

14th CODH Seminar

100 Recipes for IIF Curation Platform

Ideas for Using the IIF Curation Platform to Bring Out the Full Potential of IIF



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<http://codh.rois.ac.jp/>

Introduction

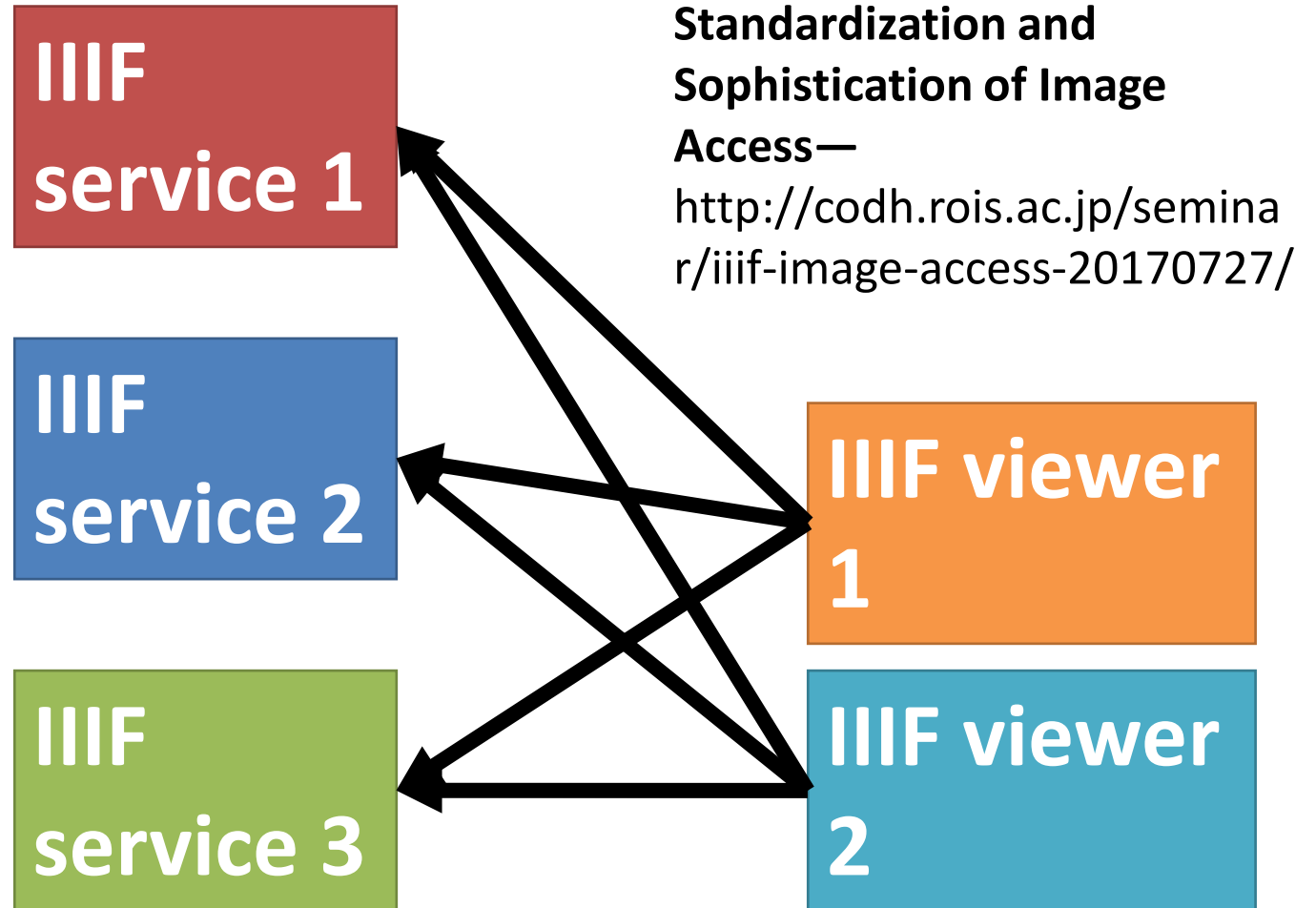
1 ★

What is IIIF ("triple-I F")?

IIIF = International Image
Interoperability
Framework



Web: HTML
Images: IIIF



4th CODH Seminar
A New Trend on Image
Delivery in Digital Archives
—IIIF's Potential for
Standardization and
Sophistication of Image
Access—
<http://codh.rois.ac.jp/seminar/iiif-image-access-20170727/>

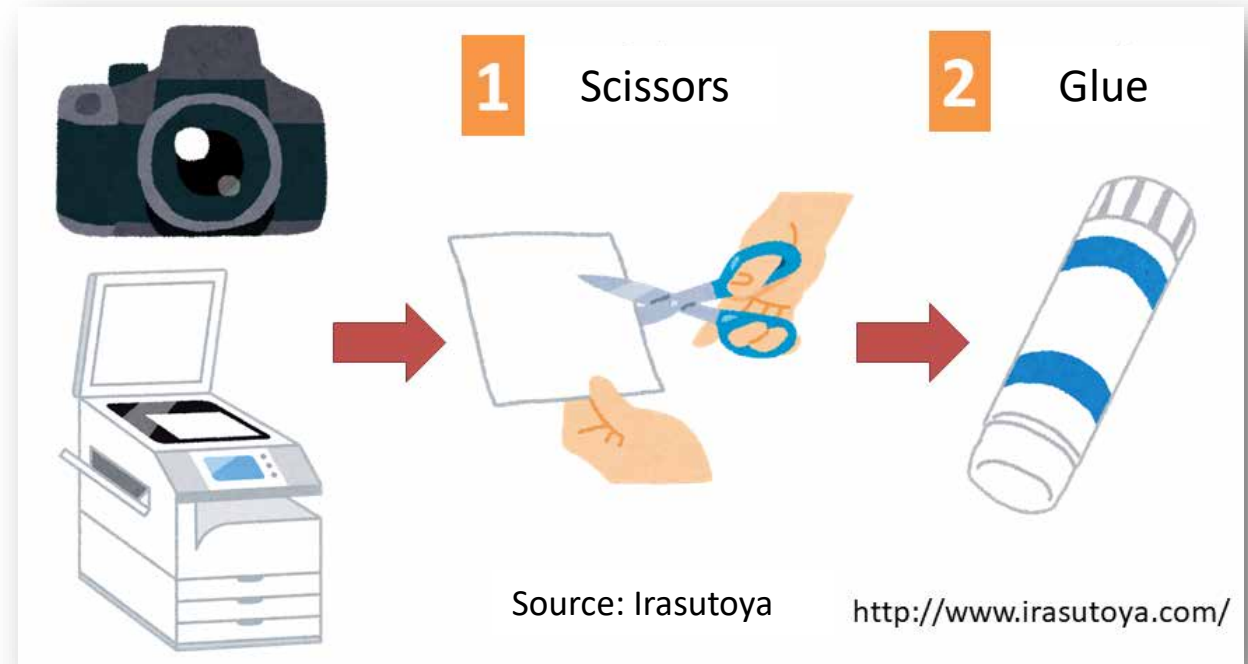
2 ★

What is curation?

"Curation" is a word that originally means activities at museums such as collecting materials and exhibiting artworks.



1. **Collect materials** under a certain theme.
2. Arrange them in an **appropriate order (layout).**
3. Present or share the result **as a new material.**



3 ★

Creation and publication of a curation



Depiction of a Homely Woman: Suetsumuhana
<http://codh.rois.ac.jp/pmjt/curation/2/>



Facial Expression Data: British portraits
<http://codh.rois.ac.jp/curation/exhibition/2/>

4 ★

What is the IIF Curation Platform?



Logo of the IIF Curation Platform
<http://codh.rois.ac.jp/icp/>

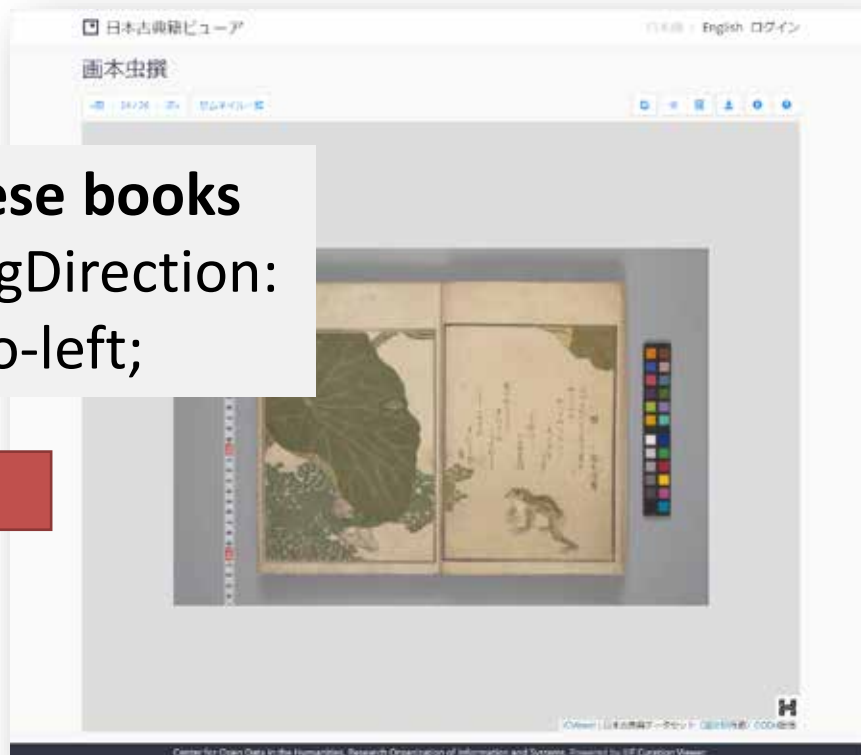
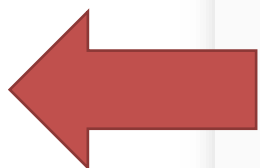
1. A software suite for introducing the **concept of curation** to the world of IIF.
2. There are **7** pieces of software running on a web browser, **1** application designed for a specific purpose, **3** Python programs running on the server side, and **1** Docker setting for supporting installation. All of these are **open source**.
3. It is not for competing with well-known IIF viewers (e.g., Mirador, Universal Viewer). **It is focused on bringing out the full potential of IIF.**

Viewing IIIF Images

5 ★

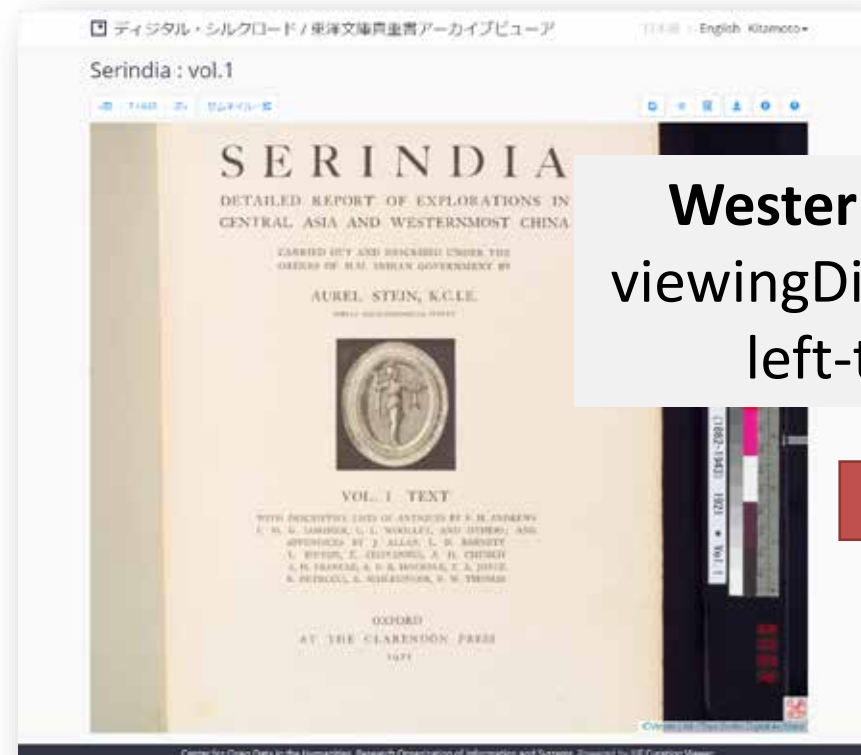
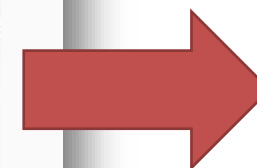
Viewing books with the IIF Curation Viewer

Japanese books
viewingDirection:
right-to-left;



Japanese Pre-modern Text Dataset
<http://codh.rois.ac.jp/pmjt/>

Western books
viewingDirection:
left-to-right;



"Toyo Bunko Collection" Rare Books Archive
<http://dsr.nii.ac.jp/toyobunko/>

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IIIF Curation Viewer Embedded



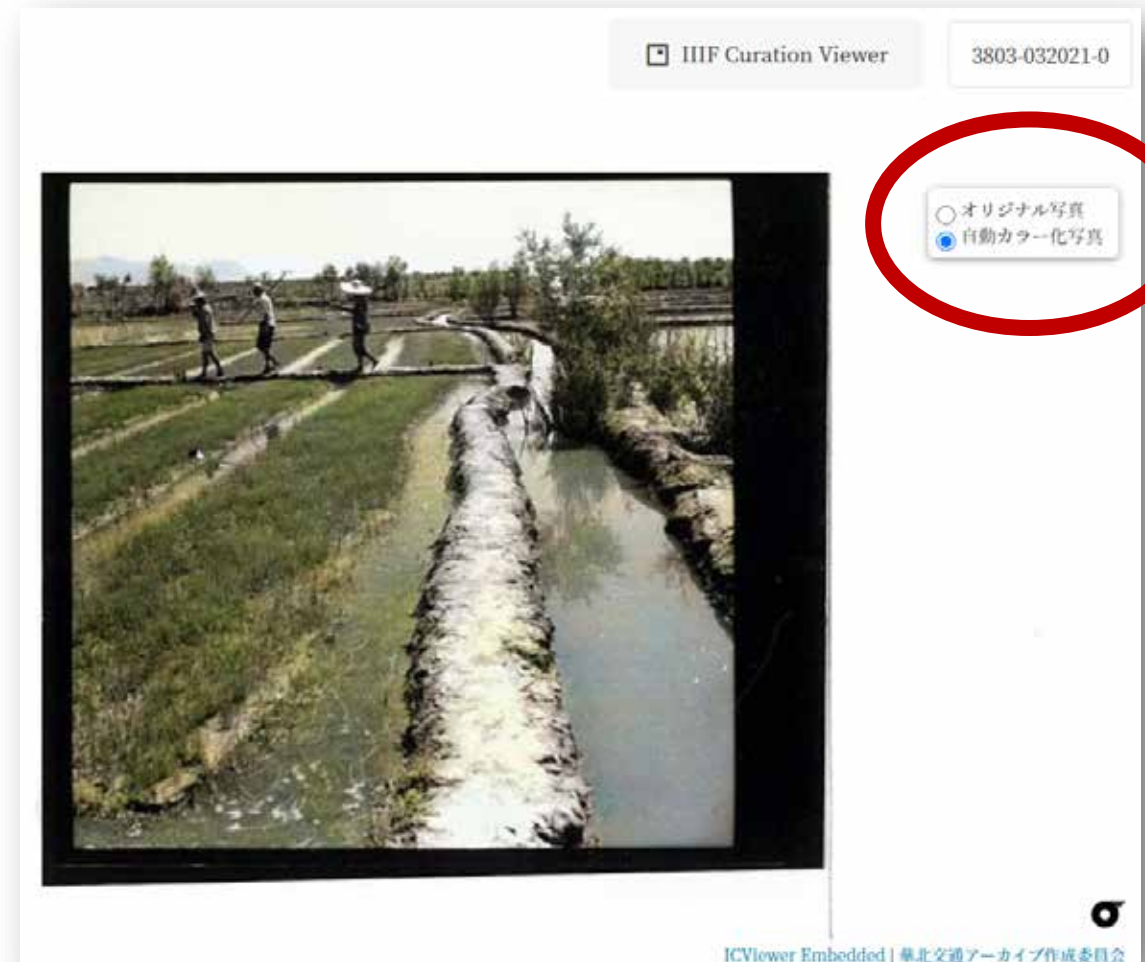
North China Railway Archive

<http://codh.rois.ac.jp/north-china-railway/>

1. The standard IIIF Curation Viewer is designed **as a full-page tool**.
2. The IIIF Curation Viewer Embedded is integrated in a web page **to combine with other information**.
3. There are **unique functions only in this viewer**, while functions not relevant for the embedded version are not implemented.

7 ★

Switchable display between multiple images



8 ★

Archives of scientific data (ledgers)

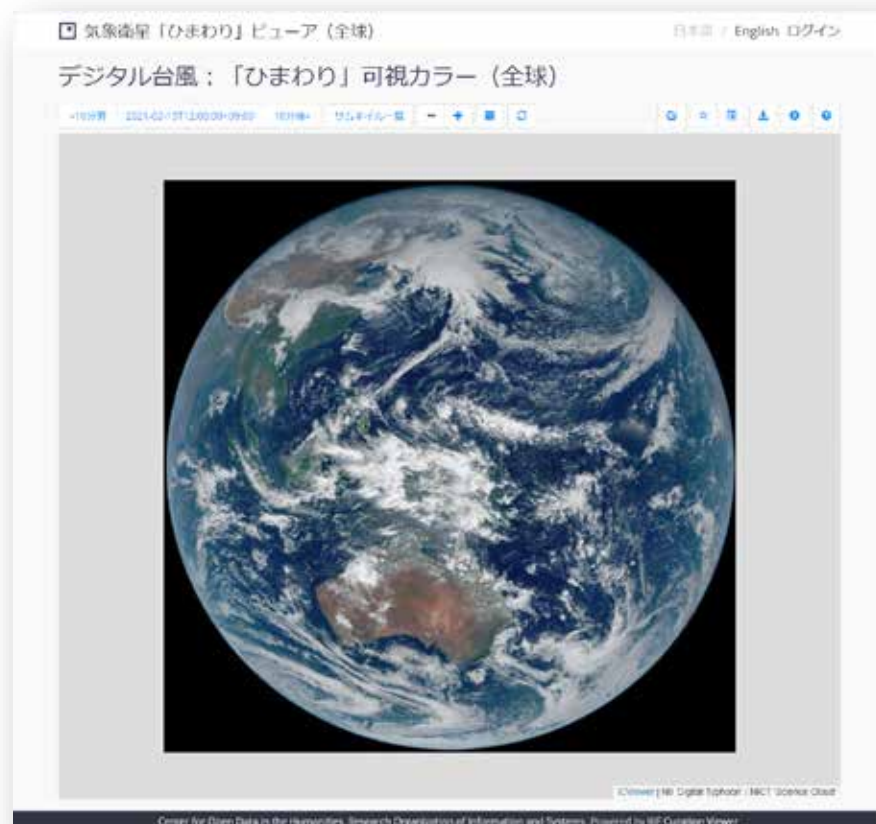


Digital Typhoon: Weather Ledger Archive
<http://agora.ex.nii.ac.jp/digital-typhoon/genbo/>

1. III F is also useful for delivering **long-term scientific data** like the ledgers.
2. Images with sequence numbers are converted to Tiled Pyramidal TIFF format, and linked from the III F manifest.
3. The enlarged region does not change as you turn the page. This is convenient **when you want to transcribe a specific section of the ledger.**

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Time series image archives



Digital Typhoon: Weather Satellite 'Himawari' Viewer

<http://agora.ex.nii.ac.jp/digital-typhoon/himawari-3g/clipping/>

1. Displays high-resolution images (11,000 pixels x 11,000 pixels) observed by the Himawari weather satellite.
2. "Prev" and "next" moves along **time instead of pages**. The date can also be selected from the calendar.
3. This use case cannot be properly handled in the current IIF framework, so we independently extended the **Timeline API and Cursor API**.

10 ★ ★

IIIF Curation Platform and Curation API

IIIF Curation Platform

- An open source software suite implementing new specifications such as the Curation API.
- The system works with many tools; not just a viewer, but also data storage, search, etc.
- Digital tools for specific needs have also been developed.

Curation API

- Proposed as API specifications that extend official IIIF specifications.
- The API itself can also be used with other tools. The IIIF Curation Platform is a reference implementation of the API.
- The official IIIF specifications are from the provider perspective. Curation, on the other hand, is from the user perspective.

11 ★ ★ ★

Non-standard APIs for extending IIIF

- **Curation API**

- Enables cross-manifest grouping, taking a rectangular region contained in a canvas as the minimum granularity.

- **Timeline API**

- Enables viewing of materials for which a one-dimensional sequence can be defined, using time as a unit instead of a page.

- **Cursor API**

- Enables cutting out a part of the list of canvases, when the list in a manifest is very long (e.g. Timeline).

Case Studies of IIIF-Based Delivery and Use of High-Quality/High-Definition Images,
<http://codh.rois.ac.jp/iiif/>

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Login to the IIIF Curation Platform

日本語 / English ログイン



日本語 / English Asanobu Kitamoto▼

There is a login function at the upper right of the IIIF Curation Viewer screen



- **Uses Firebase authentication from Google.**
- **Login is not necessary**, but if you login, you can take advantage of authorization management for ICP.
- Some ICP services (kuzushiji recognition, etc.) require login, but **services are basically free of charge.**

IIIF Image Curation

13 ★

Image curation

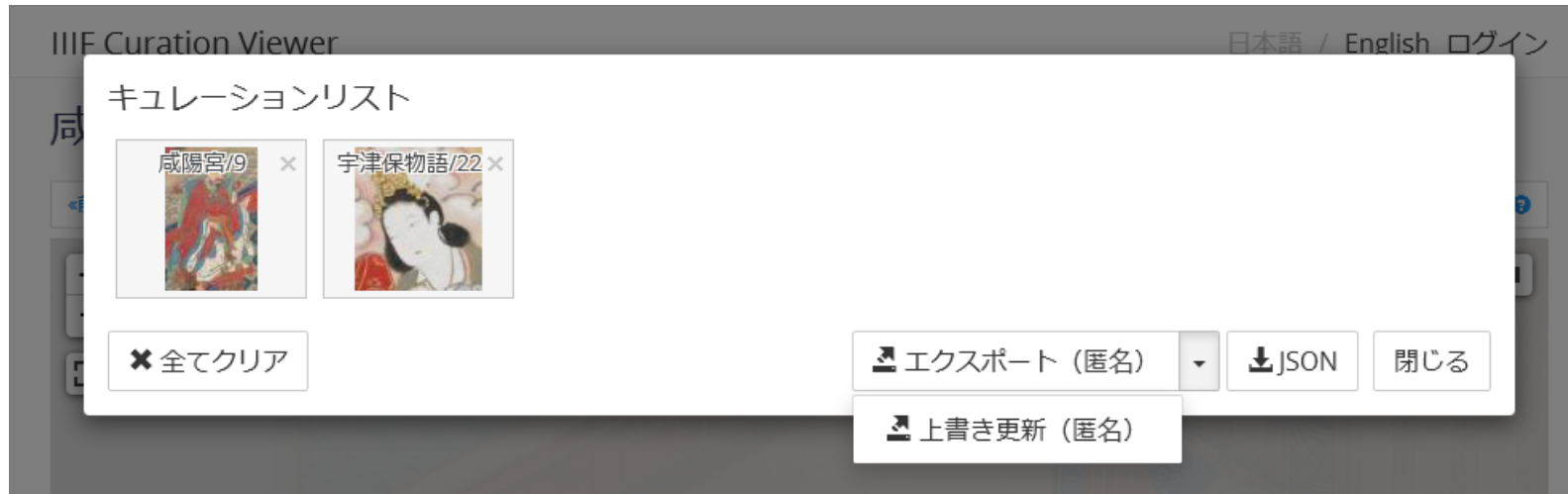


1. ■ is the "crop" button →
Selects a rectangular region
2. ☆ is the "favorite" button →
Collects regions you need



14★

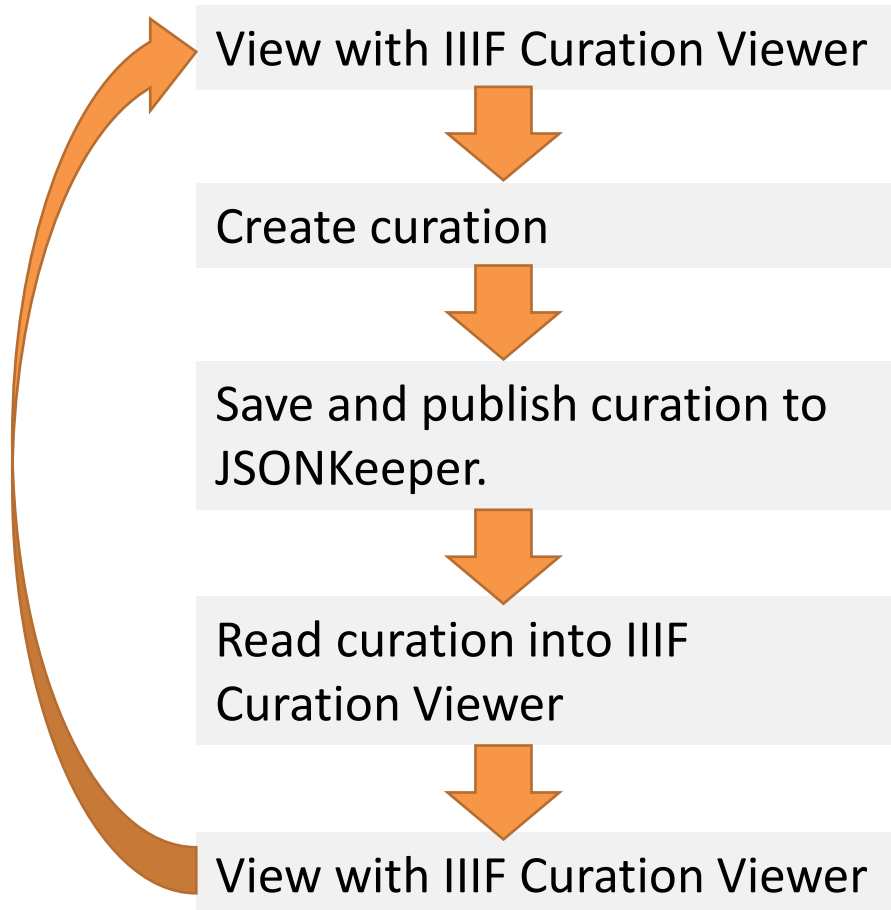
Saving a curation



1. Curations created can be downloaded locally, but it is convenient to **export and save them on our service (JSONkeeper)**.
2. Saving a curation normally means creating a new one, but overwriting the existing one (update) is also possible.
3. **Curation exported with login information can prevent being updated by other people.**

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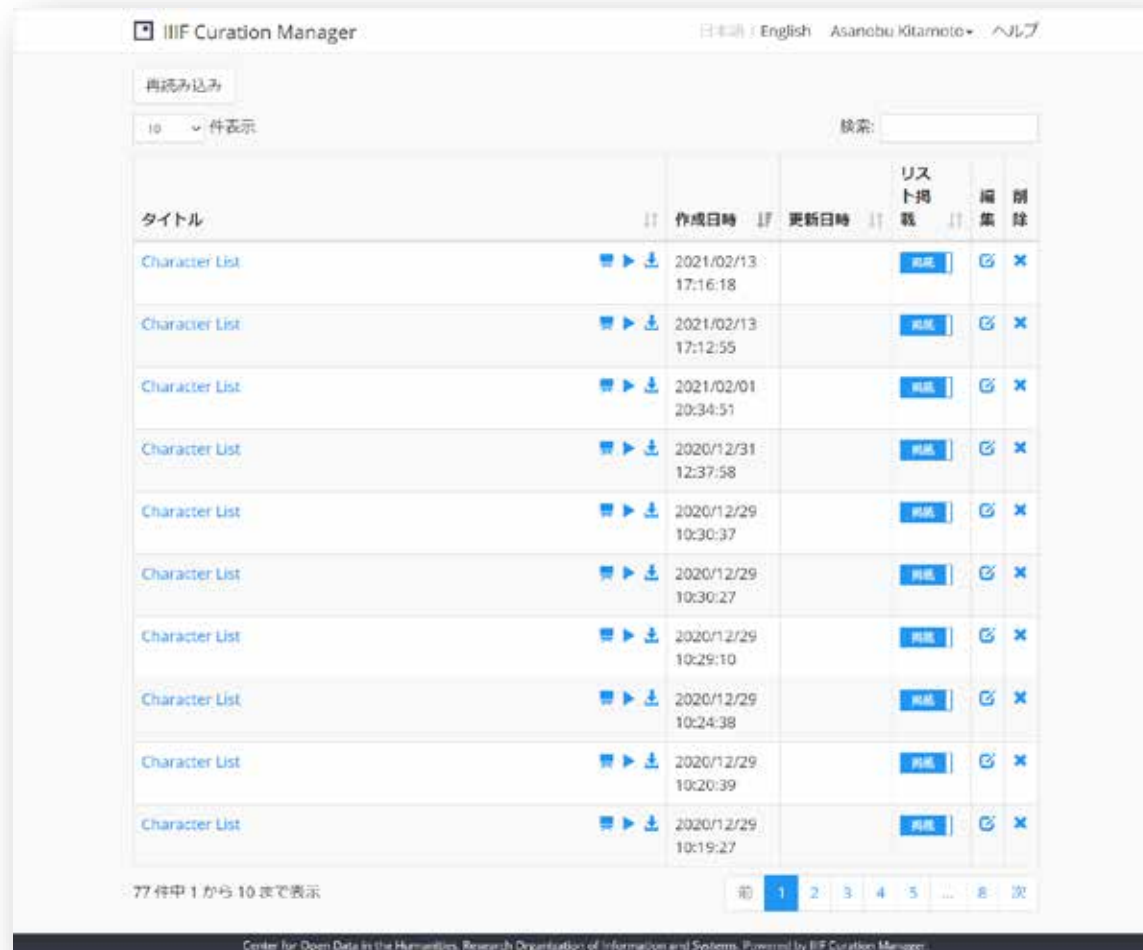
Publication of curation



1. Curations saved on our service (JSONkeeper) **can be shared with others by its unique URL.**
2. Saved curations can **be viewed again with the IIIF Curation Viewer.**
3. Curations **cannot be searched.** Search requires other tools such as the IIIF Curation Finder (to be introduced in the next presentation).

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Management using the IIF Curation Manager



The screenshot shows the IIF Curation Manager web application. At the top, there's a header with the title 'IIF Curation Manager', language options (日本語 / English), a user name 'Asanobu Kitamoto', and a 'ヘルプ' (Help) link. Below the header, there's a search bar and a '件表示' (Items per page) dropdown set to '10'. The main content area is a table with columns: 'タイトル' (Title), '作成日時' (Created at), '更新日時' (Updated at), 'リスト掲載' (Listed), '編集' (Edit), and '削除' (Delete). The table contains 10 rows of data, all with the title 'Character List'. The '作成日時' column shows various timestamps from 2020/12/29 to 2021/02/13. The 'リスト掲載' column has a '掲載' (Listed) button for each row. The '編集' and '削除' columns have edit and delete icons respectively. At the bottom of the table, it says '77件中 1 から 10 まで表示' (Showing 1 to 10 of 77 items). Below the table is a pagination bar with buttons for '前' (Previous), '1', '2', '3', '4', '5', '...', '8', and '次' (Next).

タイトル	作成日時	更新日時	リスト掲載	編集	削除
Character List	2021/02/13 17:16:18		掲載	✎	✖
Character List	2021/02/13 17:12:55		掲載	✎	✖
Character List	2021/02/01 20:34:51		掲載	✎	✖
Character List	2020/12/31 12:37:58		掲載	✎	✖
Character List	2020/12/29 10:30:37		掲載	✎	✖
Character List	2020/12/29 10:30:27		掲載	✎	✖
Character List	2020/12/29 10:29:10		掲載	✎	✖
Character List	2020/12/29 10:24:38		掲載	✎	✖
Character List	2020/12/29 10:20:39		掲載	✎	✖
Character List	2020/12/29 10:19:27		掲載	✎	✖

- Curations exported after login **can be listed on the IIF Curation Manager.**
- Curations can be edited and deleted.
- Curations can be viewed from the **IIF Curation Player** and the **IIF Curation Board.**

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Editing using the IIIF Curation Editor



```
1 {
2   "@context": [
3     "http://iiif.io/api/presentation/2/context.json",
4     "http://codh.rois.ac.jp/iiif/curation/1/context.json"
5   ],
6   "@type": "cr:Curation",
7   "@id": "http://mp.ex.nii.ac.jp/api/curation/json/1cad39b9-e462-4a38-bfcd-f9466de712a9",
8   "label": "塩焼く人々",
9   "selections": [
10    {
11      "@id": "http://mp.ex.nii.ac.jp/api/curation/json/1cad39b9-e462-4a38-bfcd-f9466de712a9/range1",
12      "@type": "sc:Range",
13      "label": "Manual curation by IIIF Curation Viewer",
14      "members": [
15        {
16          "@id": "https://rmda.kulib.kyoto-u.ac.jp/iiif/RB00013188/page214645",
17          "@type": "sc:Canvas",
18          "label": "",
19          "description": "江戸時代に流行した絵入本（通称「奈良絵本」）の人気作に『文正草子』があります。京都大学貴重資料デジタルアーカイブで公開されているこの作品のように、「横本」とも呼ばれる横長の形態の作品が多く残っています。",
20          "durationHint": 20
21        }
22      ],
23      "within": {
24        "@id": "https://rmda.kulib.kyoto-u.ac.jp/iiif/metadata_manifest/RB00013188/manifest.json",
25        "@type": "sc:Manifest",
26        "label": "ぶんしゅう"
27      }
28    },
29    {
30      "@id": "http://mp.ex.nii.ac.jp/api/curation/json/1cad39b9-e462-4a38-bfcd-f9466de712a9/range2",
```

- A curation data in the JSON format can be edited using the JSON editor.
- You can also **add or change metadata**.
- This may not be useful for a large-scale editing work.

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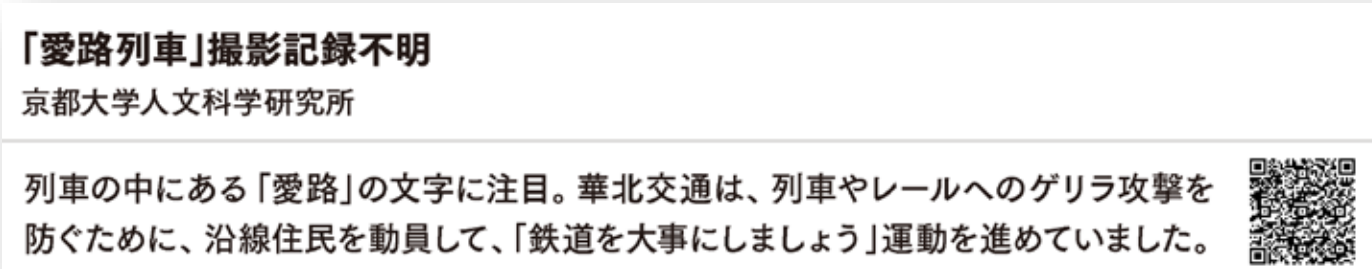
Exhibition using the IIF Curation Player



1. Functions for "exhibiting" curations are implemented.
2. Curation metadata can be displayed as an overlay on the image.
3. The slide show function allows the automatic playback of frames.

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Linkage with museum exhibitions



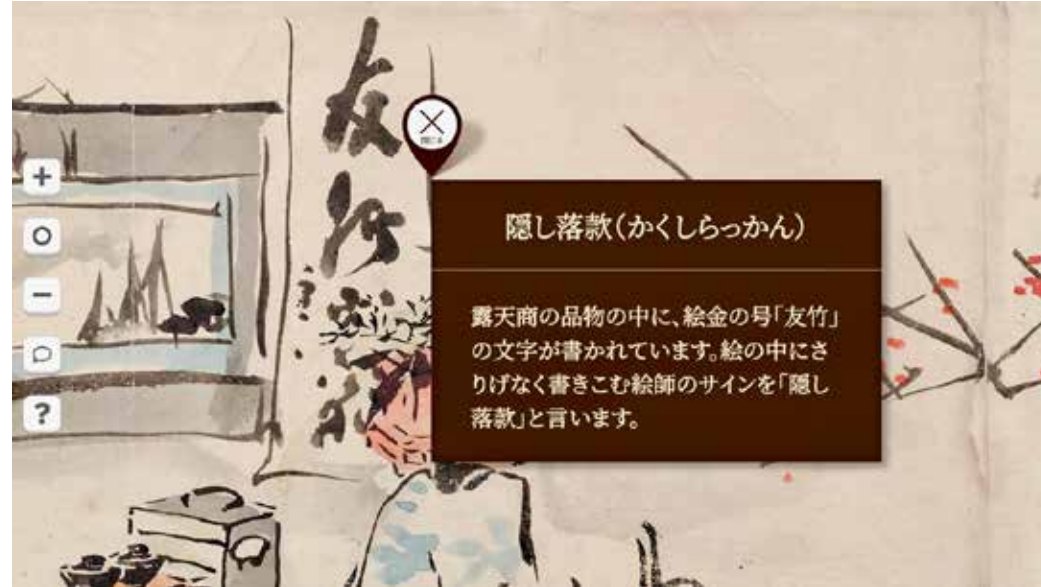
If you capture the QR code of the museum's exhibition room, the corresponding frame is displayed on the IIIF Curation Player.

- For the North China Railway Archive, **linking** is done **using a QR code** between a **museum exhibition (offline)** and an **ICP exhibition (online)**.
- A **smartphone** can be used as a **simple exhibition guide**.
- This also enables **long-term archiving of exhibition content**.

AI/Technology: North China Railway Archive, <http://codh.rois.ac.jp/north-china-railway/technology/>

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Development of a viewer for museum exhibitions



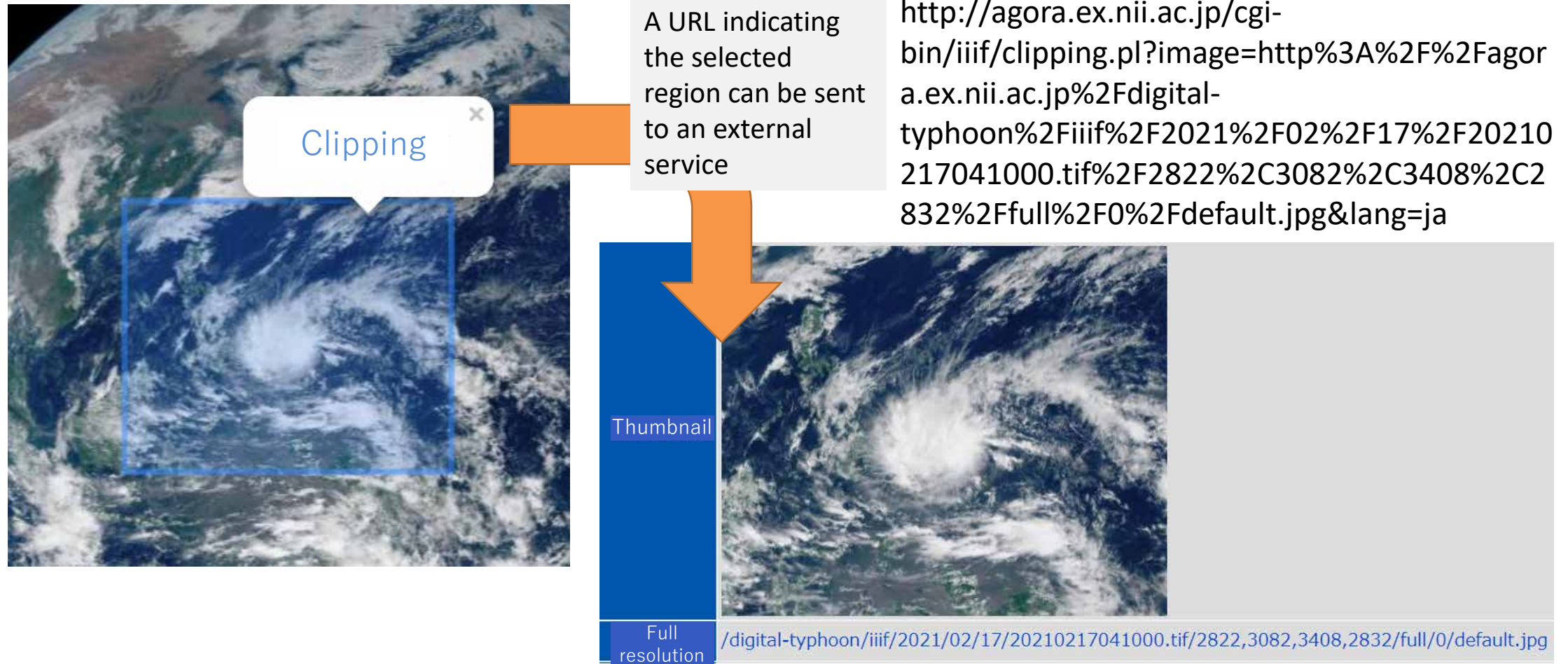
A viewer built by Association Press displays data in an ICP Docker version for a "Yoshitoshi" exhibition at the Museum of Art, Kochi.

1. The curation function of the IIIF Curation Viewer is used to attach annotations to images (region designation and metadata input).
2. Curations saved on the CODH server are displayed during the exhibition.

Exporting IIIF Images

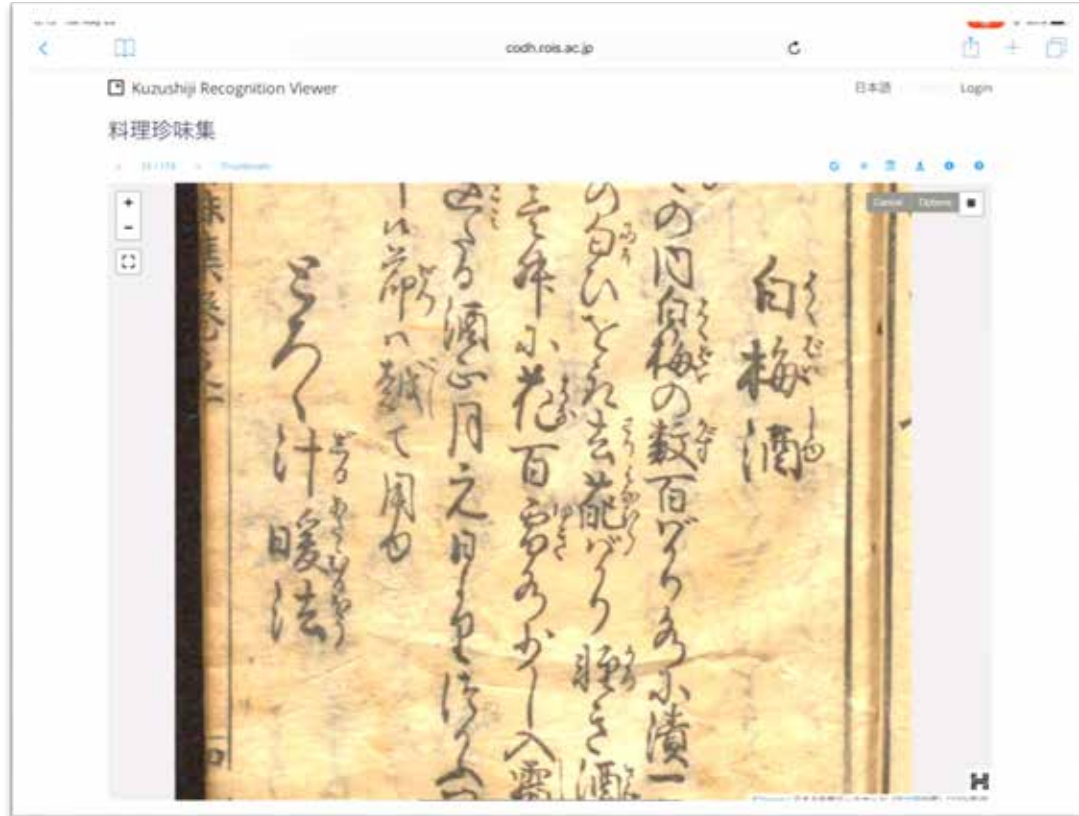
21 ★

Function for exporting a selected region



22 ★

KogumaNet kuzushiji recognition service



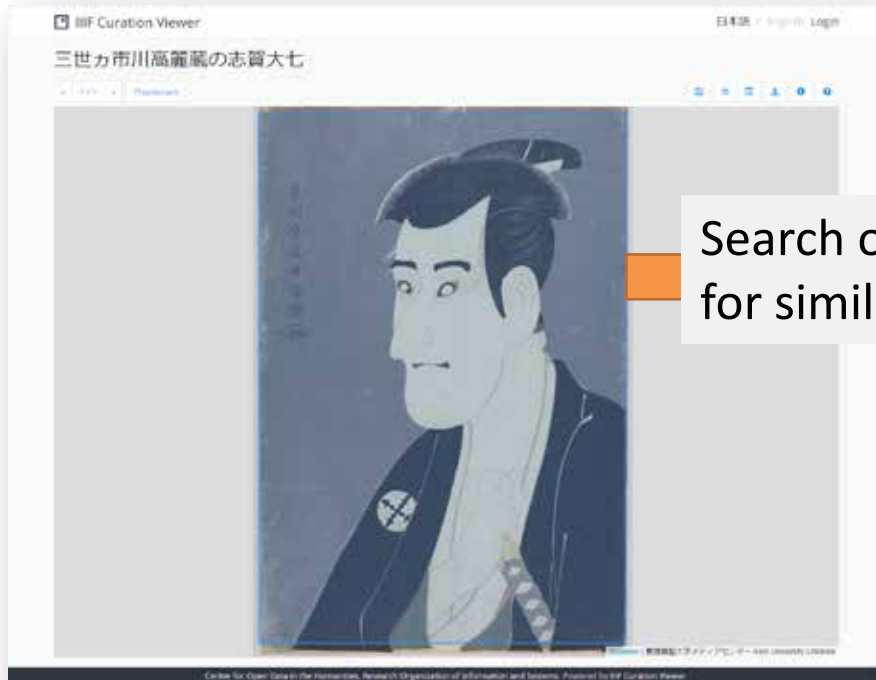
- In this **kuzushiji (cursive character) recognition service**, AI recognizes a character in the selected region, and displays an ordered list of character candidates.
- The service runs in a browser using Tensorflow.js.
- It uses the **image export function of the ICViewer**.

KogumaNet Kuzushiji Recognition Service

<http://codh.rois.ac.jp/char-shape/app/single-mobilenet/>

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Exporting to a general image service



Search of ukiyo-e.org
for similar images

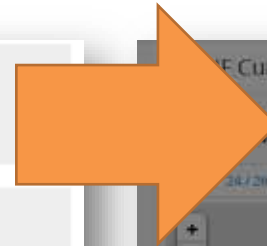


- Work with web services that takes an image as input and returns processed results as output.
- It is also possible to **start up an API on one's own.**

Cropped from IIF image of Keio University

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Cropped image export plugin



1. Create a JSON file describing the **endpoint setting**.
2. You can change the export **endpoint of the ICViewer** by a drag & drop of this JSON.

ICP Service Repository
<http://codh.rois.ac.jp/icp/service-repository/>

IIIF Image Annotation

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Curations and annotations



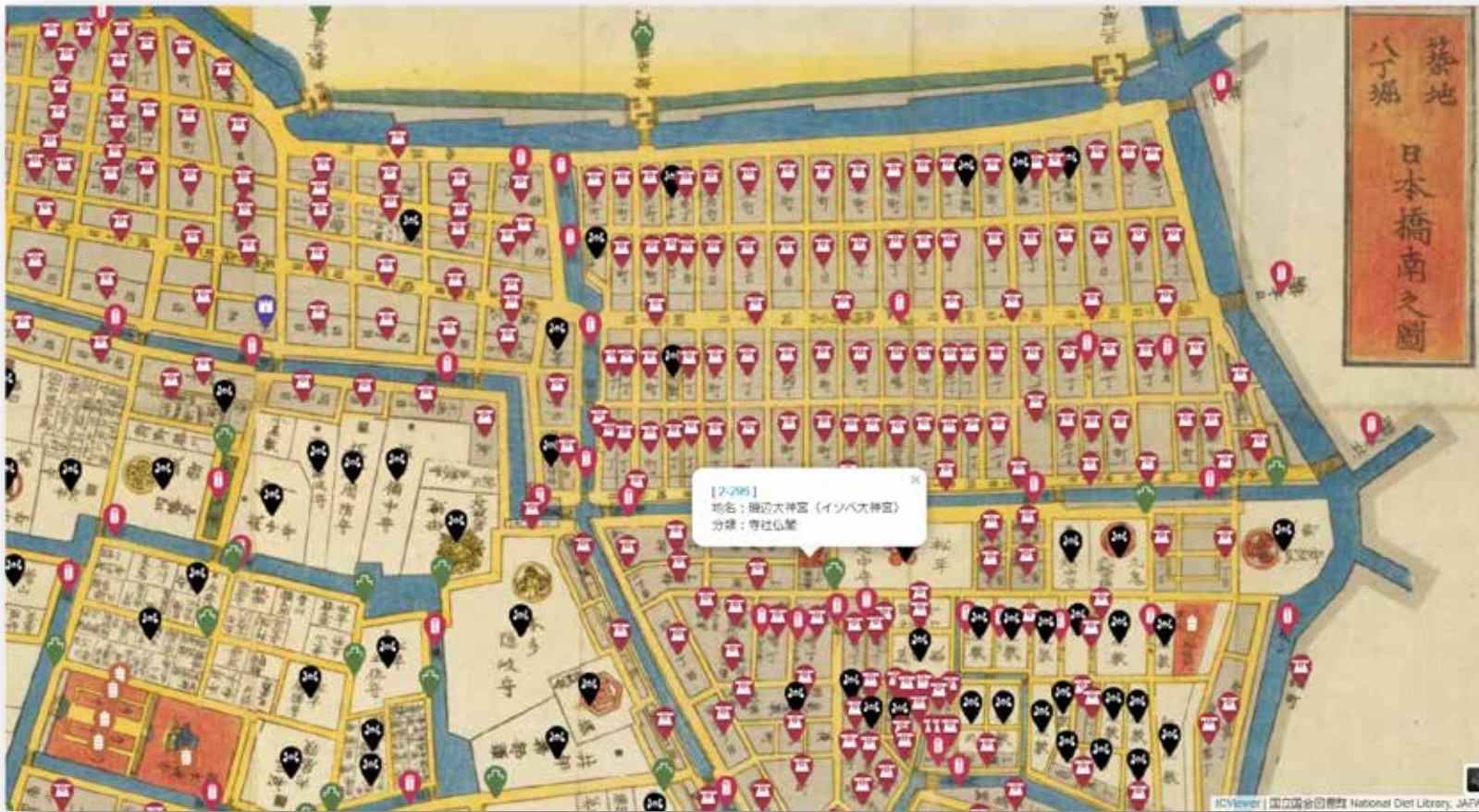
Edo maps β
version "Map of
Hongo Yushima",
National Diet
Library



1. **Curation**: Selecting and collecting a part of images (defined in the Curation API).
2. **Annotation**: Adding and displaying annotations for images (defined in the Curation API)
3. **This is different from annotation in the IIIF Presentation API** (However, the two are mostly interoperable).

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Annotation view mode (map)



- Annotations can be displayed as an overlay on the image.
- By using the marker and info window, it is possible to offer user experience similar to using a Web-based map.

Edo maps β version, <http://codh.rois.ac.jp/edo-maps/>

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Building cross-institutional digital archives



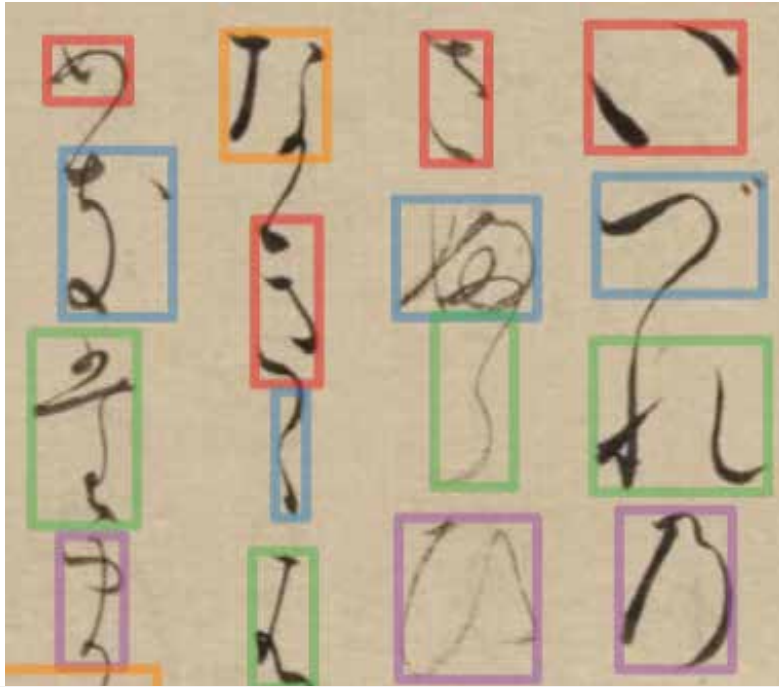
- Access NDL for map image
- CODH displays only markers as an overlay

National Diet Library Digital Collections "Edo Kiriezu Map"
<https://dl.ndl.go.jp/info:ndljp/pid/1286656>

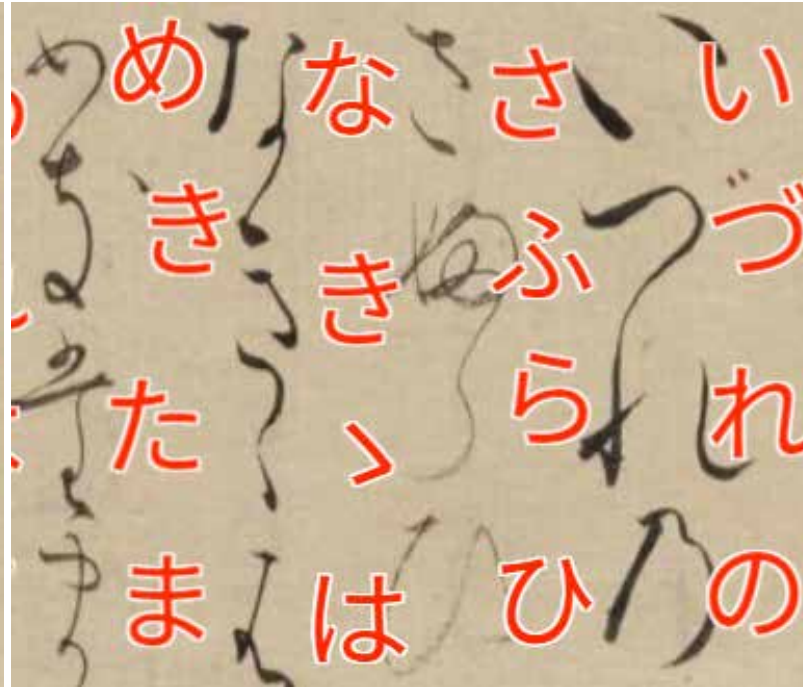
Edo maps β version

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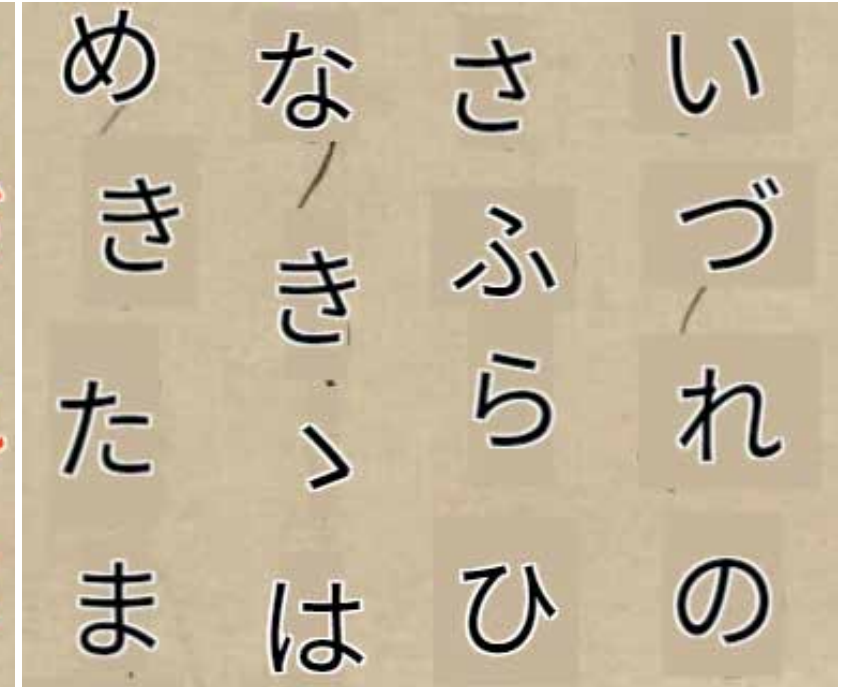
Annotation view mode (characters)



Box frame markers



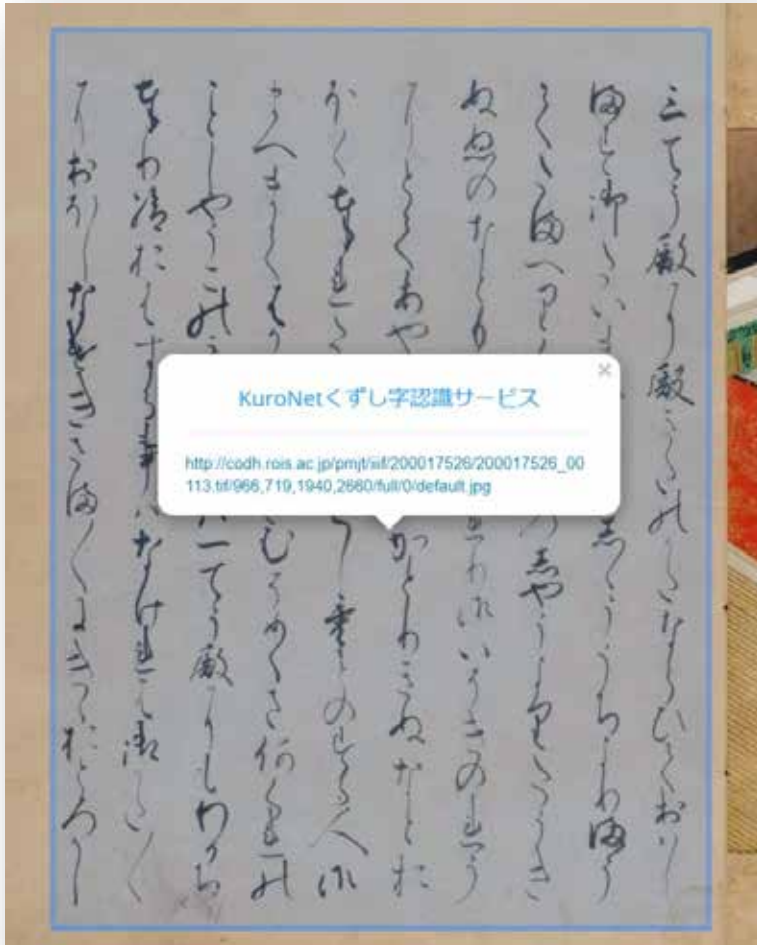
Character markers
(standard mode)



Character markers
(overwrite mode)

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KuroNet kuzushiji recognition service



KuroNetサービス KuroNet くずし字OCR CODH Asanobu Kitamoto

ダッシュボード (Asanobu Kitamoto)

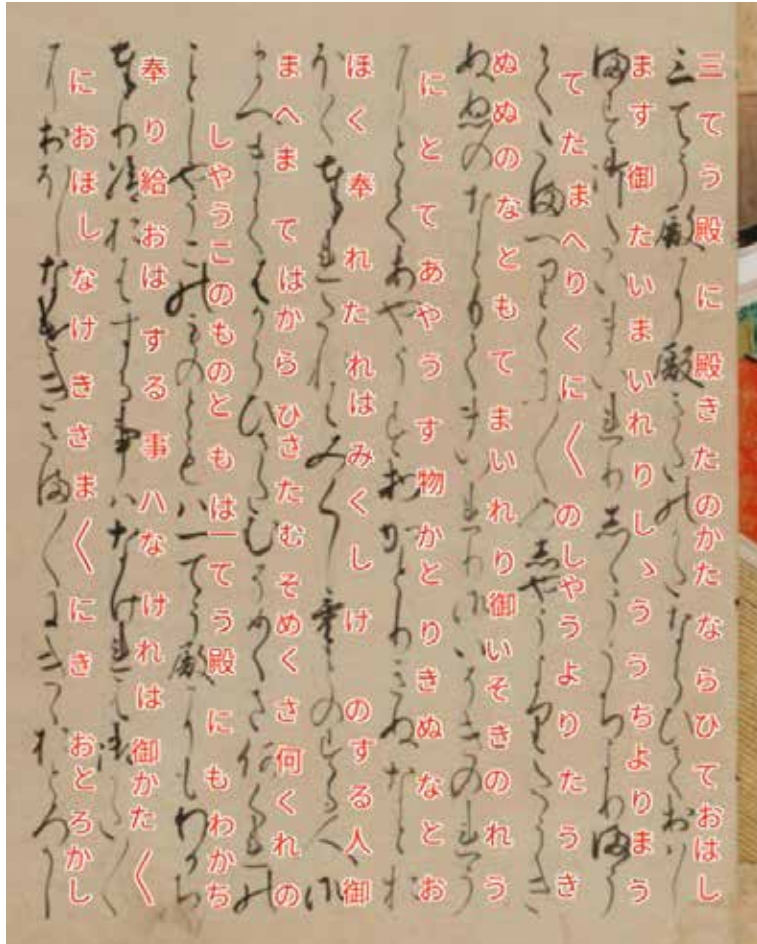
領域指定画像	くずし字OCR	自動テキスト化	手動テキスト化
1 2021-02-13 16:56:01	予約: 実行 @ 2021-02-13 17:12:03 処理: 完了 @ 2021-02-13 17:12:06 成功: 閲覧	処理: 実行 @ 2021-02-13 17:12:54 エディタ: 起動 テキスト化: 実行	エディタ: 起動 テキスト化: 実行
2 2021-01-16 12:41:16	予約: 実行 @ 2021-01-16 12:41:19 処理: 完了 @ 2021-01-16 12:41:22 成功: 閲覧	処理: 実行	エディタ: 準備
3 2021-01-15 17:35:55	予約: 実行 @ 2021-01-15 17:36:03 処理: 完了 @ 2021-01-15 17:36:06 成功: 閲覧	処理: 実行	エディタ: 準備
4 2021-01-09 21:08:11	予約: 実行 @ 2021-01-11 15:08:03 処理: 完了 @ 2021-01-11 15:08:06 成功: 閲覧	処理: 実行	エディタ: 準備

KuroNet Kuzushiji Recognition Service
<http://codh.rois.ac.jp/kuronet/>

- Kuzushiji multi-character recognition service recognizes all cursive characters in an exported image.
- It takes about 1–3 seconds for the recognition of a single image.

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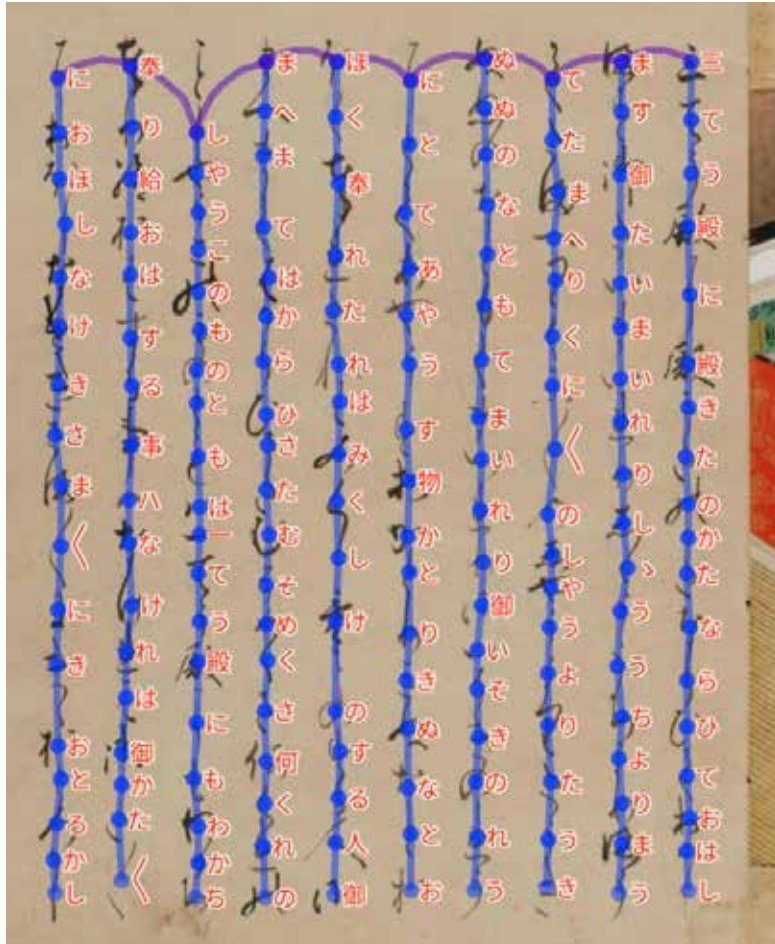
Displaying results of kuzushiji recognition



- It is possible to **display character markers** on the IIF Curation Viewer, and read them **while comparing with characters in the background image**.
- If you click on a character, its **Unicode is displayed** with a link to the **web page showing other kuzushiji examples** with the same Unicode.
- Settings like transparency, display position, and size of characters can be changed to allow users **select a display setting for their convenience**.

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Designating the reading order using the KuroNet Text Editor

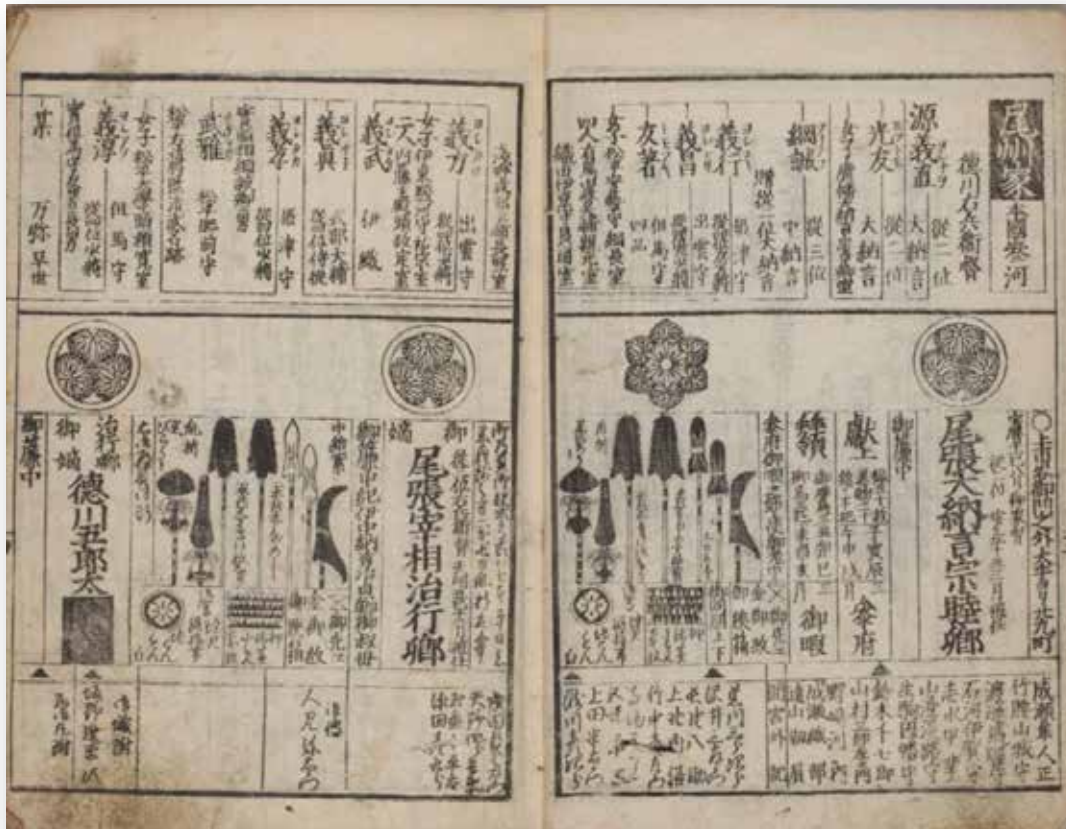


1. The character reading order for the result of KuroNet recognition can be automatically inferred or manually designated.
2. The sequence within and between lines can be manually designated using the KuroNet Text Editor.
3. The character reading order can also be made visible with the KuroNet Text Editor.
4. **Functions specially required by a domain-specific application can be added to the IIF Curation Viewer.**

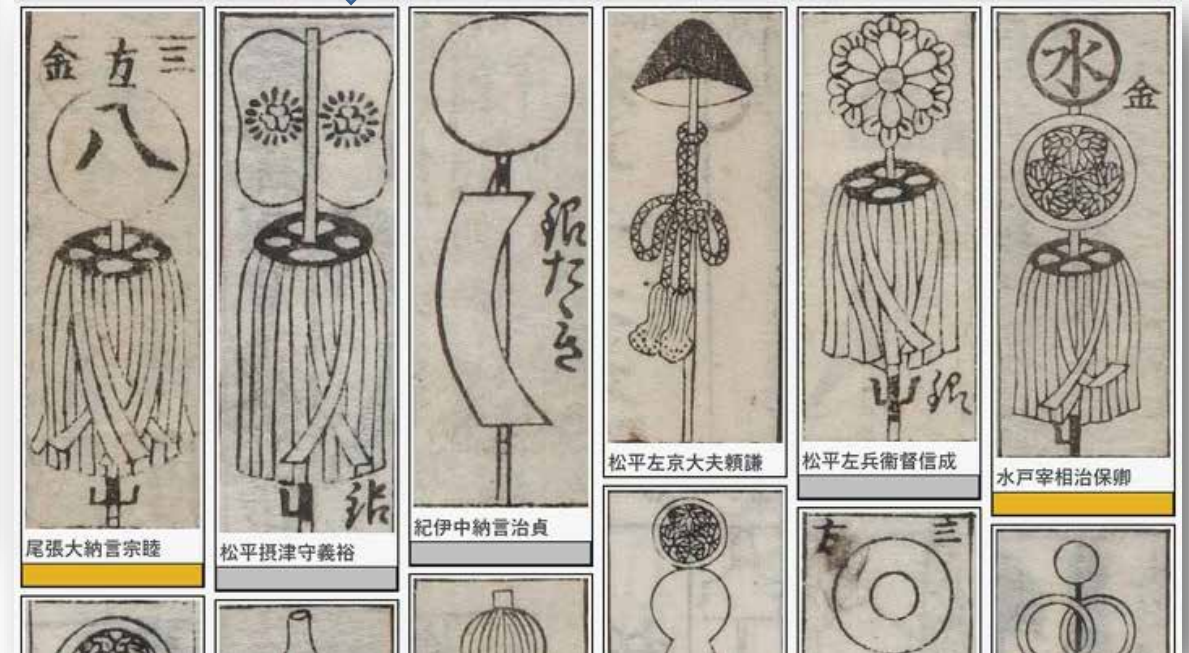
Sophisticated Use of ICP

32 ★★

Use in data structuring



Adding metadata by selecting a partial region of an image has a wide range of applications.



Bukan Complete Collection
<http://codh.rois.ac.jp/bukan/>

33 ★★

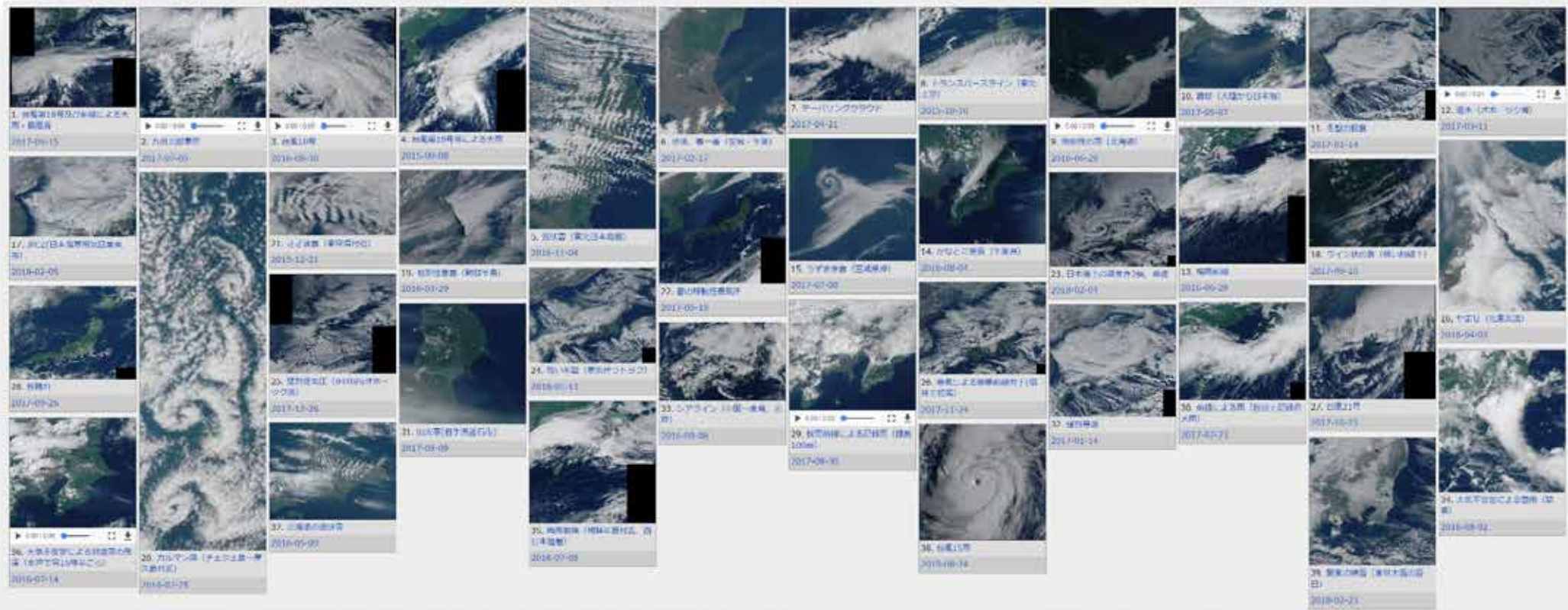
Building a digital archive using ICP

	A	B	C	D	E	G	H
1		家or個人情報					
2		大名ID	大名当主名	居城地		URL	
3		* 空欄で !	現代通称	武鑑表記	武鑑表記	原本URL	切絵図
	1		徳川宗睦	尾張大納言宗睦	尾州愛知郡名古屋	http://codh.rois.ac.jp/iiif/iiif-curation-viewer/index.html?curation=https://mp.ex.nii.ac.jp/api/curation/json/2cc539a8-2efe-43be-909d-750b601ff648&pos=266	http://codh.rois.ac.jp/software/iiif-curation-viewer/demo/?curation=https://mp.ex.nii.ac.jp/api/curation/json/e93ff930-4fde-4caa-b67b-a3cefdbe6ddc&pos=7

- Curation URLs are made into a list, and a program reads that out from JSONkeeper, and converts to a format suited to an external system.
- **Building a digital archive with a help of the IIIF Curation Platform.**

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Creation of an online pictorial collection



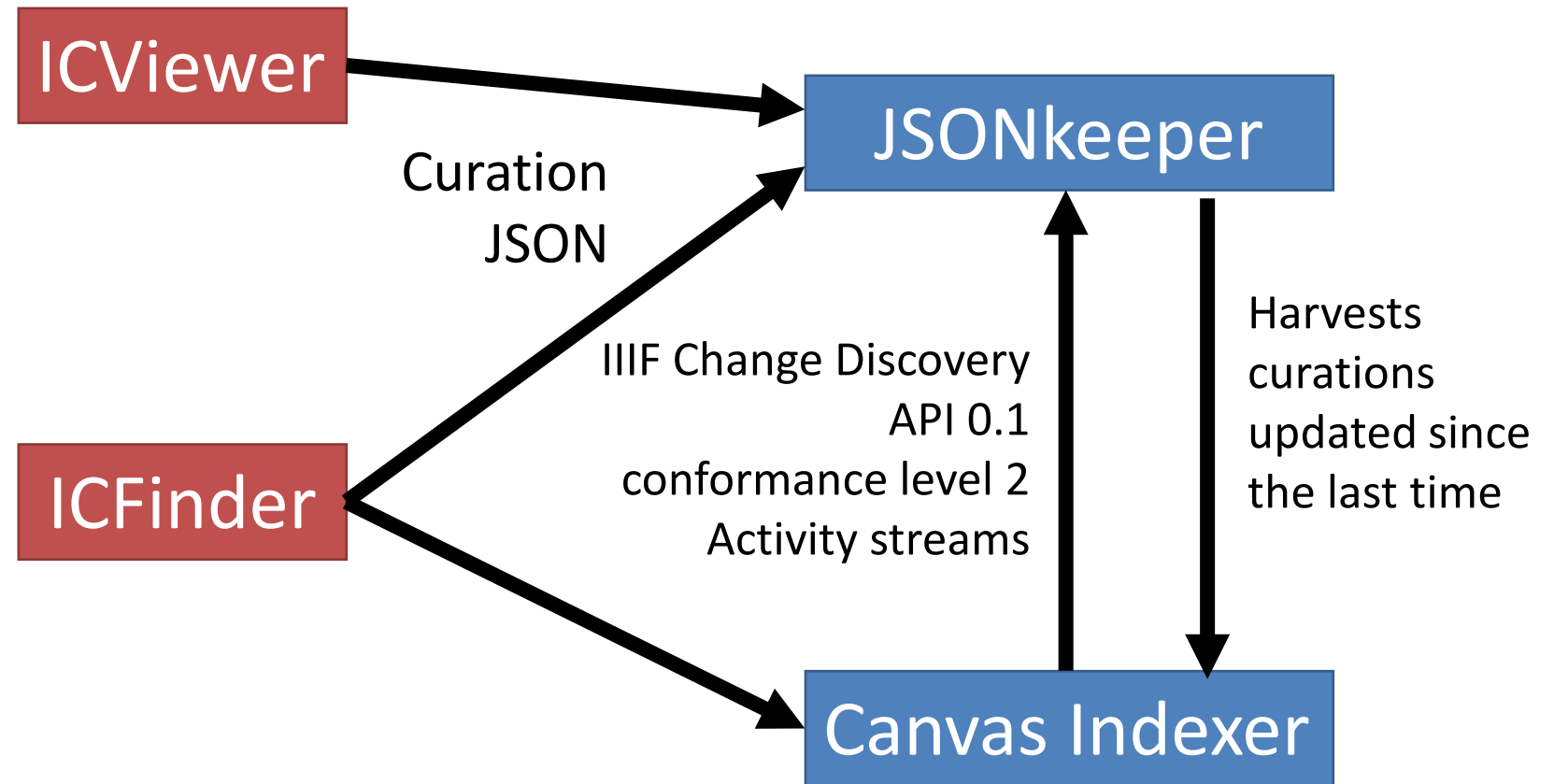
Digital Typhoon: Weather Satellite 'Himawari' Pictorial Collection

<http://agora.ex.nii.ac.jp/digital-typhoon/contribution/gallery/>

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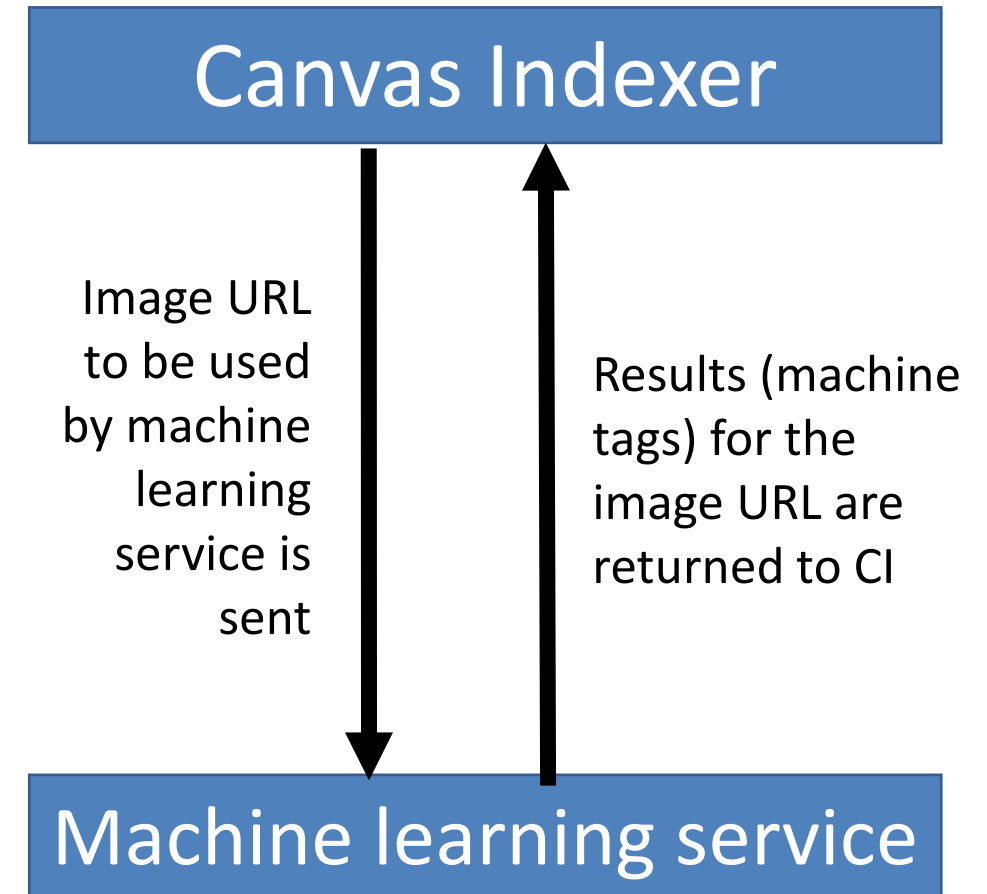
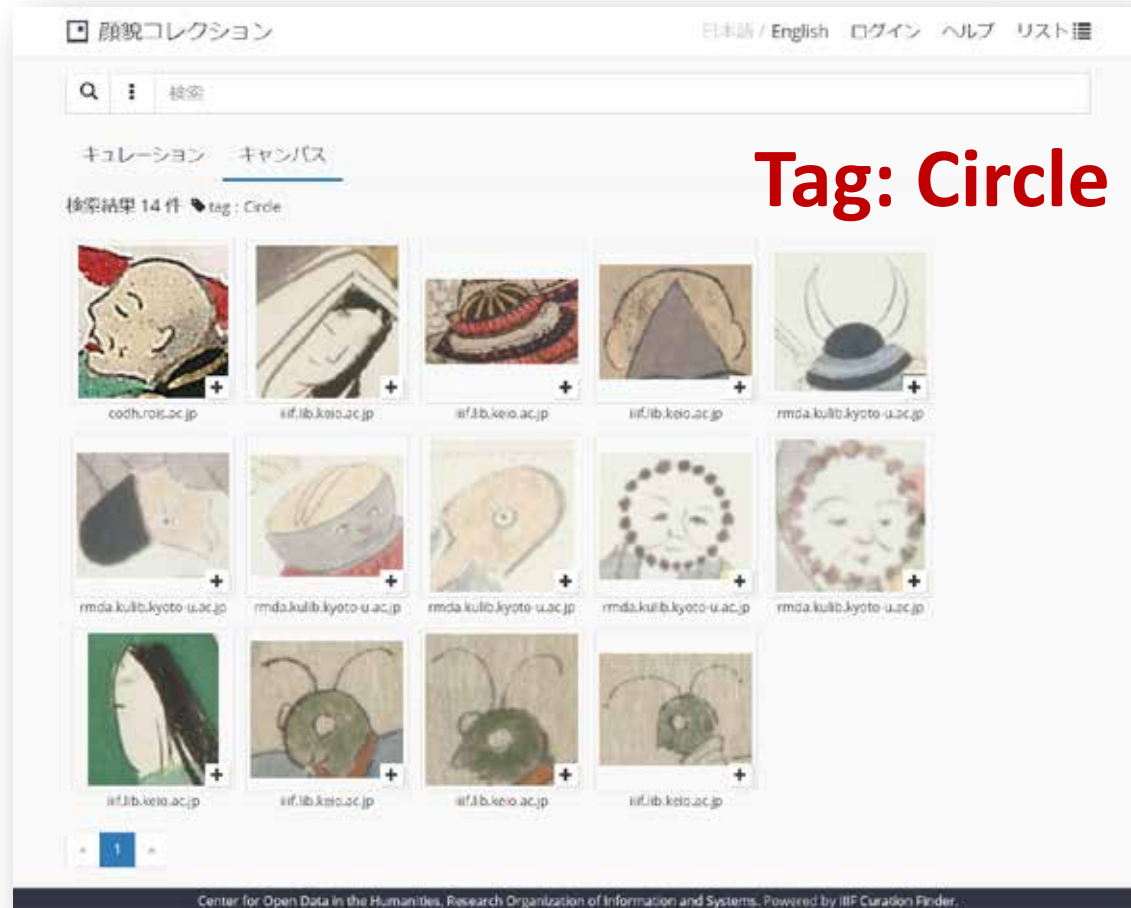
Linkage of JSONkeeper and Canvas Indexer

- **JSONkeeper:**
Service for saving and delivering data in JSON format.
- **Canvas Indexer:**
Service for crawling JSONkeeper data, breaking down into canvas units, and enabling searching.



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Linkage of Canvas Indexer and machine learning



37 ★★

Curation search using Canvas Indexer



Collection of Facial Expressions

<http://codh.rois.ac.jp/face/iiif-curation-finder/>

- A system for **breaking down** data gathered in curation units **into canvas units, and rearranging in metadata units.**
- We are planning to use it from other systems than the IIIF Curation Finder, e.g. Omeka S.

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Curation search using Curation Tracer



Curation Tracer

<http://codh.rois.ac.jp/curation/tracer/>

- Regions used in curations can be visualized for each canvas or for each manifest.
- This enables analysis of **which part of an image people focusing on.**
- In the future, it may become **the analytics for a region of interest?**

Conclusion

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Interoperability of IIIF

1. IIIF has rapidly spread throughout the world because **it meets the common needs of image providers.**
2. By delivering data in a common format (ensuring interoperability), IIIF has made it possible to **access images all over the world using the same tools.**
3. As various tools adopt IIIF as a premise, **archives not supporting IIIF are seen as inconvenient.**
4. **There is heightened "fear of missing out."**

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Unique features of the IIIF Curation Platform

1. It enables **users** to create and publish **original** image collections based on different themes.
2. It enables **users** to call and use **original** image services delivered from service providers other than the image provider.
3. It enables **users** to provide an overlay display of **original** annotation information.
4. As a platform supporting the entire workflow of users freely collecting, processing, and publishing images, ICP is playing a role in pioneering new uses of IIIF images.

IIIF Curation Platform Cultivating the Usage of Images in the Open World, Current Awareness, No. E2301, No.398, 2020.09.17, <https://current.ndl.go.jp/e2301/>

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<http://codh.rois.ac.jp/icp/>