these obligations.

This policy defines "research data," assigns roles and responsibilities to key actors, and

describes its relationship to other relevant University policies.

(Source) Harvard University's Research Data Ownership Policy [83]

For more on the background to policies of the latter type, please see the tutorial on "Data Management" on the website of Responsible Conduct of Research (RCR) Administrators [60]. As explained in Section (3) of this chapter, each university needs to manage documents, respond to requests for open access to information, manage intellectual property, and ensure research integrity as a party to various contracts for research grants. Hence, universities should clearly define their relationship with their researchers in terms of research data ownership by setting their policies and act accordingly. The introduction in Harvard University's policy shown in Table 3.3 well states the framework of the policy. This type of policy not only provides descriptions regarding research data ownership, but specifies how to retain and transfer research data.

As mentioned above, policies based on the movement toward Open Science are more common in European countries where there are numerous policies related to Open Science and research data management. On the other hand, in the United States where such policies are not so common[2], policies aligned with Open Science are not much needed, which is likely why research data policies are designed for actions universities take to ensure compliance. Some universities in Australia and Asian countries have policies that combine the two types. That is, these policies are based on the movement toward Open Science and clearly state the position the universities take on research data ownership [89] [90] [93].

Overall, British universities have been working on policies that are largely oriented to the movement toward Open Science. It was the "Science as an open enterprise report" [47] by the Royal Society that initiated the movement toward Open Science in Europe. Hence, universities in Britain have developed their policies based on the "Concordat on Open Research Data" (announced by four higher-educational and academic institutions in 2016) [45] and established frameworks for research data management within the universities. The Concordat specifies the principle of open access to research data and what should be noted when open access is provided. Also in the Netherlands, many universities have made their policies based on the movement toward Open Science in accordance with the National Plan Open Science [53] published in 2017. In

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[2] In the United States, the National Institute of Health (NIH) was the first in the world to set out its Data Sharing Policy[54] in 2003. This policy, however, is intended only for research projects funded by grants of $500,000 or more. Consequently, the directions that research sponsors take do not considerably influence policies developed by universities. Note, however, that NIH currently seeks public comments in order to expand the scope of the Data Sharing Policy to cover all research grants [55]. The US Office of Science and Technology Policy (OSTP) are also open to public comments on open access to academic papers immediately after their publication [58] and on requirements for a data repository [59]. Hence, the situation surrounding US universities may dramatically change. (as of May 2020)

Germany, the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) has developed guidelines on research data management [51]. Since these guidelines have little legally binding power, only a limited number of universities have policies geared to the movement toward Open Science.

In Australia, the Australian Research Data Commons (ARDC) was launched around 2008 to integrate initiatives related to multiple research data and information infrastructure. With help from the Australian government and research funding agencies, the ARDC serves as a powerful driving force for research data management [65] [66] [67]. Consequently, many universities in the country have their own research data policies, and these policies are largely oriented to the movement toward Open Science. That said, the policies at the University of Sydney and the University of Queensland include provisions pertaining to research data ownership, which indicates that these universities needed to specify rules to ensure institutional compliance, in addition to aligning the policies with the movement toward Open Science [89] [90].

The policy set out by Nanyang Technological University in Singapore also combines the two types [93], while the University of Hong Kong is oriented to the movement toward Open Science [91].

As these examples show, the status of research data policy development varies between countries. In countries where research data management and Open Science are strongly promoted either by research funding agencies or by the governments as their strategies (i.e., Britain, the Netherlands, and Australia), almost all major universities have research data policies that are based on the movement toward Open Science. In contrast, in countries where the governments and research funding agencies only recommend, rather than promote, research data management (i.e., Germany, the United States, Canada, and Asian countries), it seems that only a handful of high-minded universities have a research data policy. Some policies developed by these universities may include their positions on research data ownership.

(2) Characteristics of research data policies based on the movement toward Open Science

Research data policies based on the movement toward Open Science typically have the characteristics shown in Table 3.4. Chapter 4 elaborates on each component of a policy. This section provides an overview of this type of policy.

Research data policies based on the movement toward Open Science have been developed mainly in European countries. Also, in Australia and Asian countries, many university research data policies are oriented to the movement toward Open Science. The vast majority of these policies are titled "Research Data Management Policy." This is most likely because these countries' governmental policies on Open Science prompted research funding agencies to demand that recipients of research grants have a research data management plan (DMP), urging researchers and

universities to manage their research data.

This type of research data policy specifies 1) the importance of Open Science or research data management for the university and 2) how research data should be managed within the university.

The reason for the wording "Open Science or research data management" in 1) in Table 3.4 is that, while some universities proclaim the importance of openly sharing academic data [71] [72] [74] [76] [77], others only touch on the importance of managing research data as an institution, without mentioning that their data are openly available [75] [78] [79]. This means that this type of policy set by a university may focus solely on what the university as an institution should at least do to manage research data, without saying a word about making academic data openly available, even as the policy is oriented to Open Science.

As for 2), many policies specify the roles of the universities and their researchers. Universities are typically responsible for: a) ensuring that their policies are known to and followed by all relevant people, b) establishing and managing the infrastructure needed for data management, c) providing support for research data management, and d) providing research data management training and promoting implementation thereof. Researchers are responsible for all aspects of research data management during research activities. Table 3.5 has been prepared based on policies set by several universities. It provides descriptions of the roles of a university and its researchers in the university's research data management. Please also see Tables 4.8 and 4.9, which portray the roles that the university and researchers have at the University of Amsterdam as examples.

A university's research data policy based on the movement toward Open Science is typically structured to describe the roles that the institution and its researchers have in research data management within the university. This type of policy often specifies researchers' role and responsibilities in each part of research data management as a research process, such as "before/during/after research." Some policies, on the other hand, are not as specific about researchers' role. They simply list what should at least be done to manage research data within the universities [71] [75] [76]. Policies that combine the two types, that is, those that are geared to Open Science and institutional compliance, are often structured to establish what must be done in each part of research data management. Some universities in Australia and Asian countries have policies with this structure [89] [90] [93].

This type of policy is developed in response to the country's Open Science policies promoted by the government and/or to demands from research funding agencies in connection with research data management. It also has to do with demands for prevention of research misconduct and with requests that must be met for the sake of research ethics and contracts, among others.

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Table 3.4: Characteristics of Research Data Policies based on the Movement toward Open Science

○ **Policy titles***
  ➢ Many are titled "Research Data Management Policy."
  ➢ Other titles include "Research Data Policy" and "Research Data Management and Open Access Policy."

○ **Purport of policies**
  1) Proclaiming the importance of Open Science or research data management for the university
  2) (If necessary) Clarifying how research data are managed within the universities (roles assigned to key actors)

○ **Policy structures***
  ➢ Many are "X) Unstructured research data policies" or "Z) Research data policies structured around roles and responsibilities."

○ **When to manage research data***
  ➢ Universities: a) When ensuring that their policies are known to and followed by all relevant people, b) When establishing and managing the infrastructure needed for data management, c) When providing support for research data management, and d) When providing research data management training and promoting implementation thereof
  ➢ Researchers: When storing, managing, and sharing research data before, during, and after research

○ **Policy background***
  ➢ National plans to advance Open Science
  ➢ Demands from research funding agencies (e.g., requests for DMPs; expenses involved in research data management)
  ➢ Requests in terms of the prevention of research misconduct (e.g., retention of research data)
  ➢ Requirements as part of research ethics and research contracts (to ensure the management of research data containing sensitive information)

○ **Major countries where policies of this type are adopted**
  ➢ European countries

(Note) Chapter 4 elaborates on the items marked with an asterisk (*).

Table 3.5: Roles of Universities and Researchers in the Universities' Research Data Management

○ **Role of the university**

    1) Defining its own purpose of research data management as an academic institution

    2) Exploring, developing, and operating the research data management system adopted by the university as an academic institution

    3) Establishing and providing a digital platform for research data management

    4) Announcing that the university's research data management system is available and encouraging internal and external use of the system

○ **Role of researchers**

    1) Making sure that proper research data management happens during research (before research)

       - Establish a responsible research data management framework in their laboratories and research project teams

       - Create a research data management plan (DMP) for each research project and update the plan as necessary throughout the research activities

       - Secure resources (personnel, a budget, an environment) necessary to manage research data

    2) Managing and storing research data appropriately (during research)

       - Manage and store research data appropriately during any research activities that may be checked for history

       - Ensure that research data as the basis of research outputs are securely stored

       - Preserve research data to keep academic works for posterity (especially when the data have been acquired using public funds)

       - Handle sensitive research data responsibly

       - Take appropriate steps to manage and store research data when the researcher is transferred, resign, or retire

    3) Sharing and publishing research data (after research)

       - Share and publish research data to the utmost extent possible

       - Add explanatory information and metadata to make research data available for use by third parties

       - Add persistent identifiers (PIDs) wherever possible (e.g., DOIs to research data, researcher IDs, research project IDs, research sponsor IDs, research institution IDs, DOIs to papers, and field IDs)

(Note) Please also refer to the AXIES-RDM Recommendations in Chapter I [27] for details about the role of a university.

(3) Characteristics of research data policies based on actions universities take to ensure institutional compliance

Research data policies based on actions universities take to ensure institutional compliance typically have the characteristics shown in Table 3.6.

This type of policy has been adopted mostly by US universities. Many are titled "Research Data Policy." [84] [85] Some titles contain the word "ownership," as in those of the policies at Harvard University and the University of Minnesota [80] [83]. Most of these policies clarify the universities' positions on research data ownership, retention, and transfer. Some policies also include statements about research data sharing and access, as Yale University's policy does [84].

Universities have been driven to set out policies of this type by their institutional needs to follow document management procedures, respond to requests for information disclosure, manage intellectual property, and ensure compliance with research integrity policies. For example, the document management policies set by NIH and the National Science Foundation (NSF) in the United States require that documents (including research data) be retained for three years. NIH also requires research data to be retained for six years in order to ensure research integrity. Research data connected to patents must be retained for the duration of patent protection, that is, 20 years[3].

A routine for research data management is usually entrusted to researchers who have generated the data. Yet their universities are ultimately responsible for ensuring that these regulatory procedures are followed. This is why universities specify in their policies how their research data are retained within the institutions, and what steps are taken to transfer the data if their researchers leave to work for a different institution. These policies also clarify the universities' position on research data ownership because it is the universities as institutions, rather than researchers as the creators of research data, that are required to meet requirements from external authorities.

Table 3.6: Characteristics of Research Data Policies based on Actions Universities Take to Ensure Institutional Compliance

○ **Policy titles***
➢ Many are titled "Research Data Policy."
➢ Some are titled "Research Data Ownership Policy."
○ **Purport of policies**
1) Defining research data ownership between the universities and their

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[3] For more on research data management at an institution, please see the tutorial on "Data Management" on the website of Responsible Conduct of Research (RCR) Administrators. Refer to [60] in the tutorial for research data retention.

> researchers

> 2) Clarifying the universities' position on research data retention and on research data transfer when the researchers leave to work for a different institution.

○ **Policy structures***
  ➢ Many are "Y) Research data policies structured to specify actions in each part of research data management."

○ **When to manage research data***
  ➢ When defining research data ownership, and retaining and transferring research data

○ **Policy background***
  ➢ Document management procedures
  ➢ Requests for information disclosure, intellectual property management, import/export management
  ➢ Research integrity, research contracts, etc.

○ **Major countries where policies of this type are adopted**
  ➢ Most policies of this type are adopted in the United States.

(Note) Chapter 4 elaborates on the items marked with an asterisk (*).

The column in this section talks about overseas universities' position on research data ownership. No clear consensus exists in Japan, and thus it is probably difficult for universities in the country to adopt the same ideas. That said, it is advisable that institutions in Japan will also clarify their position on research data ownership using, for example, how matters related to intellectual property (e.g., patents and copyrighted works) have been handled within universities as a frame of reference.

Essentially, research data retention requires data handling that follows document management procedures and other related rules. Many policies of this type demand that researchers retain their research data as stewards and custodians of these data for the durations required by those procedures. It should be noted that these policies state research data will be in the custody of the universities as necessary if their researcher who manages the research data commits research misconduct [80] [83] [84] [85]. These policies also specify that the universities' students own research data that they generate in the process of their research activities [80] [83], and that the data must be retained by the institutions until the students complete their degrees [84].

When a researcher leaves to work for a different institution, he/she will either A) keep the original research data or B) keep a copy of the data. If a researcher is to keep the original data (A)), he/she must transfer the research data to the university he/she will work for, and the researcher's new

employer must promise in writing his/her former employer that it will appropriately manage the data. Since this procedure is complicated, in most cases researchers keep a copy of their research data (B)), and their former workplace retains the original and takes actions related to the data as necessary. Of the universities whose policies we studied for these Guidelines, only Harvard University takes the approach of A) [83].

Yale University's policy specifies the school's position on research data sharing and access. The policy clarifies that the University maintains the principle of research data sharing as long as non-disclosure agreements and other arrangements are adhered to, and that research data may be put in the custody of the University as necessary if any research misconduct is committed or other equally serious incident occurs. It also makes clear that Principal Investigators (PI) have the right to access research data generated in the course of their research projects, and that the members of these research projects have access to research data with the PI's permission [84]. All this indicates that the research data sharing and access set out by Yale University does not correspond to the "sharing and access" based on the movement toward Open Science as described in Section (2) of this chapter.

[Column] US and Other Overseas Universities' Position on Research Data Ownership

Research data policies set out by US universities typically state that the universities own research data[4], and that Principal Investigators (PIs) and researchers are stewards and custodians of research data[5].

According to the tutorial on "Data Management" on the website of RCR Administrators, this position is "contentious[6]" even at US universities. The tutorial also states that the universities need to clarify their position on research data ownership in this fashion because, although it is their researchers who generate research data, they are required to manage documents, respond to requests for information disclosure, manage intellectual property, and ensure research integrity as institutions [60].

Harvard University's Research Data Ownership Policy states, "The University has the proper resources to secure and manage research data, as well as protect associated intellectual property rights, and therefore is the appropriate administrator of such data.[7]" The policy also says,

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[4] "The University asserts ownership over research data for all projects conducted at the University, under the auspices of the University, or with University resources." [83]

[5] "Principal Investigators (PIs) and other researchers are stewards and custodians of research data." [83]

[6] RCR Administrators: Administrators and the Responsible Conduct of Research, "Whose Data Is It?" Opening Case, Tutorial <https://ori.hhs.gov/education/products/rcradmin/topics/data/open.shtml>

[7] "The University has the proper resources to secure and manage research data, as well as protect associated intellectual property rights, and therefore is the appropriate administrator of such data." [83]

> "Although the University is the owner of all such research data, sound management practice and common-sense call for the University and researchers to work in partnership to fulfill these obligations.[8]"

These statements indicate that the University does not clarify its position on research data ownership because researchers may take research data away from the University, and that the University acknowledges its researchers as the holder of the rights to sensibly use and share their research data and to make presentations on outputs using research data.

For example, the University of Sydney states, "the University grants the creator or collector of research data and primary materials a non-exclusive, perpetual, royalty-free license to use those data and primary materials for research and education purposes.[9]" Nanyang Technological University states, "the University assigns automatic rights to the PI and his/her designated researchers to use and publish all research data arising from their project for non-commercial purposes only.[10]"

(4) Japanese universities' position on research data policies

Sections (1) to (3) introduce the two types of research data policies overseas. One is oriented to the movement toward Open Science, and the other is designed to ensure institutional compliance with document management and other requirements. That is, each has its own purpose.

That said, policies oriented to the movement toward Open Science are essentially intended to establish how research data should be managed within the universities as well. Hence, these two types are similar in that they clarify the universities' governance of research data. Although the two are based on different views--that is, one aims to establish how each university appropriately manages, stores, and publishes research data for the purpose of sound development of academic works, and the other to ensure each university's institutional compliance with document management procedures and other requirements-- policies of either type share the purpose of managing research data. This means that universities as institutions required to manage research data should not consider the two different.

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[8] "Although the University is the owner of all such research data, sound management practice and common-sense call for the University and researchers to work in partnership to fulfill these obligations." [83]

[9] The statement by the University of Sydney: "Subject to any obligation or agreement to the contrary, the University grants the creator or collector of research data and primary materials a non-exclusive, perpetual, royalty-free license to use those data and primary materials for research and education purposes." [90]

[10] The statement by Nanyang Technological University: "The University assigns automatic rights to the PI and his/her designated researchers to use and publish all research data arising from their project for non-commercial purposes only." [93]

It is likely that many Japanese universities planning to make a research data policy envision a policy based on the movement toward Open Science. Yet universities in Japan are advised to consider having a research data policy based on actions they take to ensure institutional compliance. This is because research funding agencies in the country are not as demanding as their overseas counterparts when it comes to requirements for research data management, and because universities in Japan must also ensure compliance with various rules including the ten-year research data retention rule that was set primarily to prevent research misconduct. Alternatively, they could have a policy that combines the two types.

If a university planning to develop its research data policy is a member of Research Universities 11 (RU11), it needs to take into account the fact that RU11 has signed the Sorbonne Declaration on Research Data Rights as one of the nine groups in the world's research university network [70]. The Sorbonne Declaration seeks to make research data openly available. Although it does not require its signatories to follow this principle, it advises them to do so. For a provisional translation of the Declaration, please see Reference 2.

As stated before, which type of policy a university chooses to develop depends on the situation surrounding the university, how a policy serves as the university's strategy, and what needs the university has in connection with research data management. It is advisable that each university fully discusses why it should have a research data policy before working on details of the policy to develop.

4. Components of universities' research data policies and what to state for each of the components

This chapter presents what to state for each component provided in a research data policy. This means that a university's research data policy is complete when the details for each of the components provided in Sections (2) to (9) below are determined.

Table 4.1 shows several types of research data policies, and this chapter provides an explanation in simple terms that revolves around "Z) Research Data Policies Centered on Roles and Responsibilities," as this can be a basis for either of the other two. Universities planning to adopt an unstructured policy (X)), or a policy that specifies actions in each part of research data management (Y)), are advised to make a policy that falls under Z) first and then restructure it to shape it as either of the other two.

One suggested way is to clarify the university's position on research data management within the university using the Z) structure as a base, and delete details on which university-wide agreement could not be reached from the draft, so that the policy is finalized in a form that is as simple as the X) structure. In a practical sense, this is the easiest way to develop a university's first research data policy. If a university chooses this approach, it is advisable to present the details omitted from the body of the policy in "Explanations and Supplements" so that these details will also be followed once the policy is implemented, as stated in the third note in Chapter 1 of these Guidelines.

(1) Policy structures

The structures of the university research data policies listed in Reference 1 are broadly classified into three types.

"X) Unstructured Research Data Policies" use simple and random structures that list five to ten items that the universities should set forth regarding research data management. "Y) Research Data Policies Structured to Specify Actions in Each Part of Research Data Management" make policy statement and define terms in the policies, and then lay out what should be followed in each part of research data management.

"Z) Research Data Policies Centered on Roles and Responsibilities," on the other hand, make a policy statement and define terms in the policies, and then dedicate a section to laying out the roles and responsibilities of the universities and their researchers. Some universities that use a Y)-type policy structure state the roles and responsibilities of the universities and their researchers only in the final section of the policies.

Table 4.1: Types of Research Data Policy Structures

X) Unstructured Research Data Policies	

XX University Research Data XX Policy
 	
(Introduction)
 	
    1. (The university's position on research data management)
 	
    2. (Scope of research data)
 	
    3. (What to note in each part of research data management)
 	
              :
 	
    X. (The role of the university in research data management and the support the university provides)
	Kyoto University [40]
	
	Nagoya University [41]
	
	University of Edinburgh [71]
	
	Technical University of Munich [75]
	
	University of Göttingen [76]
	
	Wageningen University & Research [79]
	
	University of Hong Kong [91]

Y) Research Data Policies Structured to Specify Actions in Each Part of Research Data Management	

XX University Research Data (Ownership) Policy
 	
- Introduction (including background information on the policy)
 	
- Policy statement
 	
- Policies and procedures
 	
  A. Research data ownership
 	
  B. Research data retention
 	
  C. Research data transfer
 	
  D. Research data sharing and access
 	
(Roles and responsibilities*)
 	
- Definitions of terms
 	
- Related rules
 	
- Relevant departments and contact information
	University of Minnesota* [80]
	
	Harvard University* [83]
	
	Yale University* [84]
	
	Boston University [85]
	
	University of Alberta (Canada) [86]
	
	University of Queensland (Australia) [89]
	
	University of Sydney* (Australia) [90]
	
	Nanyang Technological University* [93]
	
	*Universities with policies that define "roles and responsibilities"

	Note: Most universities that develop a policy to ensure institutional compliance, or to pursue Open Science and institutional compliance both, adopt this structure.

Z) Research Data Policies Centered on Roles and Responsibilities	

XX University Research Data (Management) Policy
 	
- Introduction; Policy statement
 	
    (Background information on the policy and the university's position on research data management)
 	
- Objectives of the policy
 	
    (Clarification of the university's research data management framework and
 	
    of roles assigned to key actors)
 	
- Definitions of terms ("research data" in particular)
 	
- Scope of the policy (e.g., researchers subject to the policy)
 	
- Roles and responsibilities
 	
  A. University
	University of Cambridge [72]
	
	University of Oxford [74]
	
	University of Amsterdam [77]
	
	Delft University of Technology [78]
	
	University of Melbourne [88]

B. Researchers (before, during, and after research) - Related rules - When the policy is scheduled for review	Note: Most universities that develop a policy to pursue Open Science adopt this structure.

(Note) These types have been created based on the universities' policies listed in Reference 1. The structures of those policies are more diverse than these simplified forms.

Most policies based on the movement toward Open Science use an X)- or Z)-type structure. Policies based on actions universities take to ensure institutional compliance use a Y)-type structure. Many policies that pursue Open Science and institutional compliance use a Y)-type structure.

When a university works on a policy on research data management that it is still unfamiliar with, it is advisable to first list minimum items that should be shared within the university as the X) structure does, rather than develop a policy that is structured like Y) or Z). Then the university may continue revising the first edition in response to developments in situations surrounding research data management outside the university and to how much the data management has come to be understood within the university.

This chapter gives explanations in line with the components of Y) and Z) in order to provide what to state for each policy component. Yet universities planning to use an X)-type structure is advised to integrate these components to create the text.

(2) Policy titles

There are several variations of university research data policy titles in Japan or overseas as shown below.

Table 4.2: Types of Policy Titles

1) Research data policy ([41] [76] [78] [79] [84] [85] [93])
2) Research data management policy[11] ([40] [71] [72] [74] [75] [77] [80] [86] [88] [89] [90] [91] [92])
3) Research data ownership policy ([80] [83])
4) Policy for open access and dissemination of research data ([40] [87])

(Note) Classification based on the university policies in Japan and overseas listed in Reference 1

These Guidelines use the term "1) Research data policy" presented in the Guideline for Establishing Data Policy at National Research and Development Agencies" [5], although universities more commonly use "2) Research data management policy."

Among the universities our research covered, many that are oriented to research data management for Open Science use "2) Research data management policy," while some use "1) Research data policy." Universities looking to ensure institutional compliance commonly use "1) Research data policy," whereas some adopt "3) Research data ownership policy" in order to make clear their position on research data ownership. Other universities that seek to emphasize that their research data are published and openly available include the words "open access" and/or "dissemination" in their policy titles as 4) shows. Some universities combine multiple naming patterns ([40] [80]). As stated in Section (8) of Chapter 2, it is advisable to select an apt policy title in light of what the policy aims to achieve.

(3) Introduction/Policy statement/Basic position

Briefly describe the following:

1) The context of and reasons for your university's decision to set out a policy

2) The university's position and stance on research data management

3) The roles assigned to the institution and faculty

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[11] There are several variations on a "research data management policy." Some use the wording "management of research data," or use the term "handling" or "stewardship" for "management."

Stating the university's position on research data management in the opening to the policy helps clarify what the policy establishes in the contents that follow.

There may be several reasons for a university's decision to develop its research data policy, as listed in Table 4.3. How a university views research data and research data management and what type of research data management it adopts can be based on various stances, as listed in a. to h. in Chapter II [27] of the AXIES-RDM Recommendations. Each institution creates a policy for different purposes according to its characteristics and form of establishment, which means what a policy statement says varies between universities.

Table 4.3: Reasons for Research Data Policy Development (Examples)

○ To ensure that research outputs are universally accessible and to pursue the movement toward Open Science

○ To respond to demands for open access and dissemination of research outputs from publicly funded projects (including accountability)

○ To save human wisdom for posterity

○ To ensure solid research and to guarantee the reproducibility of research

○ To improve the transparency of research and to prevent research misconduct

✓ To comply with all relater rules and contracts and to ensure thorough document management

✓ To respond to requests for information disclosure and to fulfill accountability

✓ To manage intellectual property

✓ To fulfill the university's social responsibility related to research data management

(Note) "○" indicates the global trend aligned with Open Science in recent years.

"✓" indicates demands based on the university's needs to ensure compliance and accountability

Each university should fully discuss how it views its research data and research data management and clearly define its position. When a university plans to make a policy based on the movement toward Open Science, centering the policy on the university charter and school motto, which are underpinned by the pursuit of knowledge to acquire and preserve for posterity, helps clarify the university's position and reach a common understanding within the university. Many overseas universities have data policies that mention their university charters

The University of Cambridge has adopted the Open Research Position Statement with the principle of open access to research outputs, and bases its research data management policy on this Statement [72] [73].

Some university research data policies that have been developed according to the school philosophies also refer to rules about research data management set by research funding agencies and the government, along with those about research integrity, as the reason for the policy development. Please see Reference 1 for related rules in Japan.

Some universities may develop their research data policies in order to ensure research integrity and institutional compliance. Emphasizing solely on the obligatory aspect of research data management, however, may inhibit the sound use of research data as part of research activities. For this reason, it is advisable to create a text that focuses mostly on the benefits of proper research data management.

(4) Objectives of a policy

Describe the objectives of your university's policy and why it must be followed across the university. That is, describe what the policy aims to achieve.

The objectives of a policy may include those listed in Table 4.4. The first two are often stated as primary objectives, and the rest are also mentioned in the description. Some university policies itemize multiple objectives [86].

Table 4.4: Objectives of a Research Data Policy (Examples)

○ To ensure appropriate management of, open access to, and long-term storage of research data

○ To clarify the role of each stakeholder within the university

✓ To share the overall picture of the research data management framework within the university

✓ To fulfill the university's social responsibility related to research data management

✓ To share the university's position on research data management

✓ To share challenges to overcome in order to practice research data management and the level of how much the management is practiced, and other relevant matters

(5) Definitions of terms

> Define terms that are particularly relevant to research data management and are used in the policy.

Table 4.5 lists terms that may be defined in a research data policy. The table shows many terms because they have been picked from the university research data policies listed in Reference 1 where they are defined, and some of them have been supplemented to be included in the table. Most of these university policies define only "research data" or four to six terms.

For the definitions of some of these terms, please refer to the "Glossary" section in the AXIES-RDM Recommendations and the Glossary of Research Data Management Terms in Reference 3 included in these Guidelines.

Table 4.5: Terms Defined in Research Data Policies (Examples)

(Data)
◎ Research data
・ Raw data/Primary data/Processed data/Simulation data/Secondary data/Final data
・ Digital data/Non-digital data
・ Numerical data/Text/Multimedia/Database/Source code
・ Active data/Data as supporting evidence for papers/Metadata/Materials explaining research data/Lab notebooks/Research grant-related materials/Research papers and other research-related materials
・ Data generated with public funds/Data generated through industry-academia partnerships and others/Commercial data
・ Confidential data
(Researchers and other key actors)
○ Researchers
○ Principal Investigators (PI)
・ Deans, Faculty and staff, Student, Part-time staff, Affiliates[12]
・ Co-investigator
(Research activities)

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[12] Affiliate: A person who is not employed by the university but is deeply involved in the university's research activities or has been given a title because of his/her contribution to the university. For example, emeritus professors, visiting faculty members, visitors, faculty members on a cross-appointment basis, and consultants are affiliates[74][89][90].

> ・ Research
> ・ Before a research project/Active research/After a research project/Upon transfer/Upon resignation or retirement
>
> **(Terms specific to research data management)**
> ・ Research data management
> ・ Research data management plan
> ・ Metadata
> ・ Curation
> ・ Institutional repository

(Note) "◎" and "○" indicate that these terms are defined in many of the policies.

(6) Scope

> Describe the scope to which your university's policy applies [74] [77] [84] [88] [89].

A university's policy often specifies the researchers to whom the policy applies and thus who are required to manage research data, as stated in "a. Researchers" below. Some policies state the scope of research data to manage, as explained in "b. Research data," yet "research data" are more likely described in "(5) Definitions." Due to space limitations in the document, this section also provides what should be discussed for "b. Research data."

a. Researchers

The section dedicated to defining the scope establishes who are required to manage research data. Each policy applies to the university's faculty and staff, as a matter of course. The policy should also define the scope for graduate and undergraduate students, various affiliates[13] who are not employed by the university yet frequent the university's labs to closely collaborate with the university's researchers on projects, and co-investigators who belong to other institutions.

That said, anyone engaged in the university's research activities essentially qualifies as a "researcher," whether he or she is a visiting lecturer or student, even if he or she is not employed by the university.

The University of Oxford clarifies this point in plain language: "This policy is for all staff [...] and students conducting or supporting research at, or on behalf of, the University. Principal Investigators have overall responsibility for effective data management during research projects. However, all researchers affiliated with the University, [...] have a personal responsibility to

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[13] Affiliates: See Footnote 14

contribute to the effective management of the data they produce, and must therefore act in accordance with the aims [...] of this policy." [74]

On the other hand, as noted in Section (1) of this chapter, when a policy is structured to specify actions in each part of research data management Y), the scope of "researchers" may also be defined for each part.

b. Research data

Research data essentially refer to all data generated across a research process (see the AXIES-RDM Recommendations, p. 20 [27]). These data can be in any form and in any stage of processing.

For example, the University of Cambridge provides this definition: "'Research data – 'the evidence that underpins the answer to the research question, and can be used to validate findings regardless of its form (e.g.: print, digital, or physical). These might be quantitative information or qualitative statements collected by researchers (faculty and staff, students, or research support staff) in the course of their work by experimentation, observation, modelling, interview or other methods, or information derived from existing evidence. Data may be raw or primary (e.g., direct from measurement or collection) or derived from primary data for subsequent analysis or interpretation (e.g., cleaned up or as an extract from a larger data set), or derived from existing sources where the rights may be held by others." [72]

Research data may also include information necessary to use the data (notes of a research process (lab notebooks) and software used) [78], data generated using the university's resources and/or external funds [83], information on data sources, and software [88]. Universities in Australia also include data associated with artistic activities [88] [90]. Research data may also be part of a patent, copyrighted work, or a database with protected rights. If they are, the holder of any of these rights receive intellectual property protection [79].

Some universities explicitly exclude initial analyses, drafts of research outputs, publications (e.g., books and research papers), future research plans, peer review, communications with colleagues, and objects (e.g., samples for research), from research data [80] [84]. The University of Sydney and several other universities list the research data to which their policies apply [83] [86] [88] [90].

Table 4.5 shows several angles pertinent to research data. Each university should fully discuss which data should be defined as the research data to which its policy applies before making the final decision.

(7) Roles and responsibilities

> Define the roles and responsibilities of your university and its researchers in order to establish research data management as common practice within the university.
>
> The policy may also set forth the roles and responsibilities of each of other stakeholders. These roles and responsibilities may be in the university's overall research data management, or in each part of the research data management.

Defining the roles and responsibilities of the university and its researchers in research data management is the vital part of each policy.

Many universities' policies clearly define the roles of the universities and researchers, whereas some universities also specify those of more actors as shown in Table 4.6. Even when a university decides not to specify the roles and responsibilities of all these stakeholders in its policy, it should fully discuss the policy with these stakeholders within the university to achieve consensus before developing the policy, thereby promoting the university's research data management.

Table 4.6: Stakeholders in Universities' Research Data Policies

(University administration)
- University executive board (e.g., research director, CIO[14], library director)
- University-wide committees, organizations/offices
  (e.g., research promotion, digital transformation, intellectual property, industry-academia partnerships)
- Administrative departments
  (Research promotion, educational support and student services, legal affairs, digitalization promotion, human resources and faculty development, accounting)
- University library
- ICT center
- Deans

(Education and research)
- Principal Investigators (PI)
- Researchers
- Academic advisors

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[14] CIO: Chief Information Officer

・ Students	

(Note) Extracted mostly from the policies at Delft University of Technology and the
University of Minnesota, and partially from those at other universities

While a university's policy may define roles and responsibilities in the university's overall research data management, it often defines those in each part of the research data management.

As Table 4.7 shows, each part of research data management has several variations. Policies based on the movement toward Open Science typically define the roles and responsibilities in the parts listed in "A. Temporal Sequence of Research," and policies based on actions universities take to ensure institutional compliance in "B. Research Data Ownership." Policies that combine these two types specify roles and responsibilities in the various parts of research data management that give relatively considerable leeway, as listed in "C. Research Data Ownership and Management."

Table 4.7: How Research Data Management Is Sorted into Parts

A. Temporal Sequence of Research	B. Research Data Ownership	C. Research Data Ownership and Management
- Before research - During research - After research	- Research data ownership - Research data retention - Research data transfer (Research data management, sharing and access) (Metadata) (Research data security)	- Research data management plan - Research data ownership - Research data storage - Submission of data as supporting evidence - Research data sharing and access (Research data storage) (Research data destruction)
University of Cambridge, University of Amsterdam, etc.[15] [72] [77]	University of Minnesota, Harvard University, Yale University, Boston University [80] [83] [84] [85]	University of Queensland, University of Sydney, Nanyang Technological University [89] [90] [93]

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[15] Many policies that are not structured to have a section for parts of research data management or for roles and responsibilities provide descriptions implicitly based on the temporal sequence.

Section (3) of Chapter 3 provides explanations about research data ownership, retention, and transfer that are categorized into B. above. Hence, this section illustrates research data management in terms of the temporal sequence of research (A.). "C. Research Data Ownership and Management" combines the items from A. and B. Universities planning to adopt C. are advised to study both sections.

Essentially, a university's policy depicts research data management as a joint responsibility of the university and its researchers who have assigned roles in carrying it out.

The university is typically responsible for a) ensuring that the policy is known and followed across the university, b) providing and managing the infrastructure needed for research data management, c) assisting with research data management, and d) providing research data management training and facilitating the management. Researchers are responsible for managing research data. The table below shows examples of what is done for research data management at the University of Amsterdam. (For more information about the role of universities, see the AXIES-RDM Recommendations, p.6.[27])

Note that universities may define research data as their academic assets that they intend to actively manage, in which case they need to consider the fact that they are responsible for managing the assets and bearing the costs needed for the management accordingly. Furthermore, universities that offer their researchers various services (e.g., infrastructure for research data management) must determine the scope of those services with an eye to economy.

Table 4.8: Roles of the University and Its Departments Engaged in Research Data Management (Examples)

(Responsibilities of the University)
- Establish and regularly review its research data management policy
- Develop and operate research infrastructure for management, retention, sharing, long-term storage, and publication of research data
- Provide research data management training
- Establish a system to support university-wide research data management
- Make an annual report on research data management

(Responsibilities of the University's departments)
- Establish departmental research data management procedures and publish them on the University's website
- Assign at least one data steward
- Update the research data management procedures as needed

> ・ Prepare adequate resources and support needed to implement the research data management procedures

(Note) This is a digest translation of the examples from the University of Amsterdam's policy.
[77]

Table 4.9: Responsibilities of Researchers in Research Data Management (Examples)

(General)
- Guarantee that their data are accurate, complete, true, and reliable
- Exercise due care so that their data adhere to the FAIR data principles wherever possible
- Comply with legal, ethical, and contractual requirements pertinent to their data
- Process any research data that contain personal information according to the EU General Data Protection Regulation (GDPR) and register these data with the University Conduct an assessment for the Information Security and Privacy (IS&P) Program or a Data Protection Impact Assessment (DPIA), as necessary
- Properly manage research data generated by their students and provide the students with proper instructions in research data management

(Before research)
- Make a research data management plan toward the start of a project (including estimated time and cost needed for the project)
- Reach a definitive agreement with an external organization in a joint research project on how to collect, process, cite, use, and retain research data from the project, and make sure that these agreed details are stipulated in the joint research agreement

(During research)
- Comply with legal regulations when storing and sharing research data (researchers are advised to use a system with data backup provided or recommended by the University)
- Anonymize or pseudonymize (or encrypt, if pseudonymization would cause any difficulty) any research data containing personal information

(At the completion of research)
- When a research project is complete, archive research data from the project and

> any related materials in a reliable place (e.g., an institutional repository where
> PIDs[16] can be given to data) for an appropriate duration
>
> ・ Follow the procedure for making the research data accessible so that they will be
> cited or used with the minimum amount of time and effort. Note that this does
> not apply if doing so would go against laws and regulations, ethics, and/or
> contractual requirements. If open access to the research data cannot be allowed
> for some reason, publish the minimum amount of information about the data
> coupled with its PID so that the information can be cited
>
> ・ Register the research data that the researchers own in the University's research
> information system
>
> ・ Digitize hard copies of research data and related materials. If digitization would
> cause any difficulty or not be advisable, exercise due care in retaining and
> protecting these paper copies as well as in ensuring their discoverability
>
> ・ Destroy personal information as soon as it becomes no longer necessary
>
> ・ Doctoral students must store and publish the data that support their dissertations
> in an institutional repository or any reliable place before their thesis defense
>
> ・ Acquire a license for the researchers' research data, thereby clarifying the
> requirements that must be met to use the data

(Note) This is a digest translation of the examples from the University of Amsterdam's policy.
[77]

(8) Relationship with existing policies

> List other university policies that may be relevant to the research data policy.
> Each university may opt to simply add its research data policy to the group of these existing
> rules without including them in the research data policy.

Table 4.10 shows rules and policies that many universities in Europe and North America include in
their research data policies as related rules.

Commonly, only the titles of these related rules are listed in the policies. That said, a research data
policy and these rules are treated as one comprehensive package that governs research data and
research activities within each university, rather than as a mutually contradicting or hierarchical
collection of rules. The University of Oxford, for example, states that its policy "operates in

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[16] PID: Persistent identifier

conjunction with other University policies.[17]” As detailed in Section (3) of Chapter 3, research data must be managed responsibly throughout the period during which data must be retained according to each university's rules about document management and/or research integrity.

In Japanese, the term *kitei* (rules) refers to a statute or a set of university rules that are systematically established codes and standards within an organization, whereas the term "policy" refers to conceptual statements of a planned course and principles of organizational actions and measures and is considered different than rules. To ensure that a "policy" is precisely followed, it should be established as rules.

Table 4.10: University Rules and Policies related to a Research Data Policy

- Research integrity and research ethics
- Ethics and safety pertaining to life science research and others
- Handling of intellectual property and copyrighted works
- Personal information protection
- Security and export controls
- Document management and information disclosure
- Open Access policy
- Information security measures

(Note) These examples are based on the University of Oxford's policy.[74]

Other than these, some universities list national and/or state laws, rules set by research funding agencies, and/or other relevant guidelines. [90] Please see Reference 1 for relevant laws and regulations in Japan.

Harvard University has a separate website that lists data-related policies and regulations. [82]

(9)　Other recommended policy components

a. When the policy is reviewed

Universities in Japan have only limited experience in research data policy development. Hence, it is advisable to establish minimum rules to start with, including a plan for a review in three years, for example. [72] [89]

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[17] The statement concerning related policies at the University of Oxford: "4.1 The Policy on the Management of Data Supporting Research Outputs operates in conjunction with other University policies" under "4.0 Relationship with existing policies"

b. Relevant departments and contact information

A university's research data management involves not only departments responsible for research promotion, but various other departments, including legal affairs, intellectual property, and procurement, especially when research data ownership must be handled. Therefore, it is advisable to list these departments, along with their contact information (e.g., the departments' email addresses). [74] [84]

5. Process of university research data policy development

Figure 5.1 below shows a typical process of research data policy development that a university is expected to follow. The following sections illustrate what to discuss in each part of the process.
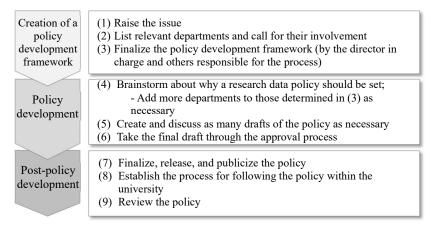
Creation of a policy development framework	(1) Raise the issue (2) List relevant departments and call for their involvement (3) Finalize the policy development framework (by the director in charge and others responsible for the process)
Policy development	(4) Brainstorm about why a research data policy should be set; - Add more departments to those determined in (3) as necessary (5) Create and discuss as many drafts of the policy as necessary (6) Take the final draft through the approval process
Post-policy development	(7) Finalize, release, and publicize the policy (8) Establish the process for following the policy within the university (9) Review the policy

Figure 5.1: Process of University Research Data Policy Development

(1) Raising the issue

Universities' research data management essentially requires a multi-stakeholder approach that involves multiple departments, as emphasized in the introduction and Chapter IV of the AXIES-RDM Recommendations. To put it another way, the departments and directors that should raise the issue of the need for research data policy development are not clearly specified, or they are absent, under current university systems.

In this situation, someone who is clearly aware of the issue should take the initiative in calling for action by potentially relevant departments and directors, thereby creating a movement toward the discussion of the need for research data management within the university.

If you choose to be courageous enough to take such initiative, you are advised to emphasize, when you work to persuade your university, that the situations surrounding research data in Japan and overseas indicate universities' increasing need for research data management. If someone else raises the issue, it is advisable to actively become involved in the action to create momentum. University librarians are clearly aware of the issue, yet there seem to be certain circumstances that make them feel inhibited from taking the initiative. Yet they could still create a movement toward data management within their university with help from the library director.

(2) List relevant departments and call for their involvement

Chapter V of the AXIES-RDM Recommendations also mentions universities' departments that may be involved in research data management. Table 5.1 shows these departments and their responsibilities.

Table 5.1 lists all potentially relevant departments. Departments 1) to 3) may lead the drafting and discussion of their university's research data policy, and Departments 4) to 6) may be asked to offer their views as necessary and informed when the finalized policy is implemented. A university usually makes progress in its efforts to create a research data management framework, including policy development, when Departments 1) to 3) work well together.

When a university drafts a policy and launches its research data management, it may consider setting up a department (tentatively called the "Academic Resource Management Office") that manages academic information generated within the university (e.g., papers, research data, source programs), academic resources (e.g., books, databases, data archives), and research facilities (e.g., laboratory equipment), among others.

Table 5.1: Research Data Management Departments at a University and Their Responsibilities

1) **Research Promotion Department**
   Supervise the overall institutional research data management
   Engage in research data management in order to prevent research misconduct as well as to promote research

2) **Library**
   Publish and externally disseminate research data via an institutional repository

3) **ICT center**
   Establish and operate information infrastructure for research data management

4) **Departments responsible for external collaboration (e.g., public relations, industry-academia partnerships, regional partnerships)**
   Externally disseminate research data
   Facilitate external collaboration through research data

5) **Other relevant departments**
   Departments in charge of intellectual property and research integrity; an organization for academic promotion
   Planning department, IR, and URA, etc.

6) **Other departments and centers**
   Research centers or departments that manage data archives
   University education and learning centers

(Note) Each university has different names and structures for its
administrative departments. Roles and responsibilities assigned to

these departments should be in line with how the university's departments are structured.

(3) Finalizing the policy development framework (by the director in charge and others responsible for the process)

Once Departments 1) to 3) in Table 5.1 are informed that their involvement is called for and each of these Departments determines who is in charge, the discussion of policy development is underway. This call for involvement and discussion work well when you are already clear about who will lead the discussion and who will ultimately be responsible.

The research director would be an appropriate facilitator of the discussion in light of 1) the creation and preservation of academic work for posterity, publicly funded proper management of research outputs, and the prevention of research misconduct, among others. Or the library director, public relations director, or liaison director may also be appropriate if the policy gives priority to 2) open access to and dissemination of research outputs. Or the information director or Chief Information Officer (CIO), if the focus is on 3) the establishment of information infrastructure and/or information security within the university.

It is advisable that several directors work on the policy as a team, if possible. It is also possible that a body like the "Academic Resource Management Office" (tentative name) mentioned in the previous section, or an organization or office for university-wide academic promotion, may facilitate the discussion, if any.

It is advisable to continue adding potentially relevant departments as the discussion progresses, rather than set the policy development framework in stone.

Table 5.2: Candidates for the Position of Research Data Management Director at a University

1)   Research director   Academic promotion and prevention of research misconduct

2)   Library director; Public relations director; Liaison director
            Preservation, disclosure, and dissemination of research
            outputs

3)   Information director, CIO, etc.
            Establishment of information infrastructure; information
            security

4)   Head of an organization or office for academic promotion
            Academic promotion, academic resource management,
            industry-academia partnerships, and intellectual property
            management

> **5) Co-Chairpersons**
>
> (Policy development framework led by several directors)

(4) Brainstorming about why a research data policy should be developed

Selected members of the policy development team must start from asking the core question, "Why should a research data policy be developed?" In the policy development process, the answer to this key question is refined and fleshed out as details of the research data policy are determined. Nevertheless, the concept and purpose should be clear from the beginning, otherwise there will be no end to discussions when the members offer diverse opinions.

While each university's finalized policy will state the background to and objectives of policy development in plain terms aligned with the trends outside the university (Table 4.3), their primary aims are the same or similar to those listed in a. to h. in Chapter II of the AXIES-RDM Recommendations. [27]

It should be duly noted that each university has distinctly different primary aims of research data policy development according to the school's characteristics and stance. Furthermore, these primary aims determine what must be achieved with the policy in place and what standards are used for these achievements. This means that the primary aims of policy development must be fully examined and shared with relevant departments.

If your university has difficulty setting clear objectives of research data policy development, it could first select the type of policy from Table 3.1 as the basis of its policy, and then explore what objectives can be set.

(5) Creating and discussing as many drafts of the policy as necessary

Once the team members share the need for and objectives of research data policy development to a certain extent, it is advisable to start working on a draft, even if there have not been enough discussions. This is because creating a text of the policy helps the members become clear about the university's stance and what should be discussed. The members are also advised to record the specifics that have become clear through discussions as "Explanations and Supplements" in the policy.

It is recommended that other stakeholders within the university (e.g., the administrator of a data archive) and external experts be invited to the team's discussions to offer their views and opinions. The invitation may be extended gradually to potentially relevant departments with no staff members included among the core members of the policy development team. It is also a good idea to conduct a survey of and interviews with researchers and relevant departments in order to identify the needs within the university.

If policy development itself becomes the objective, research data management may not be actualized. Hence, it is advised that the policy development team give a briefing to potential stakeholders to obtain their consent before the development process begins, and that, as mentioned in Section (8) of Chapter 5, the team also discuss the budget and framework (offices and departments). How to have the finalized policy approved should also be discussed. To make the objectives of the policy clear, it is worth considering working on policy development and the establishment of the research data management framework at the same time, or establishing the framework before developing the policy, as mentioned in the fourth note in Chapter 1 of these Guidelines.

(6) Taking the final draft through the approval process

Once the final draft of the policy is almost complete, it needs to be taken through the approval process within the university. The first step is to brief the research data management director on the contents of the policy if the director has not been fully informed about those details. "Explanations and Supplements" included in the policy helps clarify what has been discussed in the process of policy development. "Explanations and Supplements" also help respond to questions asked and issues raised by departments.

Who approves the policy depends on which meeting body has developed the policy and who the research data management director is. In light of this, it is vital to have a policy development framework in place (Section (3) of this chapter) that includes the process for smooth approval. It usually takes tremendous time and effort if opinions from all departments (e.g., Dean's Council) must be considered before a policy is approved. That said, a policy can be implemented smoothly when it has considered opinions from all departments.

One way to counterbalance these effects is to provide explanations for the departments that seem particularly relevant and ask them for opinions beforehand, so that the policy approval process will be completed quickly by the departments and directors directly involved in the process.

The approved policy can be quickly implemented when the policy and "Explanations and Supplements" are approved by different bodies, that is, when "Explanations and Supplements" are approved by a body that is below the body that approves the policy.

(7) Finalizing, announcing, and publicizing the policy

The finalized policy is announced and publicized across and outside the university.

The university-wide announcement is to inform mostly researchers about the contents of the policy and the role and responsibilities of researchers. It would be helpful if the department in charge provides a written guide to the systems and services for data management that have been prepared

by the university. The announcement outside the university is to publicize that the school has established its policy. The information should also include how to use the university's research data if the policy is designed to enable open access to and the use of the data.

It is also advisable to publish the policy coupled with a written guide in English translation. Doing so is a way to demonstrate that the university meets international standards. It also helps seek and form international partnerships with researchers within and outside the university through research data, giving the university higher international standing.

(8) Establishing the process for following the policy within the university

Finalizing the policy is not yet the end of the process. Each university's policy must be there to establish research data management as common practice within the university. A university-wide policy and "Explanations and Supplements" included in it typically present highly abstract principles and ideas. This means that a university-side action plan and departmental guidelines on the policy must also be provided in order to ensure research data management is practiced across the university.

Research data management should not be left entirely in the hands of researchers. Any research data policies developed by universities according to these Guidelines are based on the awareness that, in this data-oriented age, it is no longer possible for researchers to manage their research data on their own so that the data will be permanently retained and provided (the 2nd paragraph in the body text of the AXIES-RDM Recommendations). [27]

The first university-wide step to take is to make clear which departments are involved in research data management and who are responsible, and to present a complete workflow within the university. A form to fill out for the record and/or information infrastructure must also be in place, if necessary. Providing information infrastructure for research data management involves not only development and operating costs, but costs needed for storage media to retain research data. Research data need to be retained after the completion of the research projects that have generated the data and the resignation or retirement of the researchers who own the data. Hence, the system and budget should be designed to accommodate the fact that payments from beneficiaries alone cannot cover the costs. These details should go into a university-wide action plan.

How research data should be handled depends mostly on which discipline they belong in. This is why each university should have departmental guidelines in order to ensure its policy is followed across the university. These guidelines should also clearly state the roles of key actors, that is, what the departments' administrative sections should manage and how, what they should be provided with for the management, and what each field of study/academic department and laboratory/researcher should do.

(9)   Reviewing the policy

Once the policy is implemented, it is advisable to assess if and how it has been followed and continue to add what is missing, if necessary. It is also a good idea that the first edition of the policy includes the schedule of regular policy reviews (e.g., three years after the launch), considering how it is used and what the social situation looks like.

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■ **University policies (overseas)**

<International>

[70] LERU (Europe), the Russell Group (UK), AAU (USA), CURIF (France), U15 (Germany), Go8 (Australia), RU11 (Japan), U15 (Canada), ARUA (Africa), Sorbonne declaration on research data rights (January 27, 2020)(Japanese translation: Reference 2 in these Guidelines)

<Great Britain>

[71] University of Edinburgh[21], Research Data Management Policy (May 16, 2011)

[72] University of Cambridge, Research Data Management Policy Framework (December 4, 2019)

[73] University of Cambridge, The University's Open Research Position Statement (January 16, 2019)

[74] University of Oxford, Policy on the Management of Data Supporting Research Outputs

<Germany>

[75] Technische Universität München (TUM), Guidelines of the Technical University of Munich for Handling Research Data (November 13, 2018)

[76] Georg-August-Universität Göttingen[22], Research data policy of the Georg-August University

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[20] Research funding agencies in Hong Kong still do not require a research data management plan (DMP) (as of June 2021).

[21] University of Edinburgh is known as the university that formulated a research data management policy in the earliest stage in Great Britain.

[22] University of Göttingen: Vice President Norbert Lossau, who was the Director of the University Library and is currently in charge of research and information infrastructure, has been a member of the EU Open Science Policy Platform since its early days, working as a key player in promoting open science in Europe. The university is also known for its commitment to research data management.

Goettingen, (August 28, 2014)

\<The Netherlands\>

[77] University of Amsterdam, UvA Research Data Management (2019)

[78] Delft University of Technology, TU Delft Research Data Framework Policy (August 2018)

[79] Wageningen University & Research, Data policy at WUR

\<The United States\>

[80] University of Minnesota[23], Research Data Management: Archiving, Ownership, Retention, Security, Storage, and Transfer (September 25, 2018)

[81] University of California[24], --

[82] Harvard University, Data Policies

[83] Harvard University, Research Data Ownership Policy (August 6, 2019)

[84] Yale University, Research Data & Materials Policy (October 4, 2018)

[85] Boston University, Scientific Research Data Policy (June 12, 2018)

\<Canada[25]\>

[86] University of Alberta, Research Records Stewardship Guidance Procedure (October 10, 2013)

[87] University of Prince Edward Island, Open Access & Dissemination of Research Output (February 10, 2012)

\<Australia\>

[88] University of Melbourne, Management of Research Data and Records Policy (November 20, 2013)

[89] University of Queensland, Research Data Management – Policy (November 28, 2013)

[90] University of Sydney, Research Data Management Policy 2014 (November 5, 2018)

\<Hong Kong\>

[91] University of Hong Kong, Policy on the Management of Research Data and Records

\<Singapore\>

[92] National University of Singapore, Research Data Management Policy[closed access]

[93] Nanyang Technological University, NTU Research Data Policy

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[23] University of Minnesota is known as among the first to set out a research data policy in the United States.

[24] University of California is known as a state university with a system that vigorously promotes Open Access. The California Digital Library (CDL) supports the University's infrastructure and runs the University of California Curation Center (UC3), which develops DMP tools in the United States. The University apparently does not have its research data policy.

[25] According to portage, a research data management network in Canada, these two are the only universities in Canada that have research data policies. ([61], last accessed April 30, 2020)

■ Academic journals (overseas)

[94] RDA Results, Developing a Research Data Policy Framework for All Journals and Publishers (February 21, 2020)

[95] Springer Nature, Research Data Policy Types

[96] Elsevier, Research data Principles and policy

(Reference 2) Sorbonne declaration on research data rights (Japanese translation)

研究データの権利に関するソルボンヌ宣言
Sorbonne declaration on research data rights (2020.1.27)

以下の原則に基づき、

- 研究活動から得られる知は、社会に裨益すること。
- 研究データの価値は、研究の公正さに基づいていること。また、社会は一般に、これを新しい知見の前提とすること。
- データへのアクセスの提供とデータの公開は、新しい知の創出を可能とし、社会や経済発展につながる発見を加速すること。
- 研究データは、可能な限り、国家安全保障や機関の自治、プライバシー、先住民の権利、知的財産保護に妥協することなく、広く共有され、再利用されるべきであること。
- 研究データの共有と再利用に関わる複雑な条件を明確にする際、学術コミュニティは関与する必要があること。

我々研究型大学のネットワークは、以下を約束する。

- 参加校とその研究者が、可能な限りデータを共有することを呼びかける。
- 参加校とその研究者が、公開するデータを FAIR 原則に則るようにすることを、支援する。
- データのキュレーションと共有、研究データ管理計画の策定を、研究プロセスの標準的な手順として、促進する。
- データを FAIR 原則に従わせ、適切なオープンデータライセンスで共有する研究者が、適切な評価を得られるように、機関における評価プロセスの形成を促す。
- これらの原則が、機関の研究データポリシーに組み込まれることを推奨する。
- オープンな研究データ管理の環境が形成されるトレーニングやスキル開発プログラムを参加校が形成するように促す。

我々はグローバルな学術研究コミュニティに、以下を呼びかける。

- 前述の原則に基づき、研究データがグローバルに共有される環境を形成する。
- 研究データが可能な限り最大限に共有されるように、インタオペラビリティを

保証するツールと適切なデータリポジトリを形成する。

・ 研究成果は、アクセス可能、立証可能、再現可能でなければいけないため、査読付き論文が、FAIR 原則に則ったデータセットを伴うことを保証する。

これらの約束を履行できるように、我々は以下を要望する。

・ 研究助成機関は、研究データ管理を研究助成の対象と見なし、研究データの共有に伴うフルコスト分の研究助成の増額を検討すべきである。

・ 各国政府は、データがキュレーション、共有する活動が開始され、維持されるように、リソースを提供すべきである。

・ 各国の法令は、上述の原則に則ったポリシーや指針を策定し、これらが大学や研究機関により実施されるように、適切な枠組みを用意すべきである。

・ このような法律やポリシー、指針は、商用のプラットフォームやデータサービスへの"ロックイン"を防ぎ、研究データのオープンさと再利用可能性を確実なものとする。

署名

・ Association of American Universities（AAU）（米国）

・ African Research Universities Alliance（ARUA）（アフリカ）

・ Coordination of French Research-Intensive Universities（CURIF）（フランス）

・ German U15（ドイツ）

・ League of European Research Universities（LERU）（欧州）

・ 学術研究懇談会（RU11）（日本）

・ Russell Group（英国）

・ The Group of Eight（Go8）（オーストラリア）

・ U15 Group of Canadian Research Universities（カナダ）

原文： Sorbonne declaration on research data rights (2020.1.27)
<https://www.leru.org/files/Sorbonne-declaration.pdf>

注釈： FAIR 原則（Findable, Accessible, Interoperable, Reusable）
NBDC「データ共有の基準としての FAIR 原則」を参照のこと。
<DOI:10.18908/a.2018041901>

(Reference 3) Glossary of Research Data Management Terms
Co-produced by AXIES and JPCOAR
(in Japanese only)

　本「研究データ管理関連の用語集」は、オープンアクセスリポジトリ推進協会（JPCOAR）研究データ作業部会の協力を得て作成された。AXIES-RDM 部会 URDP-WG において、用語集に含めるべき用語を選定し、JPCOAR 研究データ作業部会において掲載する用語について最終調整を図りつつ、用語の一般的説明を記述した。URDP-WG ではこれに加えて、研究データポリシー策定の文脈から説明の付加が必要な場合に限り、説明を加えた。

　用語の定義は当初、研究データポリシーにおいてそのまま利用可能なものを想定していたが、たとえば「研究データ」という用語一つをとっても、ポリシーでカバーする「研究データ」の範囲は大学ごとに異なることから、これについては断念し、用語の一般的な意味のみを提示することとした。

　各大学のポリシーに記述する用語の定義については、各大学の議論を反映した各大学固有の「適用範囲」を記述されたい。なお、1 章 3 点目に述べたように、そうした詳細な記述については、ポリシーとあわせて運用される「解説・補足」文書に譲ることも考えられる。

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
研究データ			
データ data	情報の表現であって，伝達，解釈または処理に適するように形式化され，再度情報として解釈できるもの。	―	日本工業規格「X0001 情報処理用語-基本用語」 https://kikakurui.com/x0/X0001-1994-01.html
研究データ research data	研究の過程，あるいは研究の結果として収集・生成されるデータのこと。広義には，研究者が研究上で触れたあらゆるデータが含まれる。 各機関のポリシーによって定義される範囲は異なり，非デジタルの研究データを含めることもある。	研究データは，その加工段階（生データ，二次データ等）や形状（無体・有体，デジタル・非デジタル等），公的資金を得ているかの有無など，多様な側面を有しており，研究データポリシーを策定する際は，どの範囲の研究データを対象とするかを定義する必要がある。 → 4(5)-4(6)節参照	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 1 章：序論「1.3.1 研究データとは」 http://id.nii.ac.jp/1458/00000556/ （参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「研究データ」 https://axies.jp/report/publications/proposal/
公的資金による研究データ research data from public funding	公的資金による研究から収集・生成された研究データのこと。 公的資金による研究成果は社会への還元が求められていることから，公開・共有等の最大限の利活用が求められる。	―	（参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「公的資金を得た研究成果」 https://axies.jp/report/publications/proposal/

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
論文の根拠データ（エビデンスデータ） evidence data of an article	論文等の研究成果の根拠（エビデンス）となり，その再現性を担保する研究データのこと。 根拠データの提出や公開を求める学術ジャーナルが増えており，一定期間の保存が責務となっている。 日本学術会議「回答『科学研究における健全性の向上について』」においては，資料（文書・数値データ・画像など）の保存期間は原則として当該論文等の発表後10年間とされており，多くの大学において同様の内容が規定されている。	研究公正の観点からの「研究データ10年保存ルール」や，学術ジャーナルの要求する根拠データの公開への対応の方針を研究データポリシーに含めることができる。	（参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「研究成果発表の根拠データ」 https://axies.jp/report/publications/proposal/ （参考）日本学術会議「回答『科学研究における健全性の向上について』」7-8頁「⑤研究資料等の保存に関するガイドライン」 http://www.scj.go.jp/ja/info/kohyo/pdf/kohyo-23-k150306.pdf
アクティブデータ active data	研究に使用中の研究データのこと。	—	
一次データ（ソースデータ，生データ） primary data (source data, raw data) 二次データ secondary data	一次データとは，研究対象から新規に収集・生成されたオリジナルの研究データのこと。 二次データとは，一次データを加工した研究データ（加工データ）や，一次データを解析・分析した研究データ（解析データ）などのこと。	—	
研究データセット research data set 研究レコード research record	研究データセットとは，ある目的のために集められたり，整理されたりしている研究データのまとまりのこと。 研究レコードとは，研究データセットを構成する最小の単位のこと。	—	
オリジナル original コピー copy	オリジナルとは，研究データの原本のデータのこと。 コピーとは，オリジナルを複製した研究データのこと。	—	
デジタルデータ digital data	デジタルデータとは，電子化されたデータのこと。	研究データポリシーにおいては，デジタルデータのみを対象とする場合も，非デジタルデータを含める場合もある。	
データベース database データアーカイブ data archive	データベースとは，構造化した情報またはデータの組織的な集合のことで，通常はコンピュータにより電子的に保管されたものを指す。 データアーカイブもデータベースとほぼ同義であるが，データを単に集積したものであることに重点が置かれ，データベースより構造性が弱い場合がある。	—	

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
資料 material 試料 sample	資料とは，研究・調査の基礎となる材料のこと。 試料とは，分析・試験・検査の対象として使う物質や生物等のサンプルのこと。 非デジタルの研究データの代表的な事例である。	資料や試料は一般に有体であることから，研究データの保存期間や共有方法などの具体的手続きにおいて，デジタルデータと異なる取扱いをする必要がある。	
構造化データ structured data	定型的に処理が行えるように，一定のルールに基づき記述されているデータのこと。データ形式としては，CSV ファイル，XML ファイル，固定長ファイル，Excel ファイルなどが該当する。	―	
機密データ（センシティブデータ） confidential data (sensitive data)	慎重な取扱いが求められるデータのこと。 具体的には，個人情報やプライバシー情報が含まれるデータ，共同研究契約や個別の契約により制限されているデータ，国家安全保障・国際関係などにより制限されているデータ，データ提供機関から制限されているデータ等がある。	機密データの機密性にはレベルがあるが，大学にて研究データを管理・共有する際は，データの機密レベルを特定し，そのレベルに応じた手続きを定める必要がある。	
研究者			
研究者 researcher	ある特定の分野の学問の専門知識を持ち，主に研究機関において研究活動に従事する者のこと。	大学には，教員や研究支援者，院生・学生，その他，大学や特定の研究室と密に関係する学外の研究者（元教員・学生，企業関係者等）など，さまざまな研究者がいる。研究データポリシーにおいては，その一部を対象とすることもできるが，一般には，あらゆる研究者を対象とする。 → 4(5)-4(6)節参照 なお，機関に在籍する研究者については，離職・退職後の研究データの扱いについて定めておくことが望ましい。 → 2(7)節参照	
研究主宰者（PI） principal investigator	独立した研究グループを持ち，その研究グループの研究の実施，予算の管理，若手研究者の指導，論文発表等を担う責任者のこと。	PI は，自身が主宰する研究プロジェクトや研究室（以下，「研究室等」という。）における RDM について，管理責任を有する。このため，研究室等内の RDM 体制の整備や，定期的な RDM 状況の把握，必要に応じて，規律を正すといった管理をする必要がある。 → 3(3), 4(6)節参照	（参考）文部科学省 科学技術・学術審議会 学術分科会第 8 期研究費部会（第 3 回）配付資料「資料 5－3　PI（Principal Investigator）の定義について」 https://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu4/037/attach/1358880.htm

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
共同研究者 co-investigator : Co-I	特定の研究テーマについて，共同で研究を行う者のこと。	学外の共同研究者にも，一般に，学内の研究データポリシーが適用される。共同研究のプロジェクトが学内研究者をPIとする場合は，研究データポリシーの適用に特に留意する必要がある。共同研究者の所属機関にも研究データポリシーがある場合は，共同研究プロジェクトのPIがいずれの機関に所在するかに応じて，優先するポリシーを判断する。	
研究補助者 research assistant	研究者を補佐し，その指導に従って，研究者の研究活動の一部を担い，研究活動を直接的に補助する者のこと。助手やリサーチアシスタント（RA）などが該当し，助教・ポスドク・学生等が研究者の研究活動の補助業務を行う場合も研究補助者に該当する。 総務省統計局「科学技術研究調査」においては，研究者以外の研究関係従業員を「研究補助者，技能者，研究事務その他関係者」と分類している。	研究補助者に対しても，一般に，大学の研究データポリシーが適用される。 研究データに関わる具体的手続きを定める場合は，研究者と区別することもできる。	（参考）総務省統計局「令和2年科学技術研究調査」用語の解説「研究関係従業者」 https://www.stat.go.jp/data/kagaku/kekka/a3_25you.html#yougo4
研究支援者 research support staff	研究支援を業務として行う者のことで，研究者の研究活動を間接的に支援する。技術職員，リサーチ・アドミニストレーター（URA），図書館員，研究事務職員（教室系事務職員）・秘書などが該当する。	研究支援者に対しても，一般に，大学の研究データポリシーが適用される。 研究データに関わる具体的手続きを定める場合は，研究者と区別することもできる。	
その他研究関係者 research affiliates	その他，研究に関係する者のこと。 名誉教授，客員教員，クロスアポイント制度で雇用されている教員，産学連携関係者，研究室出入りの業者，コンサルタント，訪問者などが該当する。 →P26 脚注12 参照	その他研究関係者が学内の研究活動に関わる場合，学内の研究データポリシーが適用される。研究データのアクセス権限等は，一般に，当該者が関わる研究プロジェクトや研究室ごとに定める。 その他研究関係者の所属機関にも研究データポリシーがある場合は，その他研究関係者の関わる研究プロジェクトのPIがいずれの機関に所在するかに応じて，優先するポリシーを判断する。	
部局長 dean	大学を構成する内部組織である学部・研究科・研究院・学院・付置研究所・センター等の総称である「部局」の長のこと。	部局内のRDM状況に関わる責任者。全学ポリシーの部局内の徹底や，部局内のデータアクセス権の基準設定などについて，責任を有する。	

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
教職員 faculty	大学の教育・研究を直接担当する教員と，その他大学の仕事に従事する職員（事務職員，技術職員，図書館員など）の総称。	大学の研究データポリシーが一般に適用される。 教員以外の事務職員や研究支援者については，研究者と区別した手続きを定めることもできる。	
名誉教授 emeritus professor	大学・高等専門学校などで教授として勤務した者のうち，功績のあった者に対して授与される称号のこと。	大学の研究データポリシーは，一般に，当該者の機関在籍期間中について適用される。しかし，当該者が定年退職後も，機関との関係の下に行った研究活動については，大学のポリシーが適用されてよい。	
博士研究員（ポスドク） postdoctoral researcher	博士号を取得あるいは大学院博士課程を修了後，大学などの研究機関において，任期制の雇用形態で研究業務に従事している者のこと。	博士研究員（ポスドク）に対しても，一般に，大学の研究データポリシーが適用される。	
学生 student	教育機関で学問を学んでいる者のこと。日本の法律では大学・短大・高専で学んでいるものを学生と言う。 大学生は，学部生，大学院生，研究生，聴講生等に分かれる。	学生に対しても，一般に，大学の研究データポリシーが適用される。 学生が自身の研究において生成する研究データは本来，学生の管理下にあるが，学位取得までの研究データの管理については指導教員に委ねる場合もある。 → 3(3)節参照	
外国人研究者 foreign researcher 外国人留学生 foreign student	日本国籍を有さない外国人の研究者および留学生のこと。	大学が受入れた外国人研究者・留学生についても，一般に，大学の研究データポリシーが適用される。 特定の国・大学からの外国人研究者・留学生については，安全保障貿易管理等の観点から，技術や研究データの供与・共有について，慎重な対応を要することがある。	（参考）経済産業省貿易管理部「安全保障貿易に係る機微技術管理ガイダンス（大学・研究機関用）第三版（平成 29 年 10 月公表）」 https://www.meti.go.jp/policy/anpo/law_document/tutatu/t07sonota/t07sonota_jishukanri03.pdf https://www.meti.go.jp/policy/anpo/daigaku/seminer/h30/meti.pdf （参考）国立研究開発法人科学技術振興機構　研究開発戦略センター「（調査報告書）オープン化，国際化する研究におけるインテグリティ／CRDS-FY2020-RR-04」2020 年 10 月 https://www.jst.go.jp/crds/report/report04/CRDS-FY2020-RR-04.html

研究データ管理

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
研究データ管理 research data management：RDM	研究者が研究活動中に生成・収集・解析した研究データの取扱いの他、研究データの管理計画の策定・更新、研究データの保管・利用・保存・廃棄、公開・非公開、組織化・構造化といった研究データに関わる一連の活動全般のこと。広義には、ラボノートや利用ソフトウェア、論文等の研究成果物、研究計画、査読、その他研究に付帯する様々な資料の管理も含まれる。適切な研究データ管理により再現性のある研究の実現に繋がる。→2(4), 4(5)(6)節参照	研究データは、これまで研究者自身により管理されており、そのことは今後も変わらないが、学術機関にはオープンサイエンスや研究公正、コンプライアンスなどの観点から研究データを管理するための基盤や支援の提供が求められている。	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 1 章：序論「1.4.1 研究データ管理（RDM: Research Data Management）とは」http://id.nii.ac.jp/1458/00000556/ （参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「学術機関における研究データ管理」https://axies.jp/report/publications/proposal/
研究データポリシー research data management policy	学術機関等において定められた研究データの取扱い（管理・利活用）に関する基本方針のこと。	研究データに対する組織としての関わり方は、国立研究開発法人と大学では異なる。国立研究開発法人は国の政策に基づく研究開発が組織の使命であるのに対して、大学における研究は研究者個人の営みに基づくからである。一方、研究の大部分が公的資金によることを踏まえると、大学にも一定の責務が発生する。大学において研究データポリシーを策定する際は、このような研究開発法人との違いを認識して策定する必要がある。→2(6)節参照	
研究データ管理計画 data management plan：DMP	研究プロジェクト等における研究データの取扱いを定める計画のこと。具体的にはデータの種類、フォーマット、アクセス及び共有のための方針、研究成果の保管に関する計画等について記載する。研究助成申請時もしくは採択時に計画の提出を求める研究助成機関が増えつつある。	研究助成機関の要求の有無にかかわらず、学内研究者の行動規範や機関管理の観点から、大学が研究データ管理計画の作成を求める場合がある。	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 3 章：研究前の支援「3.3.1 データ管理計画（DMP）とは」http://id.nii.ac.jp/1458/00000556/ （参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「研究データ管理計画」https://axies.jp/report/publications/proposal/
研究データのライフサイクル research data lifecycle	研究データが生成、加工、分析、保存、公開、再利用というプロセスを経て、循環していくことを表現したモデルのこと。適切に保存・公開された研究データは、再利用されることにより新しい研究を生み出していくというオープンデータの理念に基づく。	研究データポリシーは、研究データのライフサイクルに沿って記述することもできる。	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 1 章：序論「1.3.4 研究データのライフサイクル」http://id.nii.ac.jp/1458/00000556/

研究データの公開

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
公開 open access 制限公開 semi-open access 制限共有 semi-closed access 非公開 closed access	公開とは，インターネット上で，誰もが無料でアクセス・利用できる状態（オープンアクセス）のこと。各機関のポリシーによって定義される範囲は異なり，共有の概念も含めることもある。 制限公開とは，条件を満たした利用者に限り，研究データが公開されること。 制限共有とは，特定の研究グループ内等に限定して研究データが共有されること。制限公開との違いは必ずしも明確ではない。 非公開とは，データ作成者・収集者あるいはデータ管理者以外はアクセス・利用できないこと。メタデータも公開しなければ，完全に非公開・秘密となり，他人に知られることは無くなる。	大学にて研究データを公開する際は，データの機密レベルを特定し，そのレベルに応じた公開の範囲や手続きを定める必要がある。	（参考）文部科学省「学術情報のオープン化に係る研究データの公開等について（案）」（第 8 期学術情報委員会第 8 回配付資料 資料 3） https://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu4/036/attach/1378756.htm （参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「研究データの公開と研究データの共有」 https://axies.jp/report/publications/proposal/ （参考）朝岡誠「研究データ公開：フルオープンと制限公開の境界線」（第 1 回 SPARC Japan セミナー2020） https://www.nii.ac.jp/sparc/event/2020/pdf/20201002_1.pdf
データの匿名化 data anonymization	個人情報・プライバシー保護のために，データセットから特定の個人を識別できる情報を削除する処理のこと。	（特定の部局のポリシーを策定する場合など）匿名化処理を必要とするデータが想定される場合は，その取扱いをポリシーに含めてもよい。	（参考）文部科学省・厚生労働省「人を対象とする医学系研究に関する倫理指針」 https://www.lifescience.mext.go.jp/files/pdf/n1859_01.pdf （参考）個人情報の保護に関する法律（平成 15 年 5 月 30 日法律第 57 号） https://elaws.e-gov.go.jp/document?lawid=415AC0000000057 （参考）個人情報の保護に関する法律についてのガイドライン（匿名加工情報編） https://www.ppc.go.jp/files/pdf/guidelines04.pdf
オープンデータ open data	利用料支払や利用許諾手続等をせずに，誰でも自由に利用でき，かつ再利用・再配布できるデータのこと。 研究データの他，国・自治体等の公共データのオープンデータ化も進められている。 慣用的には，国・自治体等の公共データを中心的に指すことが多い。	—	（参考）Open Data Handbook「オープンデータとは何か?」日本語訳： http://opendatahandbook.org/guide/ja/what-is-open-data/

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
5つ星オープンデータ 5 Star Open Data	ティム・バーナーズ=リーにより提唱され，オープンデータの公開レベルを5段階で定めたオープンデータ評価指標の一つ。 レベル1：オープンライセンスの下でウェブ上から入手可能 レベル2：レベル1に加えて，構造化データとして提供 レベル3：レベル1-2に加えて，プロプライエタリ（非オープンソース）でないファイル形式 レベル4：レベル1-3に加えて，URIを識別子として使用 レベル5：レベル1-4に加えて，他のデータソースへのリンクを含む	―	「5つ星オープンデータ」 日本語訳： https://5stardata.info/ja/ （参考）Open Data Handbook「5つ星オープンデータ」 日本語訳： https://opendatahandbook.org/glossary/ja/terms/five-stars-of-open-data/

研究データの帰属			
帰属 ownership	特定の研究データに関する権利を特定の人や大学等が有すること。	研究データの帰属の考え方は国内では十分に議論・整理されていると言えないが，研究者に研究データを帰属させつつ，必要なときに大学が即座に対応できるようにしておくことが望ましいと考えられる。 なお，研究者の離職・退職後の研究データの扱いについて定めておくことが望ましい。 → 2(7)節参照	
保管 retention	研究データを保存・保持し，管理すること。	種々の要請(研究データ10年保存ルール，文書管理，分野毎の慣行等)に応じて，研究データのデータ管理者や保管期間を定めておくことが望ましい。	
移管（移譲） transfer	研究データの管理・管轄を他機関に移すこと，もしくは，権限・権利を譲り渡すこと。	研究者が他大学に異動する際の手続きを定めておくとよい。具体的には，研究者が異動前に生成した研究データに対する大学の管理責任（研究データ10年保存ルール等）についての移管について定める。 → 3(3)節参照 その他，研究プロジェクト終了後の研究データの扱いについても，研究データ管理計画等を通じて定めておくことが望ましい。	

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
廃棄（消去） disposal (delete)	データをストレージから消去し，アクセスできないようにすること。 個人情報を含む治験等の研究データは，一定期間後の廃棄・消去が定められている。	研究者が管理・保管する研究データについては，外部からの各種の要請（研究データ 10 年保存ルール，分野毎の慣行等）に準じつつ，自身で廃棄（消去）の判断が可能であるが，機関が機関リポジトリ等に保管する研究データについては，機関がデータの保管期限を事前に定め，それに基づいて運用することが望まれる。ただし，非常に重要な研究データについてはその限りではなく，永久保存の対象と判断することもできる。	
破棄 destruction	元のデータに復元できないように壊すこと，もしくは，消し去ること。	研究データポリシーの下に定められる研究データ管理の実施要項において，単に廃棄（消去）することを定めるだけでなく，破棄の方法も定めるとよい。	

研究データの引用

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
引用 citation	論文等において，参照した文献や再利用した研究データの出典を示すこと。 研究データの引用については，これまで研究成果として評価されにくかった研究データが正当に評価されるように，研究データを参考文献リストで引用することを推奨する学術ジャーナルが増えている。	研究データの適切な引用を推奨することができる。	（参考）片岡朋子「JPCOAR スキーマが支えるデータ引用」（Japan Open Science Summit 2019） https://japanlinkcenter.org/rduf/doc/joss2019_rdc_05.pdf
帰属 attribution	研究データの引用元を示す情報。具体的には，引用元のクレジット（データの作成者・提供者等）や所在（URL，DOI 等）。学術的な信用や評価の根拠となり，これを示すことが研究データを利用する際の条件としてライセンスで指定されることがある。 注：データ管理の文脈における帰属（ownership）とは異なる。	研究データの帰属について，研究データの作成者に適切なライセンスの付与を推奨することができる。	（参考）Data Citation Principles Glossary https://www.force11.org/node/4770 （参考）Out of Cite, Out of Mind: The Current State of Practice, Policy, and Technology for the Citation of Data https://doi.org/10.2481/dsj.OSOM13-043

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
データ引用原則の共同宣言 Joint Declaration of Data Citation Principles : JDDCP	2014 年に FORCE11 により取りまとめられた共同宣言。 データ引用について，重要性，クレジットと帰属，エビデンス，識別，アクセス，永続性，特定性と検証可能性，相互運用性と柔軟性の 8 項目から記述している。「クレジットと帰属」においてはデータ作成に貢献した全ての人々の学術的功績を認めることが重要とされ，「識別」「永続性」においては DOI の利用が示唆されている。	—	FORCE11「データ引用原則の共同宣言」 原文： https://doi.org/10.25490/a97f-egyk 日本語訳： https://doi.org/10.11502/rduf_rdc_jddcp_ja （参考）池内有為, 野村紀匡, 能勢正仁「データ引用原則の共同宣言：データ引用を学術界の慣習に」『カレントアウェアネス-E』E-2234 https://current.ndl.go.jp/e2234
データジャーナル data journal	研究データそのものに関する解説・記述・保存先情報等を，学術の成果（論文）として公表することを目的に発行されている学術ジャーナルのこと。"Scientific Data", "Data in Brief"などの学術ジャーナルがある。	—	（参考）南山泰之「データジャーナル：研究データ管理の新たな試み」『カレントアウェアネス』325, 19-22 http://current.ndl.go.jp/ca1858
メタデータ			
メタデータ metadata	本体のデータに関する情報が記述されたデータのこと。	研究データへのメタデータ付与や，メタデータへのライセンス付与について定めることができる。	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 5 章：研究後の支援「5.4.1 メタデータとは」 http://id.nii.ac.jp/1458/00000556/ （参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「研究データの外形的情報（メタデータ）」 https://axies.jp/report/publications/proposal/
メタデータスキーマ metadata schema	メタデータの記述項目や記述形式を定めたもの。 研究データに対応したメタデータスキーマとしては，JPCOAR スキーマ，DataCite Schema, OpenAIRE などがある。	—	（参考）瀬川結美「リポジトリ周辺技術解説(1) JPCOAR スキーマ」（JPCOAR 学術コミュニケーション技術セミナー） http://id.nii.ac.jp/1458/00000542/ （参考）大園隼彦, 片岡朋子, 高橋菜奈子, 田口忠祐, 林豊, 南山泰之「JPCOAR スキーマの策定：日本の学術成果の円滑な国際的流通を目指して」『情報管理』60(10), 719-729 https://doi.org/10.1241/johokanri.60.719

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
識別子 identifier	識別子とは，特定の一つのデジタルオブジェクトを識別・同定するために用いられる情報（名称，符号，文字列，数値等）のこと。	―	
永続的識別子 persistent identifier：PID デジタルオブジェクト識別子 DOI：Digital Object Identifier ORCID：Open Researcher and Contributor ID Funder Registry：Open Funder Registry / Crossref Funder Registry	永続的識別子とは，恒久的に識別することを意図している識別子のこと。 研究データに関係する識別子としては，論文や研究データ等のあらゆるデジタルオブジェクトに対して付与することのできる"DOI"，研究者や著者に対して付与することができる"ORCID"，研究助成機関に対して付与することができる"Funder Registry"などがある。	―	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 5 章：研究後の支援「5.4.5 識別子の付与（DOI）」「5.4.6 識別子の付与（ORCID）」 http://id.nii.ac.jp/1458/00000556/ （参考）大波純一「著者名・機関識別子技術解説」（JPCOAR 学術コミュニケーション技術セミナー） http://id.nii.ac.jp/1458/00000550/ （参考）RDUF リサーチデータサイテーション小委員会「研究データに DOI を付与するには？：5 分で分かる研究データ DOI 付与」 https://japanlinkcenter.org/rduf/doc/rduf_rdc_doileaflet.pdf
データキュレーション data curation	研究データ管理・共有・公開のために行われる技術的な処理のこと。 具体的には，研究データの変換・整形・クリーニング，メタデータ作成，識別子付与，ライセンス処理，データの保存・公開等の処理が該当する。	学内で行われるデータキュレーションについて，その方法や手続き，担当の部署等について定めることができる。	（参考）池内有為「研究データ共有時代における図書館の新たな役割：研究データマネジメントとデータキュレーション」『カレントアウェアネス』319, 21-26 https://current.ndl.go.jp/ca1818
共通語彙 common vocabulary 統制語彙 controlled vocabulary	共通語彙とは，異なるシステム間であっても分野や地域を横断した情報交換を可能にするために，さまざまな分野で利用される用語・概念の表記・意味・データ構造を共通化した一連の語彙のこと。 統制語彙とは，言葉のあいまいさや検索の漏れと重複を防ぐために，あらかじめ選定され，意味の範囲や使い方が規制された一連の語彙のこと。図書館情報学やデータベースの分野で使われ，シソーラスや件名標目表等に利用されている。	―	

リポジトリ

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
リポジトリ repository データリポジトリ data repository	リポジトリとは，複数のデータや情報などが体系的に保存・管理されているデータベース（電子アーカイブ）のこと。 学術成果や研究データ等を保存・管理するリポジトリは，その収集範囲から，機関リポジトリ，分野別リポジトリ，汎用リポジトリに分類される。 データリポジトリとは，研究データやそれに付随するプログラム等を収集・保存・管理する電子アーカイブのこと。	—	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 5 章：研究後の支援「5.3.1 データリポジトリとは」「5.3.2 データリポジトリの種類」 http://id.nii.ac.jp/1458/00000556/ （参考）尾城孝一，杉田茂樹，木下直，松本侑子，石田唯，井上知永理，大原司，横井慶子「オープンアクセスハンドブック 第 2 版」11-13 頁「2.1.2 リポジトリ」 http://hdl.handle.net/2261/72694
機関リポジトリ institutional repository : IR	大学等が自機関の研究成果を収集・保存・公開し，誰もが無料で利用することのできるインターネット上の電子アーカイブのこと。 2019 年に国立大学図書館協会オープンアクセス委員会の再定義によると，研究データやデジタル化された研究資料も対象となることが謳われている。	学内の研究データの保管・公開先として指定すること，あるいは候補として挙げることができる。 指定する場合は，機関リポジトリの運用ポリシーと連動させる必要がある。	（参考）国立大学図書館協会オープンアクセス委員会「機関リポジトリの再定義について」 https://www.janul.jp/sites/default/files/janul_redefining_the_institutional_repository_20190805.pdf
分野別リポジトリ subject repository プレプリントサーバ preprint server	特定の学術研究分野の研究資源を登録・保存・公開できるインターネット上の電子アーカイブのこと。 代表的なものとして，数学・物理学分野の arXiv.org, 経済学分野の RePEc，生命医学分野の PubMed Central（PMC）などがあり，プレプリント（査読前論文）サーバとして機能している分野別リポジトリも多い。	—	
汎用リポジトリ general-purpose repository	分野に関わらず，幅広いデータを登録・公開・共有できるインターネット上の電子アーカイブのこと。 代表的な研究データリポジトリとしては，欧州原子核研究機構（CERN）と OpenAIRE が開発した Zenodo, PLOS 等の学術ジャーナルと連携し，機関リポジトリのホスティングサービスも提供している Figshare, Elsevier 社が提供する Mendeley Data などがある。	—	

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
ホットストレージ hot storage コールドストレージ cold storage	ホットストレージとは，アクセス頻度が高くよく使われるデータ（ホットデータ）に高速にアクセスできる高機能なストレージシステムやサービスのこと。 一方，コールドストレージとは，アクセスが低頻度になったデータ（コールドデータ）を長期間・安価に保管できるストレージシステムやサービスのことで，代表例としては，磁気テープや光ディスクへの保管の他，Amazon S3 Glacier などのサービスもある。	研究データの保管コストを抑えるために，ホットストレージとコールドストレージを使い分けることができる。	
権利			
著作権 copyright	著作権とは，作品を創作した者が有し，どのように使われるか決めることができる権利のことで，日本では著作権法で保護される。	著作権法により保護される著作物は，「思想又は感情」を表現したものであることが条件であるため，研究データについては，「データベースでその情報の選択又は体系的な構成によって創作性を有するもの」を除き，著作権法で保護されないとされている。	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 5 章：研究後の支援「5.5.1 研究データと著作権」 http://id.nii.ac.jp/1458/00000556/ （参考）RDUF 研究データライセンス小委員会「研究データの公開・利用条件指定ガイドライン」p.18「参考：日本におけるデータの法的保護一覧」 https://japanlinkcenter.org/rduf/doc/rduf_license_guideline.pdf
所有権 ownership	所有権とは，物（有体物）を自由に使用・収益・処分する権利のことで，日本では民法で規定される。	研究データのうち無体物（デジタルデータ）は，民法の所有権の対象外である。 このため，デジタルである研究データについて何らかの権利や利用条件を付す場合は，ライセンスや契約に依る必要がある。 なお，有体の研究データは民法の所有権の対象となるが，その利用・提供においてはデジタルの研究データと同様，ライセンスや契約を付してもよい。	

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
データガバナンス data governance	データ管理に対して，組織として，明確な理念のもとに体制を構築し，具体的に実施するようにすること。機関におけるデータの重要性が認識されるようになり，近年使われるようになった概念。 大学におけるデータガバナンスはもっぱら機関データ（人事，財務，教務データ等）を対象とし，部署間のデータの整合性の担保や，エビデンスに基づく意思決定，データセキュリティ，コンプライアンスなどを目的する。 研究データの場合は研究者がデータを生成するため，機関データのデータガバナンスと体制が異なる。	研究データのデータガバナンスは，研究データポリシーに即して行われる．	
データオーナー data owner	データガバナンスの観点で組織内に位置づけられることのある地位，権限の一つ。 データ所有者を意味し，大学の機関データ（人事，財務，教務データ等）については学長あるいは大学当局が該当の者として挙げられる場合がある。データトラスティーを任命し，機関データについて最終責任を有する。 研究データについては，研究データを生成した研究者が該当する場合と，大学当局が担う場合とがある。なお，研究者（PI）の指示の下にデータを生成した研究支援者は，データオーナーとはならない。	研究データのオーナーを明示する場合がある。 明示する場合は，研究者が離職・退職する際や，他大学に異動する際の手続きを定めておくとよい。当該研究者が引き続き継承する場合，研究グループのメンバーや所属組織の部局長等に継承する場合，異動前/後の大学とする場合などがありえる。 → 2(7), 3(3)節参照	
データトラスティー data trustee	データガバナンスの観点で組織内に位置づけられる地位，権限の一つ。大学におけるデータガバナンスは主として大学の機関データ（人事，財務，教務データ等）を対象とする。 トラスティー（trustee）は「被信託人」「管理人」と訳され，土地や財産の管理を請け負って管理する人や管理会社を一般に指す。 「大学におけるデータトラスティー」は大学の役員や管理職により担われ，自身の担当領域のデータの管理について最高責任を負う（教育担当理事あるいは教務部長が教務データのデータトラスティー等）。自身の担当領域のデータスチュワードやデータカストディアンを監督する。	（研究データポリシーに記載されることは少ない）	

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
データスチュワード data steward データスチュワードシップ data stewardship	データガバナンスの観点で組織内に位置づけられる地位，権限の一つ。 スチュワード（steward）は「世話役」「執事」と訳され，任された担当領域において業務がつつがなく実施されることについて責任を有す。「大学の機関データに関わるデータスチュワード」は，それぞれの担当領域の部課長や職員（教務データのデータスチュワードは，教務課長や教務課職員）で，機関データが適切に生成，管理，取り扱われることについて責任を有す。 研究データについては，研究者自らがデータスチュワードの場合もあるが，研究室内でデータの管理を担当する者（助教，技官，RA，URA 等）が該当する場合もある。機関リポジトリにて管理・公開する研究データについては，機関リポジトリ担当の図書館員がデータスチュワードとなる。	研究データを実際に管理する者として，データスチュワードが指定される場合がある。 多くの場合，研究者（PI）や図書館員が明示されている。	
データカストディアン data custodian データカストディアンシップ data custodianship	データガバナンスの観点で組織内に位置づけられる地位，権限の一つ。 カストディアン（custodian）は「守衛」「管理人」と訳され，建物や土地を管理，維持する。「大学におけるデータカストディアン」は，データの保存管理や保護について責任を有し，情報管理や IT 部門により担われることが多い。 研究データについては，研究者自らがデータカストディアンの場合もあるが，研究室内でデータの管理を担当する者（助教，技術職員等）が該当する場合もある。大学のクラウドストレージを利用する場合は，情報基盤センター等がデータカストディアンとなる。	（研究データポリシーに記載されることは少ない）	

ライセンス

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
ライセンス license	許可・許諾すること，もしくは，その証明となる書類のこと。研究データを公開・共有する場合，日本の法律では著作権・所有権の保護の対象外になる可能性が高く，クリエイティブコモンズやパブリックドメインなどのライセンスにより利用条件を明示する必要がある。	学内の研究データを公開・共有，もしくは利用に供する場合，利用条件を明示するライセンスを付与しておくことが望ましい。	（参考）JPCOAR 教材「研究データ管理サービスの設計と実践」第 2 版 第 5 章：研究後の支援「5.5 ライセンスの付与」 http://id.nii.ac.jp/1458/00000556/ （参考）南山泰之「研究データの公開・利用条件指定ガイドラインの策定」『カレントアウェアネス-E』E2250 https://current.ndl.go.jp/e2250
エンバーゴ embargo モラトリアム moratorium	公開猶予期間のこと。学術ジャーナルに掲載された自機関の論文等の研究成果を機関リポジトリで公開する場合，条件の一つとして公開猶予期間が設けられることが多い。また，研究データの場合，研究上の都合から公開猶予期間が設けられることがある。	学内の研究データを公開・共有，もしくは利用に供する場合，エンバーゴの付与を可能とすることもできる。	（参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「エンバーゴ期間」 https://axies.jp/report/publications/proposal/
政策・ポリシー			
FAIR 原則 The FAIR data principles	2014 年に FORCE11 での議論に基づき作成されたデータ公開・共有に関する原則のこと。 Findable（見つけられる），Accessible（アクセスできる），Interoperable（相互運用できる），Reusable（再利用できる）の頭文字を取った略語で，データ公開・共有の適切な方法を示している。	—	FORCE11「FAIR 原則」日本語訳： https://doi.org/10.18908/a.2019112601

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
オープンアクセス Open Access : OA	論文等の研究成果がインターネットで公開され，誰もが無料で閲覧・ダウンロード・複製・配布・印刷・検索等の利用が可能な状態にすること。	OA は慣用的には，研究データではなく，論文などの文献情報に対して用いられる表現。 データについては「オープンデータ」という表現が存在するが，慣用的には（研究データではなく）政府データの公開を指す場合がある。 研究データの管理・公開は「オープンサイエンス」の中心的アジェンダで，研究データの公開は慣用的にはこの中に含まれる。	（参考）BOAI「ブダペスト・オープンアクセス・イニシアティヴから 10 年：デフォルト値を「オープン」に」 日本語訳： https://www.budapestopenaccessinitiative.org/boai-10-translations/japanese-translation-1 （参考）尾城孝一，市古みどり「オープンアクセスの現在地とその先にあるもの」『大学図書館研究』109, 1-13 https://doi.org/10.20722/jcul.2014
オープンサイエンス Open Science	明確な定義はまだ定まっていないが，ICT 技術によりオープンな方向に科学を変容させる諸活動のことで，オープンアクセス，オープンデータ（研究データや政府データの公開），オープンピアレビュー（査読プロセスのオープン化），シチズンサイエンス（研究への市民参加）などが含まれる。「第 5 期科学技術基本計画」「統合イノベーション戦略」では，オープンサイエンス推進を謳っており，オープンデータに重点が置かれている。	大学における研究データ共有・公開の拠り所となる理念として挙げることができる。	（参考）AXIES「学術機関における研究データ管理に関する提言」付属文書 用語解説「オープンサイエンス」 https://axies.jp/report/publications/proposal/ （参考）結城憲司「研究データの管理と公開」（2020 年度 JPCOAR オープンアクセス新任担当者研修：オープンアクセスの概要（プログラム A））4.1.2.「オープンサイエンス」とは？ http://id.nii.ac.jp/1458/00000242/
研究データの権利に関するソルボンヌ宣言 Sorbonne declaration on research data rights	日本の学術研究懇談会（RU11）を含む，研究型大学ネットワーク 9 団体が 2020 年に署名した宣言のこと。 研究データの共有・再利用が重要であることを確認した上で，参加校とその研究者はその推進を約束している。一方で，学術コミュニティに対しては，研究データの共有環境，相互運用性を保証するツール，適切なデータリポジトリの整備や，査読付き論文が FAIR 原則に則ったデータセットを伴うことを呼びかけている。また，各国政府や研究助成機関に対しては，これらの約束を履行できるように資金や法律の整備等の支援を要望している。	大学における研究データ共有・公開の拠り所となる理念として挙げることができる。	「研究データの権利に関するソルボンヌ宣言」 原文： https://www.leru.org/files/Sorbonne-declaration.pdf 日本語訳：本ガイドラインの「参考資料 2」を参照

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用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
統合イノベーション戦略 Integrated Innovation Strategy	内閣府の総合科学技術・イノベーション会議（CSTI）の下，研究開発の成果の実用化によるイノベーションの創出の促進を図るための統合的な戦略のことで，2018年から毎年策定。 「統合イノベーション戦略2020」では，「第Ⅲ部第1章(3)研究データ基盤の整備・国際展開」において，「研究データ基盤及びリポジトリの整備」「研究データの管理・利活用についての方針・計画の策定等」「人材の育成及び研究データ利活用の実態把握」を目標としている。	—	内閣府「統合イノベーション戦略2020」 https://www8.cao.go.jp/cstp/tougosenryaku/index.html 内閣府「統合イノベーション戦略（英語版）」 https://www8.cao.go.jp/cstp/english/doc/integrated_main.pdf
オープン・アンド・クローズ戦略 open and close strategy	研究データにおけるオープン・アンド・クローズ戦略とは，研究データの特性から，公開するものと非公開にするものとに分けて進める戦略のこと。 「第5期科学技術基本計画」「統合イノベーション戦略」の中で謳われている。	—	
科学技術基本計画 Science and Technology Basic Plan 科学技術・イノベーション基本計画 Science, Technology and Innovation Basic Plan	平成7年制定の「科学技術基本法」により，長期的視野に立って体系的かつ一貫した科学技術政策を実行するために策定された計画のこと。これまで，第1期（平成8～12年度），第2期（平成13～17年度），第3期（平成18～22年度），第4期（平成23～27年度），第5期（平成28～令和2年度）が決定されてきた。 令和2年の「科学技術・イノベーション基本法」への改正に伴い，令和3年度からの5年間は「科学技術・イノベーション基本計画」として策定された。 「第5期科学技術基本計画」及び「第6期科学技術・イノベーション基本計画」では，オープンサイエンスの推進や研究データのオープン化が謳われている。	—	内閣府「科学技術基本計画」 https://www8.cao.go.jp/cstp/kihonkeikaku/index5.html 内閣府「第6期科学技術・イノベーション基本計画」 https://www8.cao.go.jp/cstp/kihonkeikaku/index6.html 内閣府「第6期科学技術・イノベーション基本計画（英語版）」 https://www8.cao.go.jp/cstp/english/sti_basic_plan.pdf

国内インフラ

用語	用語の説明（JPCOAR）	研究データポリシーに関わる補足説明（AXIES）	参照先
NII Research Data Cloud：NII RDC 管理基盤 公開基盤 検索基盤	NII Research Data Cloud とは，国立情報学研究所（NII）が提供（予定）している情報インフラのこと。 学術研究活動の過程で生成される研究データや関連の資料を管理・公開・検索することができ，それぞれに独立した，研究プロジェクトごとに研究データや関連のファイルを共有できる「管理基盤」（GakuNin RDM），研究プロジェクトが終了後，学術論文やその素となった研究データの一部などを公開できる「公開基盤」（新JAIRO Cloud：WEKO3），公開された学術成果等を検索できる「検索基盤」（CiNii Research）で構成されている。	―	NII オープンサイエンス基盤研究センター「NII 研究データ基盤（NII Research Data Cloud）の概要」 https://rcos.nii.ac.jp/service/
GakuNin RDM	国立情報学研究所（NII）が提供している研究データ管理サービス。個人の研究者や研究者グループが研究プロジェクト単位で研究データを管理できる。	研究者が研究活動期間中に利用する研究データ基盤として，大学に導入することができる。	NII「GakuNin RDM」 https://rdm.nii.ac.jp/
JAIRO Cloud：JC	国立情報学研究所（NII）とオープンアクセスリポジトリ推進協会（JPCOAR）が運営するクラウド型の機関リポジトリ環境提供サービス（共用リポジトリサービス）。核となるソフトウェアにNII 開発の WEKO を採用。2020年3月31日現在，609 機関が利用。 2020 年度中に提供開始予定の新JAIRO Cloud は，WEKO3 採用，JPCOAR スキーマ対応，マルチリポジトリ機能，デジタルアーカイブ機能等の特徴を有し，GakuNin RDM や CiNii Research との連携も予定している。	学内で生成された各種学術資源（論文，博士論文，紀要，教材，講演資料，研究データ，DB，その他）を公開する機関リポジトリを同サービスの利用により展開できる。	JPCOAR「JAIRO Cloud とは」 https://jpcoar.repo.nii.ac.jp/page/42
CiNii Research	国立情報学研究所（NII）が提供予定の包括的検索サービス。学術論文や図書，博士論文，研究データなどの研究成果情報，それらの成果を生み出した研究者，研究プロジェクトの情報などを包括的に検索できる。	現段階では研究者個人が利用する学術情報検索サービスであるが，機関の生み出す研究成果を分析する機能も導入し，大学 IR や URA も利用できるようにする予定。	NII「CiNii Research」 https://cir.nii.ac.jp/

(Reference 4) Members of URDP-WG, AXIES-RDM Interest Group

(in Japanese only)

- 船守美穂（国立情報学研究所, AXIES-RDM 部会 副査）
- 青木学聡（名古屋大学情報連携推進本部, AXIES-RDM 部会 主査）
- 松原茂樹（名古屋大学情報連携推進本部, AXIES-RDM 部会 副査）
- 外山勝彦（名古屋大学情報基盤センター）
- 松井啓之（京都大学経営管理大学院）
- 芦北卓也（九州大学附属図書館）
- 菊川昭治（愛媛大学研究支援部）
- 元木正和（東北大学情報シナジー機構, AXIES-RDM 部会 副査）
- 岩井雅史（信州大学附属図書館）
- 結城憲司（北海道大学附属図書館）
- 加納靖之（東京大学地震研究所）

○ URDP-WG

大学における研究データポリシー策定に向けた WG

（University Research Data Policy Working Group）

■第 1 回［2020 年 7 月 28 日(火) 10:00-12:00］（議事録担当：岩井雅史）
   1. WG の進め方（船守）
   2. 自己紹介
   3. 事例発表：東北大学（元木正和）
   4. 事例発表：京都大学（松井啓之）

■第 2 回［2020 年 8 月 6 日(木) 16:00-18:00］（議事録担当：結城憲司）
   1. 事例発表：愛媛大学（菊川昭治）
   2. 事例発表：九州大学（芦北卓也）
   3. URDP ガイドライン用語集（用語提案の依頼）

■第 3 回［2020 年 8 月 20 日(木) 9:00-12:00］（議事録担当：芦北卓也）
   1. 事例発表：地震研究所（加納靖之）
   2. 事例発表：信州大学　（岩井雅史）
   3. URDP ガイドライン用語集（収録用語の方向性）
   4. 研究データに関する北京宣言（翻訳？）

■第 4 回［2020 年 9 月 4 日(金) 16:00-19:00］（議事録担当：元木正和）
   1. 事例発表：北海道大学（結城憲司）
   2. 事例発表：名古屋大学（松原茂樹）

■第 5 回［2020 年 9 月 10 日(木) 16:00-19:00］（議事録担当：船守美穂）
   1. URDP ガイドライン改善方向性の確認

■第 6 回［2020 年 10 月 2 日(金) 9:00-12:00］（議事録担当：青木学聡）
   1. 発表事例のとりまとめ
   2. 今後のプロジェクト提案について（自由討議）

・2020 年 10-11 月　：　URDP ガイドライン改訂作業 1
・2020 年 11 月後半　：　WG メンバーによる URDP ガイドライン確認

■第 7 回［2020 年 11 月 27 日(金) 9:00-12:00］（議事録担当：船守美穂）
   1. URDP ガイドライン改善提案受付

・2020 年 12 月　　　　：　<u>AXIES 年次会合にて、URDP ガイドライン(案)提示</u>
・2021 年 1-3 月　　　　：　URDP ガイドライン最終調整、とりまとめ

■番外編［2021 年 3 月 12 日(金) 17:00-20:00］（議事録担当：船守美穂）
　1.　参考資料 3「RDM 用語集」最終調整