

Unit-based Scheme Connection Between TEI and Original Scheme To Promote Data Sharing Beyond Cultural Diversities

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The Goal of this presentation

jabb1	manuscripts or printed documents	/TE/tei-Header/fileDesc/sourceDesc/msDesc/@type
jabb2	a name of the reading material	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msIdentifier/repository
jabb3	a name defined by the investigator	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msIdentifier/msName
jabb4	additional information on a name defined by the investigator	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msIdentifier/msName
jabb5	a condition of binding	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb6	a name defined by the owner	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msIdentifier/altIdentifier
jabb7	ID defined by the owner	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msIdentifier/idno
jabb8	a title on the cover page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/binding/p/title
jabb8@base	a base paper for a title on the cover page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/binding/p/title/fs
jabb8@originalOrNot	original or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/binding/p/title/fs
jabb8@positionOfTitlePage	a position of the title on the cover page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/binding/p/title/fs
jabb8@typeOfBox	a type of a base paper for a title on the cover page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/binding/p/title/fs
jabb9	a title indicated in the content pages	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContent/titlePage
jabb10	a space in the center of a folio	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/foliation
jabb11	the year when the book or manuscript was made or appeared, which may be an estimated year	/TE/tei-Header/fileDesc/sourceDesc/msDesc/history
jabb11@typeOfPrinting	a type of printing	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb12	a condition of the book or manuscript; whether it contains a whole contents or not.	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb12@conditionOfContentParts	a condition of the part of content pages	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13	a condition of the preservation	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13@totalCondition	a total condition of the preservation	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13@broken	whether being broken or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13@stained	whether being stained or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13@shabby	whether being shabby or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13@vermiculture	whether being vermiculture or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13@otherDamage	other damages	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb13@mending	whether being mended or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition
jabb14	a description on an outer of the printed documents or manuscripts	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/
jabb15	a description about a seal made by owners who may be the present or previous owners	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/addition/stamp
jabb15@provenance	provenance information	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/addition/stamp/note
jabb16	a description about contents in a front matter	there are multiple elements in TEI (1:n relation)
jabb16@JO	whether there is a description about this reading materials in a front matter or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContents/msItem/incipit
jabb16@BATU	whether there is a description about this reading materials in a back matter or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContents/msItem/colophon
jabb16@JO	a content of JO	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContents/msItem/incipit
jabb16@BATU	a content of BATU	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContents/msItem/colophon
jabb17	a description about editors or people who took part in this publication	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContents/msItem/bibl/editor
jabb18	a description about ages or a text type of body text to help identify this reading material	there are multiple elements in TEI (1:n relation)
jabb18@DATE	a content of DATE	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContents/msItem/bibl/date
jabb18@TEXTCLASS	a content of TEXTCLASS	/TE/tei-Header/profileDesc/textClass
jabb19	a description about a cover page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/binding/p/title
jabb19@typeOfCover	a type of a cover page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/adminInfo/custodialHist
jabb20	information on binding	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/bindingDesc/binding/condition/fs
jabb20@	a type of binding	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/bindingDesc/binding/condition/fs
jabb21	a flyleaf of a title page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/bindingDesc/condition/p
jabb21@condition	a condition of the flyleaf	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/bindingDesc/condition/fs
jabb21@typeOfPager	whether the paper is the same as one used in content pages or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/msContents/msItem/bibl/serie
jabb22	the number of book forms of this title in terms of works, not physical forms	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/support/material
jabb23	a description about paper used	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/support/material/fs
jabb23@typeOfPaper	a type of paper	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb24	the number of sub-parts to make this binding	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb24@typeOfUnit	a type of sub-parts or units	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/extent
jabb25	information about size in a unit of cm.	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/extent/fs
jabb25@width	width	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/extent/fs
jabb25@length	length	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding
jabb26	information about lines on a page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb26@frameLines	a type of the frame lines	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb26@linesBetweenTexts	information about lines between text lines	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb26@width	width	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb26@length	length	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb27	the number of paper excluding a cover page	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb27@totalNumberOfPaper	the number of paper in this reading material	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb27@numberOfFrontFlyleaf	the number of a fly leaf in the front part of this reading material	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb27@numberOfBackFlyleaf	the number of a fly leaf in the back part of this reading material	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding/condition/fs
jabb28-1	the average number of lines in a page of a body part	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding
jabb28-2	the average number of lines in a page of a front matter	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding
jabb28-3	the average number of lines in a page of a back matter	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding
jabb28-4	the average number of lines in a verse	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/bindDesc/binding
jabb29	information about pictures included	?
jabb29@existenceOfPicture	whether there are pictures or not	?
jabb29@typeOfPicture	a type of the pictures	?
jabb29@numberOfPicture	the number of the pictures	?
jabb30	information about additional writings besides or within the reading material	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/handDesc
jabb30@existenceOfNotes	whether there are additional writings or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/handDesc/summary/fs
jabb30@sameAsWriterOfBodyText	whether the writer of the additional writings is the same as one of the body text or not	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/handDesc/summary/fs
jabb30@color	a type of color	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/handDesc/summary/fs
jabb31-1	a type of scripts, letters, or characters in a body text	there is a n:1 relation between JABBL and TEI
jabb31-1#		/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/scriptDesc
jabb31-2		/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/typeDesc
jabb31-2#		there is a n:1 relation between JABBL and TEI
jabb31-2#		/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/scriptDesc
jabb32-1	information about publication	/TE/tei-Header/fileDesc/sourceDesc/msDesc/physDesc/typeDesc
jabb32-2	colophon	/TE/tei-Header/fileDesc/source

Outline of the following story

- **Background:** Introducing our project and Japanese old reading materials
- **Observation:** A comparison of bibliographic items used in the research of Japanese old reading materials and elements in a TEI scheme
- **Problems:** Two kinds of correlation problem between TEI and non-TEI on a scheme level
- **Solution:** TEI as referential information

The system we plan

- The system is used in a field.
- It's function is to support the work of data entering.
- It provides flexibility as a personal data recording format.  the original target of our research

Our initial workflow

- analyze the JB item
- define the JB item in TEI (tagdocs)
- compare elements of TEI and JB format.
- make a scheme based on TEI
- make HTML5 based web pages on a tablet with services provided from a server storing the data sent from the pages.
- make a data conversion service for JB format and personal format.

Actual flow of completed work

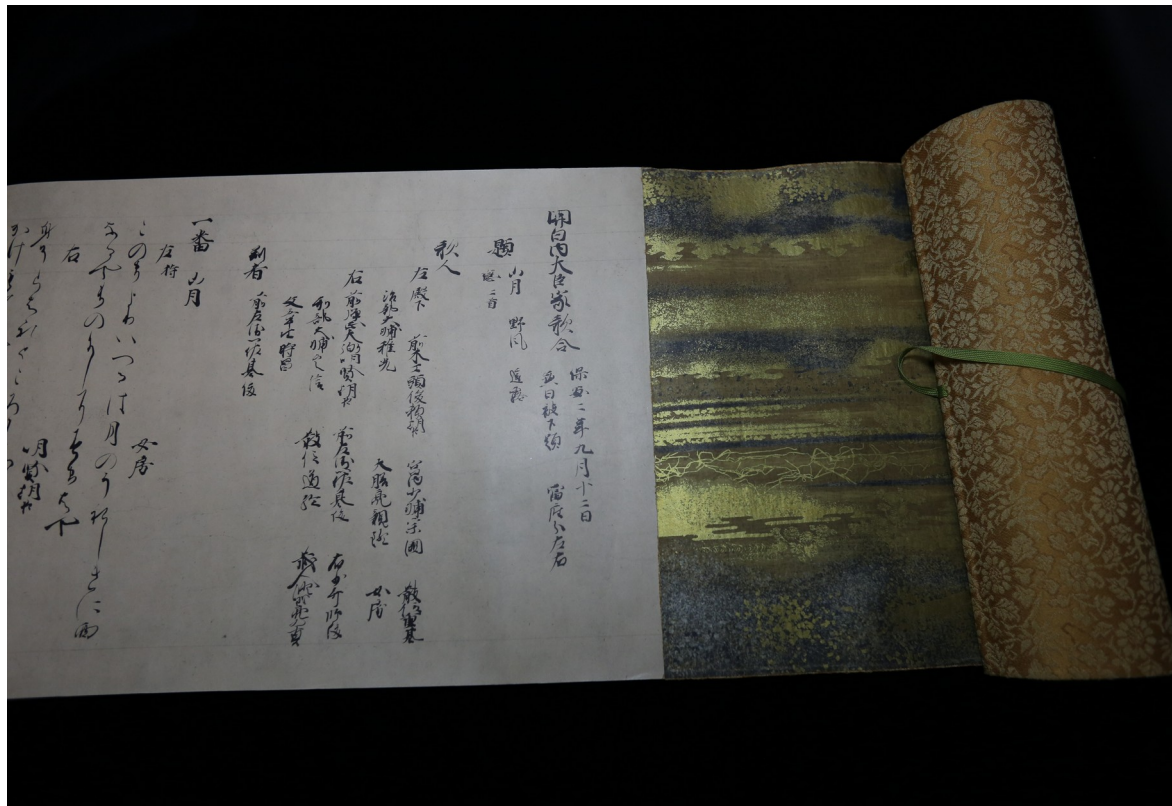
- analyze the JB item
- define the JB item in TEI (tagdocs)
- compare elements of TEI and JB format.
- make an original scheme and use elements of TEI just as referential data.

not yet

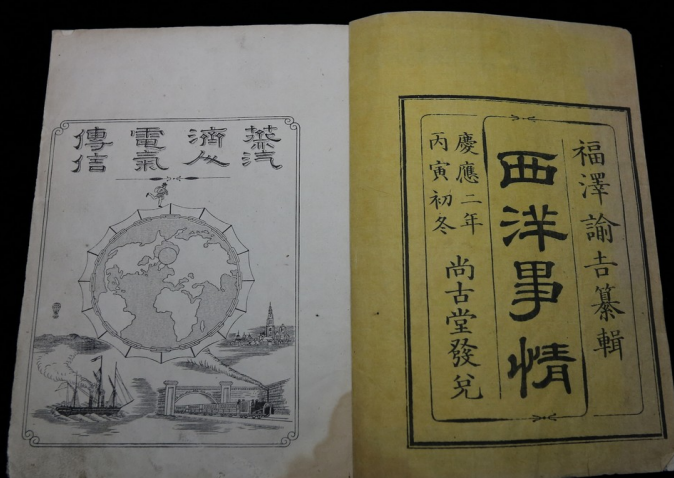
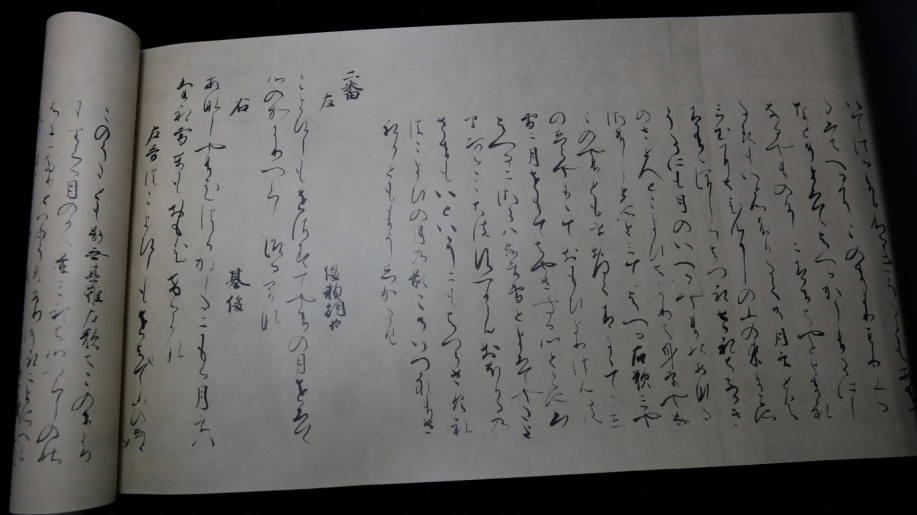
- make HTML5 based web pages on a tablet with services provided from a server storing the data sent from the pages.
- make a data conversion service for JB format and personal format.

Japanese old reading materials

a variety of form, Japanese paper(washi),
bound by strings, easy to reform, etc.



Japanese old reading materials



The union catalog for old reading materials issued in Japan

base1.nijl.ac.jp/~tkoten/about-en.html

About this database "Union Catalogue of Early Japanese Books"

[Japanese](#)

This database is union catalogue of early Japanese books. (but also including Chinese classics and books of the Meiji period). We produced this catalogue with the aim of succeeding and expanding "KOKUSHO SO MOKUROKU" (published by Iwanami Shoten). Thus this catalogue is, so to speak, "New KOKUSHO SO MOKUROKU". With this catalogue, we can provide you authoritative information of Japanese classical literary works and its authors. We also provide you bibliographic information of early Japanese books, and show you who own it.

Bibliographic information and information on owners is based on not only data of KOTENSEKI SOGO MOKUROKU (includes information of "KOTENSEKI SOGO MOKUROKU" (edited by National Institute of Japanese Literature (NIJL), published by Iwanami Shoten 1990)), but also data of WAKOSHO MOKUROKU and MICRO SHIRYO MOKUROKU (catalogues of Japanese manuscripts and old printed books in original and in microform which we have).

Authoritative information of this database contains all of works and its authors printed in "KOKUSHO SO MOKUROKU" (revised and expanded edition, 1989-1991) and "KOTENSEKI SOGO MOKUROKU". And it also includes information on works and its authors added after these catalogues published.

Information gathered from "KOKUSHO SO MOKUROKU" (Information of Japanese manuscripts, old printed books, printed books with type, reproduced books etc.) has recorded as part of content of data on works as it is, and it is displayed as reference. For this, information of this data is not up-to-date. By the situation each books may be kept by different owner at present. If you want to know change in denomination and structure of owners, transfer of books and so on, please see ["KOKUSHO SO MOKUROKU SHOZOSHA ICHIRAN"](#) (List of owners). And when you want to read each books, please be sure to inquire of each owners in advance.

KOTENSEKI SOGO MOKUROKU DATA is based on catalogues of books which colleges, libraries and so on, have. We gathered information on early Japanese books (Japanese classical literary works which is created by Japanese until 1868) from these catalogues. For this, information of this data is not up-to-date. When you want to read each books, please be sure to inquire of each owners in advance. → ["KOTENSEKI SOGO MOKUROKU SHOZOSHA ICHIRAN"](#) (List of owners)

WAKOSHO MOKUROKU DATA has made, based on Japanese manuscripts and old printed books in original which we have, and MICRO SHIRYO MOKUROKU DATA has made, based on Japanese manuscripts and old printed books in microform which we collected. → ["MICRO SHIRYO & WAKOSHO MOKUROKU SHOZOSHA ICHIRAN"](#) (List of owners)

We would like to express our sincere gratitude to all of owners for their cooperation.

This database has developed with FY 2003-2007 Grants-in-Aid for Scientific Research (Publication of Scientific Research Results) and so on.

This database has developed under the charge of NIJL.

over 500,000 records
for reading materials
in history before Meiji Era
(cir. 1890)

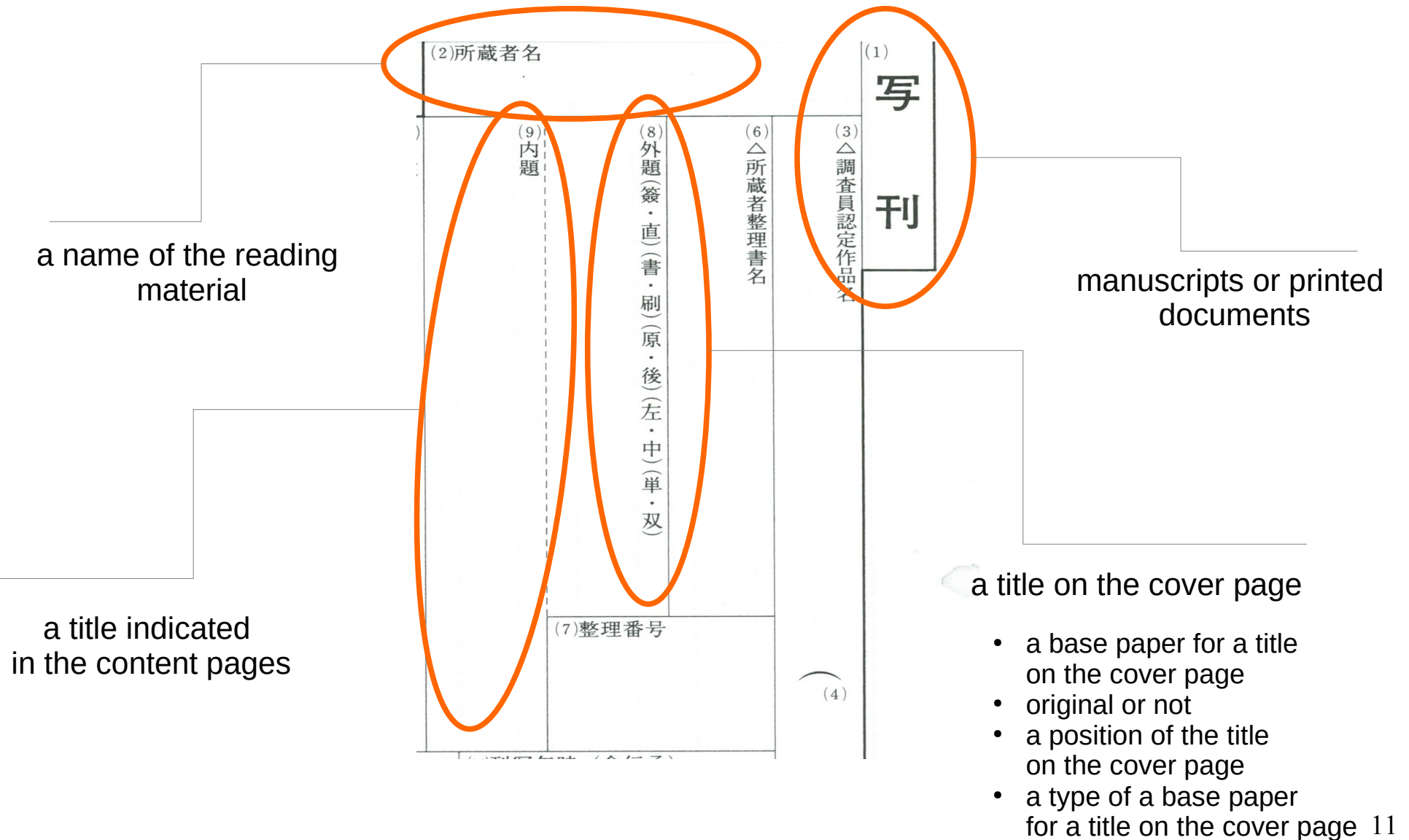
The information has been
provide by volunteers of
researchers

The website of National Institute of Japanese Literature

A data sheet for the database

当館整理番号		撮影年度		フィルム番号		サービス区分		(2)所蔵者名		(1)写刊		
当館整理書名						(10)*柱		(9)内題		(8)外題(簽・直(書・刷)(原・後(左・中(單・双		
(17)△編著者等				(18)△時代・ジャンル等				(6)△所蔵者整理書名		(3)△調査員認定作品名		
(19)表紙	原・後 色・文様等:			(20)装訂	卷・折・列・袋・仮・			(7)整理番号		(4)		
(21)*見返し	原・後 本文共紙			(22)巻数	卷							
(23)*料紙	楮・鳥の子・薄様・極・			(24)数量	軸 帖 冊 枚							
(25)寸法	表紙縦 横 cm × cm			(26)匡郭(単・双)字高 界線 縦 横 cm × cm								
外(27)の表紙紙数	全	丁	遊紙前	丁	(28)一面行数	本文 序 跋 行 行 行 (一首 行)						
(29)絵	無・濃彩・淡彩・白描・丹緑・色刷・墨印;()面											
(30)書入	無・有		同筆・別筆 墨・朱・	(31)用字	本 文 漢・片・平・ 書入・付訓等 漢・片・平・			(11)刊写年時(含伝承)				
						(32)1刊記		整版・古活・木活・活版		(5)合集状況		
						2奥書		(12)残存	全・()存 欠		(15)蔵書印	
						3識語		(13)保存	良・並・不良 破・汚・疲 虫 補修アリ		(5)合集状況	
						4極札		(14)箱・帙・袋等	数・材質等			
						5箱書		(16)序跋(無・有・年時・序跋者)	伝来()			
						6広告						
						7その他						
補助カード有・無		裏面記入有・無										
間紙要・否		その他撮影時留意事項:										
調査年月日: 年 月 日 調査者:												

A section of the sheet



Relationship between JB and TEI

Example 1 on the level of elements

JB1	manuscripts or printed documents	/TEI/teiHeader/fileDesc/sourceDesc/msDesc@type
JB2	a name of the reading material	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/msIdentifier/repository
JB3	a name defined by the investigator	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/msIdentifier/msName
JB4	additional information on a name defined by the investigator	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/msIdentifier/msName
JB5	a condition of biding	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/physDesc/objectDesc/supportDesc/condition

Relationship between JB and TEI

Example 2 on the level of elements

JB16	a description about contents in before and after the main text	there are multiple elements in TEI (1:n relation)
JB16#JO	whether there is a description about this reading materials in a front matter or not	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/msContents/msItem/incipit
JB16#BATU	whether there is a description about this reading materials in a back matter or not	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/msContents/msItem/colophon
JB16@JO	a content of JO	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/msContents/msItem/incipit
JB16@BATU	a content of BATU	/TEI/teiHeader/fileDesc/sourceDesc/msDesc/msContents/msItem/colophon

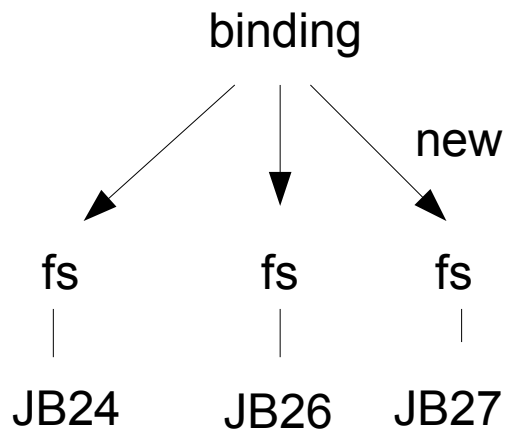
Pattern of correspondence

- 6 types of relation in elements(JB:TEI)
 - 1:n(multiple) e.g. (time and genre) – [date, textclass]
 - n:1 e.g. [etc.] - (binding)
 - 1: \varnothing (nothing) e.g. (advertising) - {}
 - \varnothing :1 e.g. {} - (heraldry)
 - 1:1 clear e.g. (idno) - (idno)
 - 1:1 unclear e.g. (GEDAI) - (title)

This is a simple combination of one, more than one, and nothing.

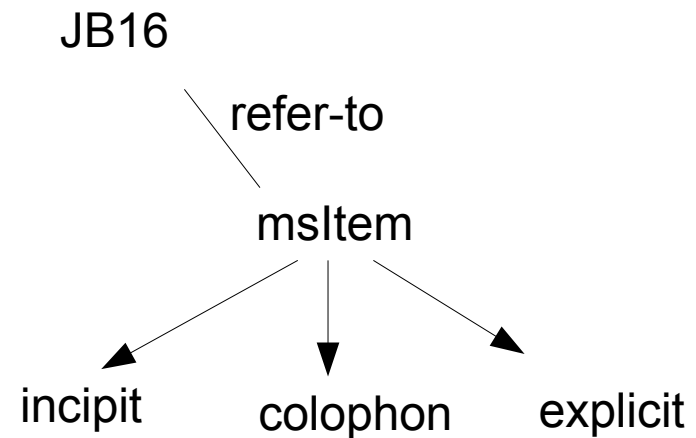
Correspondence with a structure

n:1 (binding)

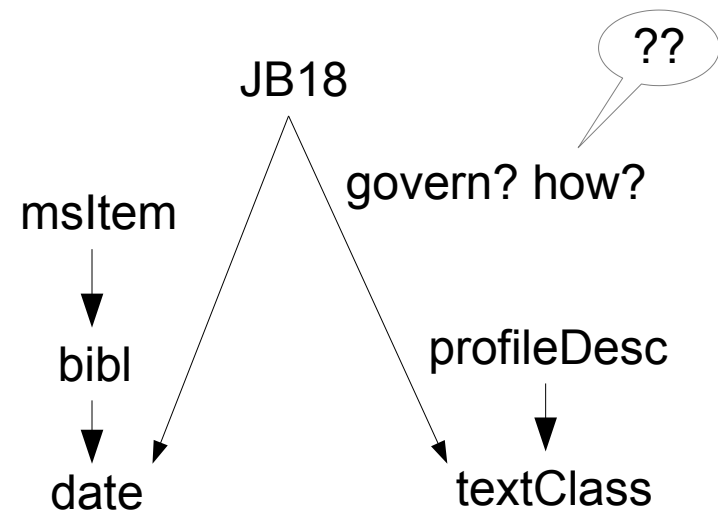


o.k.

(JB16)1:n



(JB18)1:n



What we learn from the comparison

- correspondence patterns of elements can be categorized into 6 types (in our case, at least).
- this category represents cultural differences and diversities.
- When we look from a user's point of view, it seems to be natural to adopt a data format specific to JB data units instead of TEI in the cases of $n:1$, $1:\varnothing$, and $1:1$ unclear patterns.
- What we have to do is to find the best way to encode data in JB in a digital format, not to seek the correspondence by compulsion.

New step we adopted

- We define a data format for JB.
- We define this format in tagdocs of TEI.
- We add reference information to the correspondents in TEI by using an attribute “corresp” on the units of JB.

A Definition of JB Items in tagdocs

```
- <specGrp>
- <elementSpec ident="jabbl1">
  <desc xml:lang="ja">写本・版本の別</desc>
  <desc xml:lang="en">manuscripts or printed documents</desc>
- <attList>
- <attDef ident="val" usage="req">
- <valList type="closed">
- <valItem ident="写本">
  <desc xml:lang="ja">写本</desc>
  <desc xml:lang="en">manuscripts</desc>
</valItem>
- <valItem ident="刊本">
  <desc xml:lang="ja">刊本・版本</desc>
  <desc xml:lang="en">printed documents</desc>
</valItem>
</valList>
</attDef>
</attList>
</elementSpec>
- <elementSpec ident="jabbl2">
  <desc xml:lang="ja">所蔵者名</desc>
  <desc xml:lang="en">owner name</desc>
- <content>
  <rng:text/>
</content>
</elementSpec>
- <elementSpec ident="jabbl3">
  <desc xml:lang="ja">調査員認定作品名</desc>
  <desc xml:lang="en">a title name defined by an investigator</desc>
- <content>
  <rng:text/>
- <rng:optional>
  <rng:ref name="jabbl4"/>
</rng:optional>
</content>
</elementSpec>
- <elementSpec ident="jabbl4">
  <desc xml:lang="ja">調査員認定作品名の補足</desc>
```


Correspondence by corresp

```
<elementSpec ident="jabbl19"
  corresp="TEI:/TEI/teiHeader/fileDesc/sourceDesc/msDesc/physDesc/binding/p/title"
>
  <desc xml:lang="ja">表紙</desc>
  <desc xml:lang="en">a description about a cover page</desc>
  <attList>
    <attDef ident="val" usage="req"
      corresp="TEI:/TEI/teiHeader/fileDesc/sourceDesc/msDesc/physDesc/admininfo/custodialHist"
    >
      <desc xml:lang="ja">原装または後または無し</desc>
      <desc xml:lang="en">to indicate this cover page is original one or revised one, or no cover page.</desc>
      <valList type="closed">
        <valItem ident="原">
          <desc xml:lang="ja">原装である</desc>
          <desc xml:lang="en">original</desc>
        </valItem>
        <valItem ident="後">
          <desc xml:lang="ja">後で作られた</desc>
          <desc xml:lang="en">revised</desc>
        </valItem>
        <valItem ident="無">
          <desc xml:lang="ja">無</desc>
          <desc xml:lang="en">no title page</desc>
        </valItem>
      </valList>
    </attDef>
  </attList>
  <content>
    <rng:text/>
  </content>
</elementSpec>
```

Attribute values of the attribute “corresp” are not for processing, but only for being read by humans.

So, we can add the “corresp” on any unit of XML instances such as super-elements, attributes, and sub-elements.

However, we are not sure how to add multiple values of the corresp at the same unit.

Our decision

- As a way of sharing data, we do not expect researchers to use a general or common format
- We presuppose researchers use their original data formats.
- What we prepare for data sharing is to provide data conversion services.
- In such data conversion, there must be cues to make the match of mutual data.
- As the way, we use units of TEI as referential information. (it implies possibility not to convert it perfectly)

Ways of data sharing

- defining a common/general data format
- using a common application
- defining semantic units
- referring to a common/general unit

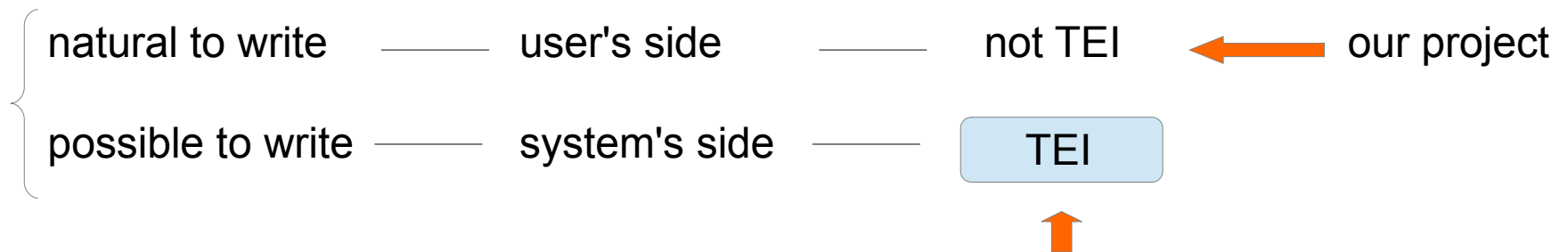
not even a semantic definition
just for reading by humans



our idea

We think it is not retrogression.
Many humanities researchers expect multiple data formats.
They do not expect to be govern by one authority.
They expect to realize data sharing within their small communities.
A style of research is quite different from each small community.
Data conversion is not only for communities but also each researcher oneself.

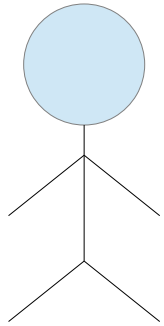
Our project and TEI



We did not consider this possibility in our project, because there has been the database of union catalogue of Japanese old reading materials.

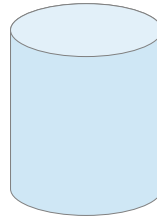
My naive question

humanities researcher



nonTEI

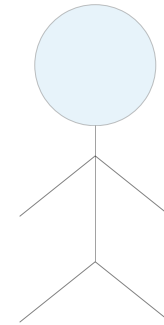
(TEI?)
system



(TEI?)

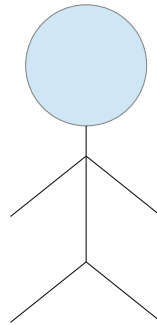


who?



data and system
specific to a field

I or DHer



people who are probably
outside a community of the
research
Is TEI suitable for this kind
of global access?

In the case of content that was not presupposed in TEI

The next targets of our research

- We seek an effective and economic way to change data formats used in a personal computational environment.
- Documentation in fieldwork is a good research field to observe multiple requests of humanities researchers, which lets us know the richness of data types and personal viewpoints.
- We restrict the fields of this research within a bibliographic study of Japanese old reading materials and field linguistics(language documentation).

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