



Visions and a Plan for a Database of Doctoral Graduates in Japan

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Surveys on Human Resource in NISTEP



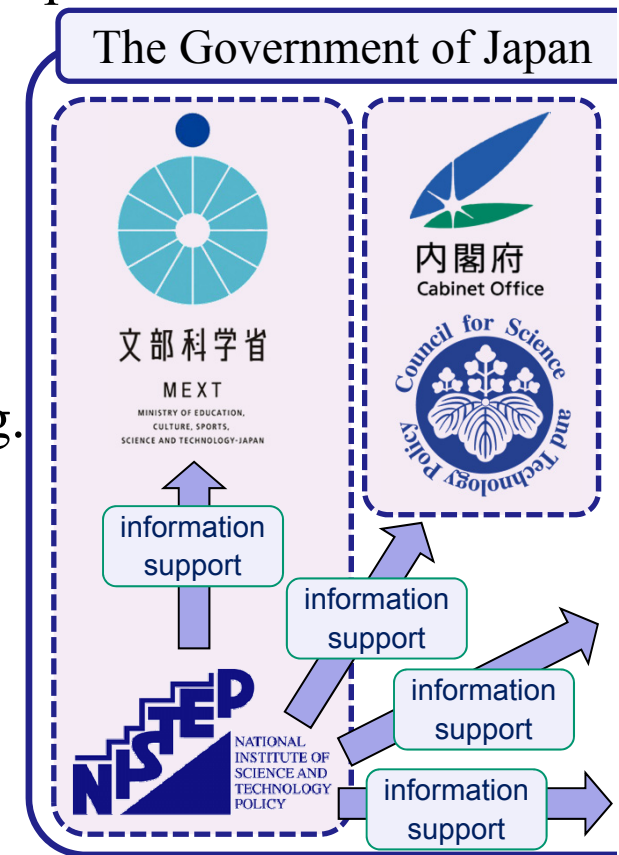
Fostering and securing **HR(human resource)** is important for every country. In particular, doctoral graduates and researchers are important for **STI(Science, Technology and Innovation)**.

The Government of Japan has been steadily implementing HR and STI policies.

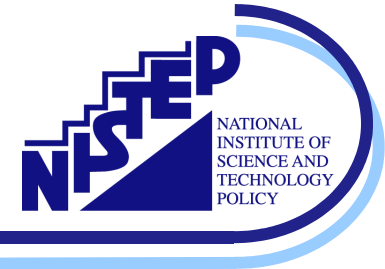
NISTEP has conducted several surveys and analyses regarding Human resources to support policy-making.

Examples of NISTEP's Surveys on HR

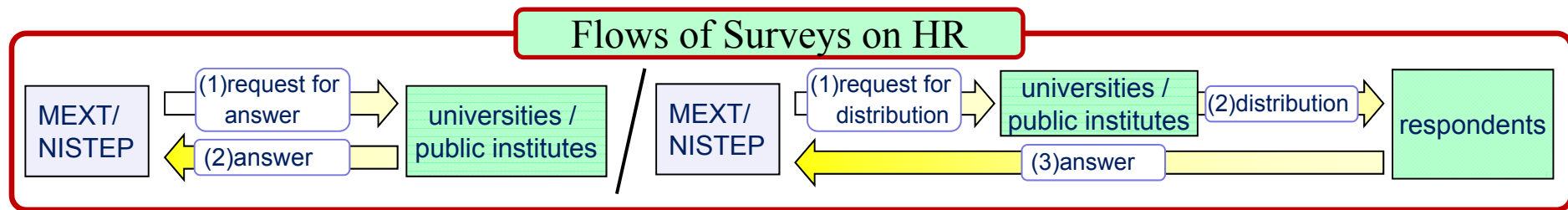
- Surveys on doctoral students and graduates
(Financial support and first destination)
- Surveys on postdoctoral fellows
(Employment situation and next destination)
- Surveys on researchers
(Mobility and research environment)



Issues to Be Resolved for Surveys to Be Effective



MEXT/NISTEP have generally conducted HR surveys by asking **universities and public research institutes** to answer/distribute questionnaires.



There are issues to be resolved for the HR Surveys

I. Respondents to the survey are limited to universities / public research institutes or its current staffs / students.

➔ **MEXT/NISTEP** cannot conduct survey on

- graduates in private companies
- graduates working as non-research positions
- graduates in foreign countries

II. MEXT/NISTEP can't identify one person across surveys.

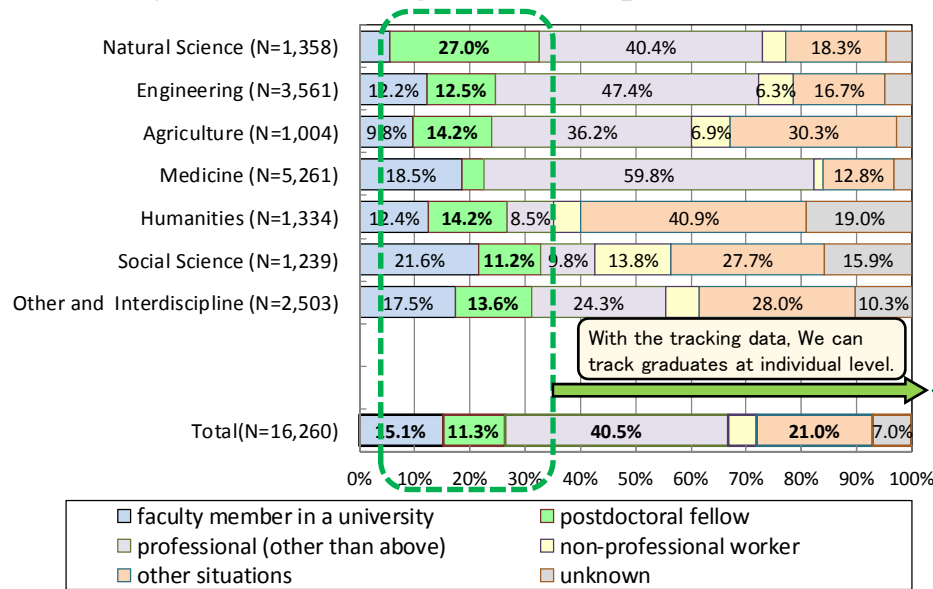
➔ Surveys for doctoral graduates, postdoctoral fellows, and researchers are separated.
MEXT/NISTEP cannot analyze the longitudinal career path of graduates.

What Become Possible with Tracking Data of Doctoral Graduates

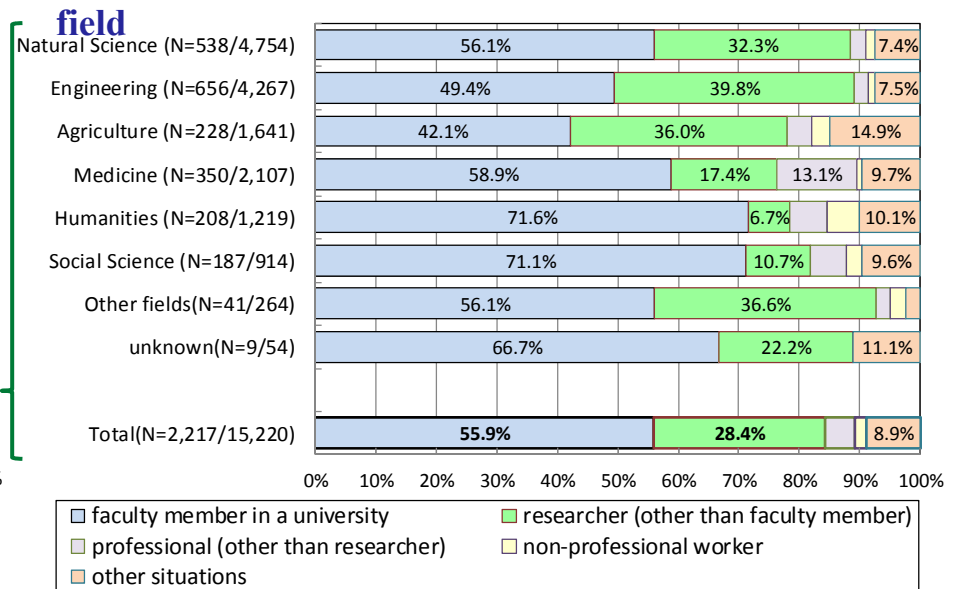


With tracking data on the database of doctoral graduates, the individually matched data of the following two figures would be available.

First jobs of doctoral graduates as per research field



Next jobs of postdoctoral fellows as per research field



* Based on FY2012 the School Basic Survey, the first job of doctoral graduates in FY2011 calculated by NISTEP (The survey includes students who terminated their student status on obtaining required credits in graduates for descriptive purposes.)

* Based on the Survey regarding postdoctoral fellows, the time for counting is November 2009. The denominator in the label is total postdoctoral fellows at that time. The numerator in the label is the number of postdoctoral fellows who changed his/her job before April 2010. (Excluding the next job is unknown)

MEXT/NISTEP will be able to identify **the roots** of each career by conducting backward analyses. The tracking data indicate **causes and effects**.

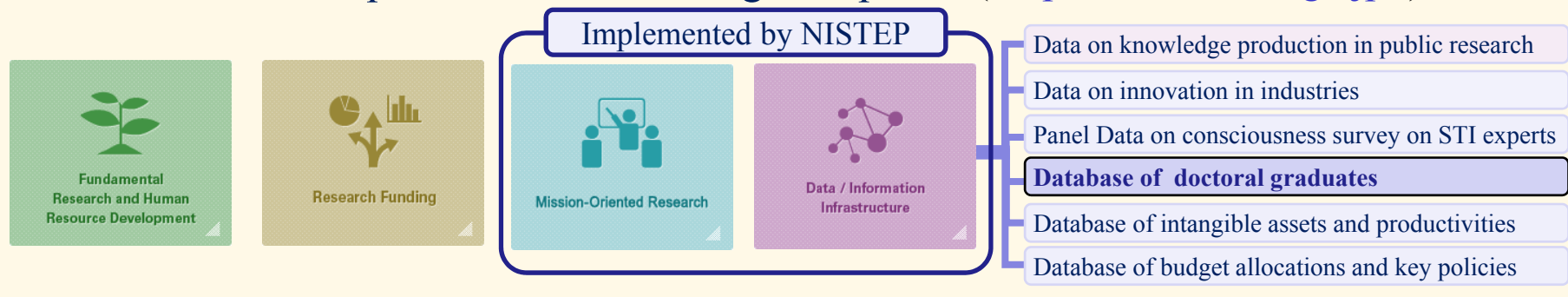
SciREX: Data/Information Infrastructure



MEXT/NISTEP will construct the **database of doctoral graduates** as a part of its “**Data/Information Infrastructure**” programs in “**Science for RE-designing Science, Technology and Innovation Policy (SciREX)**”.

SciREX (from FY2011-)

SciREX aims to prepare a system and foundation for the realization of "evidence-based policy formation": proposal of policies effective in addressing different challenges, based on multifaceted analyses and assessments of social and economic impacts from STI. SciREX is composed of the following four parts. (<http://scirex.mext.go.jp/>)



Through the database of doctoral graduates, we will track the careers of doctoral graduates and collect data for “evidence-based policy formation”.

(1) Objects of the Database of Doctoral Graduates



- MEXT/NISTEP tracks the careers of doctoral graduates **for the formulation of effective HR and STI policies.**
- Each university uses the data on graduates **to improve educational programs and career support.**
- Information on graduates is **important for accountability,** both to potential doctoral students and tax payers.
- The database **supports information management** between universities and alumni.

(2) System for the Database of Doctoral Graduates



- NISTEP constructs a web-system of the database of doctoral graduates **based on coordination with related sections and institutions.**
- NISTEP **distribute ID to each doctoral student** through university.
- NISTEP and each university **jointly manage information of doctoral students** in graduates schools and right after his/her graduation.
- Variable information (e.g. affiliation, position) is mainly **updated by each doctoral graduate** through periodic E-mail notification.
- Specialized surveys are feasible through identifying characteristics by prior information. (e.g. postdoctoral fellows, workers in private companies)

(3)Subjects of the Database of Doctoral Graduates



- In the first stage, NISTEP distributes IDs **to current doctoral students in Japan** and collects the data on new graduates.
- NISTEP consider expanding the range of subjects by coordinating with related sections and institutions.

Through identification of doctoral programs of

- researchers in Japan
(e. g. coordination with ReaD&Researchmap [<http://researchmap.jp/>])
- doctorate graduates of a foreign universities living in Japan
(e. g. online registration forms and incentives)

(4) Data Availability for the Database of Doctoral Graduates



- In principle, NISTEP/universities **publish compiled statistical data** as per courses, or financial supports etc.

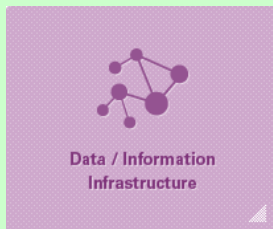
Universities/courses show positive impression of disclosure/support by joining DB-DG.

- NISTEP/universities publish or **provide identifiable personal data only if the respondent explicitly agrees to this** in each time.

For example {

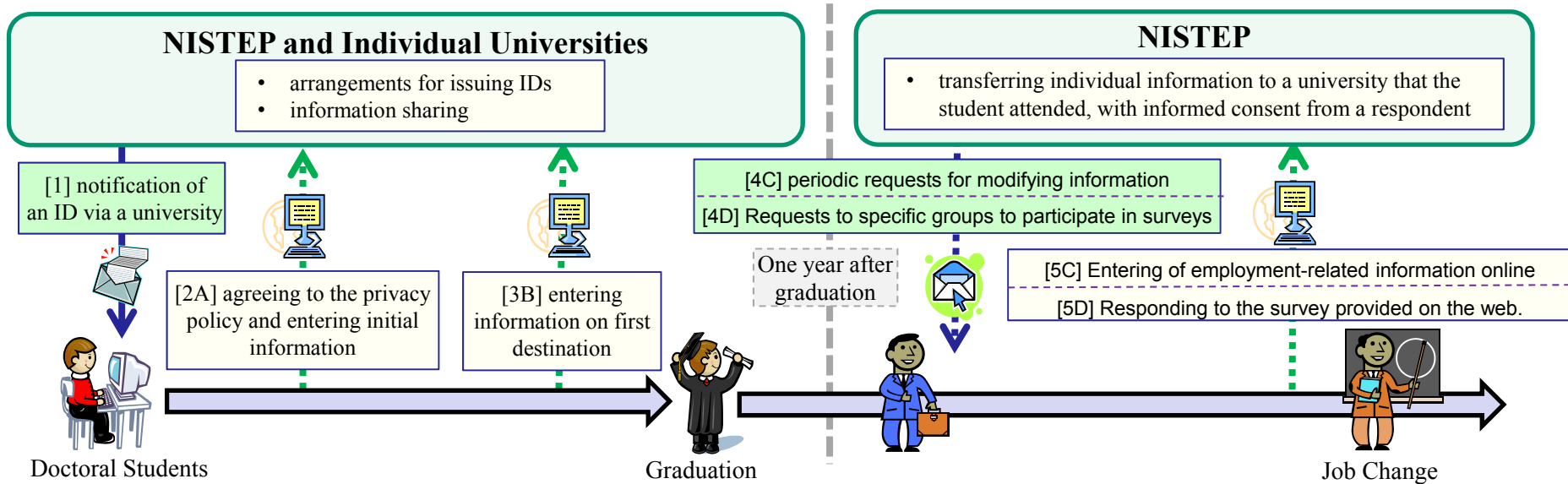
- “Messages from alumni in each career” in the brochures of a universities
- Arranging for students-alumni interactions for career support

- As a part of **“SciREX Data/Information Infrastructure”**, NISTEP will build a framework to receive applications for restricted-use data. After screening, NISTEP will provide applicants with detailed data.



The program pursues to expand accessibility to the accumulated data and research outputs as much as possible while paying enough attention on the regulations and laws concerned with confidentiality issues.

A Tentative Plan for Information Flow of the Database of Doctoral Graduates



doctoral students	career decision after graduation	career paths after graduation
<p>A: Entering initial information (doctoral student period)</p> <p>[Collection of information that generally does not change after graduation.]</p> <p>[Item examples]</p> <ul style="list-style-type: none"> • name • date of birth • nationality • course of master's degree • kinds of students (foreign student, from the workforce) • gender • E-mail • course of bachelor's degree • research field 	<p>B: Entering information on first destination after graduation</p> <p>[Accommodate survey items and share data so that universities can also utilize information for the "status after graduation" in basic survey of schools.]</p> <p>[Item examples]</p> <ul style="list-style-type: none"> • employment status • occupation • institution of affiliation • distinctions such as post-doctorate, etc. • Industrial category • full-time/part-time • fixed term/tenured 	<p>C: Confirmation of employment status</p> <p>[Survey on all respondents about once each year to collect information.]</p> <p>Simply click on the "Confirm" button if the employment status has not changed since the last survey.</p> <hr/> <p>D: Survey of "specific groups"</p> <p>[Identifying characteristics by prior information.]</p> <p>[Examples of specific group]</p> <ul style="list-style-type: none"> ◆ foreign students ◆ Working in private companies ◆ postdoctoral fellows ◆ graduates of a special program ◆ residing overseas.

The Progress and Expected Plan for the Database of Doctoral Graduates



Concept Design

FY2011

April 2011
- March 2012

- Conceptual planning of tracking doctoral graduates
- Start information sharing and coordination with related section and institutions
- Setting up a **committee of experts for building a database of doctoral graduates**
- Investigating tracking surveys in foreign countries.
- Conducting a survey on information collection of HR etc.

subject of the survey: universities and public research institutions in Japan (Total=1575)
Response rate: 81.6% (national / municipal university 100%, private university 84.9%)

A committee of experts for DB-DG

The chairman of the committee is Yoshio Higuchi.
(Dean: Faculty of Business and Commerce, Keio University)
The committee comprises of 14 members in FY2012.

- policy-maker for HR
- DB expert for HR
- policy-maker for IT
- legal expert for personal data
- researcher for HR
- Director of career information

Today!

Basic Design

FY2012

April 2012
- March 2013

- Start developing of the web-system of the database
- Publishing a report for the plan of the database

(NISTEP Research Material No.216) **System Design for Tracking Doctoral Graduates**
- Background of Database of Doctoral Graduates and Survey of Graduates in Foreign Countries -
<http://data.nistep.go.jp/dspace/handle/11035/1175>

Trial and Refining

Plan for
FY2013

April 2013
- March 2014

- Meetings with stakeholders in universities for the introduction of the web-system of the database
- **Worldwide information sharing “International Symposium on Tracking Careers of Doctoral Graduates”**
- Launching a website of the Database of Doctoral Graduates for participating universities/graduate schools
- Setting up meetings for the practical operations and experts committee for the system design of the DB-DG.
- Distribution of IDs to universities and final-year students of doctoral courses.
- Obtaining the feedbacks from universities and students.
- Refining the system by considering feedbacks

Spread

Plan for
FY2014

April 2014
- March 2015

- Trial survey of the first doctoral graduates and obtaining feedbacks
- After coordinating with related sections and institutions, sending request letters to universities.
- Conducting orientation sessions to introduce the system to every doctorate course.

What become possible with the published statistical data alone



With the published statistical data alone, we can easily see the situations of graduates.

Example: Shares of the getting a tenured position five years after graduation

characteristics course	students didn't apply to an intern program.	students applied to an intern program. And, he/she is rejected	students applied to an intern program. And, he/she is accepted	Total
A university chemistry course	73% (N=22)	75% (N=8)	93% (N=15)	80% (N=45)
B university chemistry course	66% (N=18)	71% (N=7)	83% (N=12)	72% (N=37)
⋮	⋮	⋮	⋮	⋮
chemistry course across the university	65% (N=200)	70% (N=50)	85% (N=110)	69% (N=360)

Such information is important for policy-makers, researchers, directors of universities/courses, (potential) doctoral students, and tax payers.

With reference to the published data,

- Policy-makers and researchers consider/analyze HR and STI policies.
- Directors of universities/courses consider the curriculum and career support.
- (Potential) students consider choosing a course and applying for a program.
- Taxpayers consider the ways tax money is used.

The Database of Doctoral Graduates for Tracking Careers



In order to obtain useful information for policy-making, MEXT/NISTEP have to **track careers of doctoral graduates from a student to an innovative worker.**

NISTEP constructs **the database of doctoral graduates based on coordinated efforts with related sections and institutions.**

The information within the database would be useful

- for
- HR and STI policies (e.g. design for financial support and identifying priority fields)
 - reforming of curriculum and career support
 - considering and choosing a course and applying for a program
 - accountability to taxpayers
 - Creating a network of students, alumni, universities, and companies

In order to build a worthwhile system for various stakeholders, we would appreciate your advice and support.