IIIF Curation Platform: User-Driven Image Sharing with Machine Learning-Based Image Annotation

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Important Messages

1. IIIF Curation Platform is developed by ROIS-DS Center for Open Data in the Humanities (Japan).

2. Treat "IIIF content as machine-actionable data," not "IIIF content just for human viewing."

3. "User-driven" IIIF content adds creativity and diversity to the "provider-driven" IIIF world.

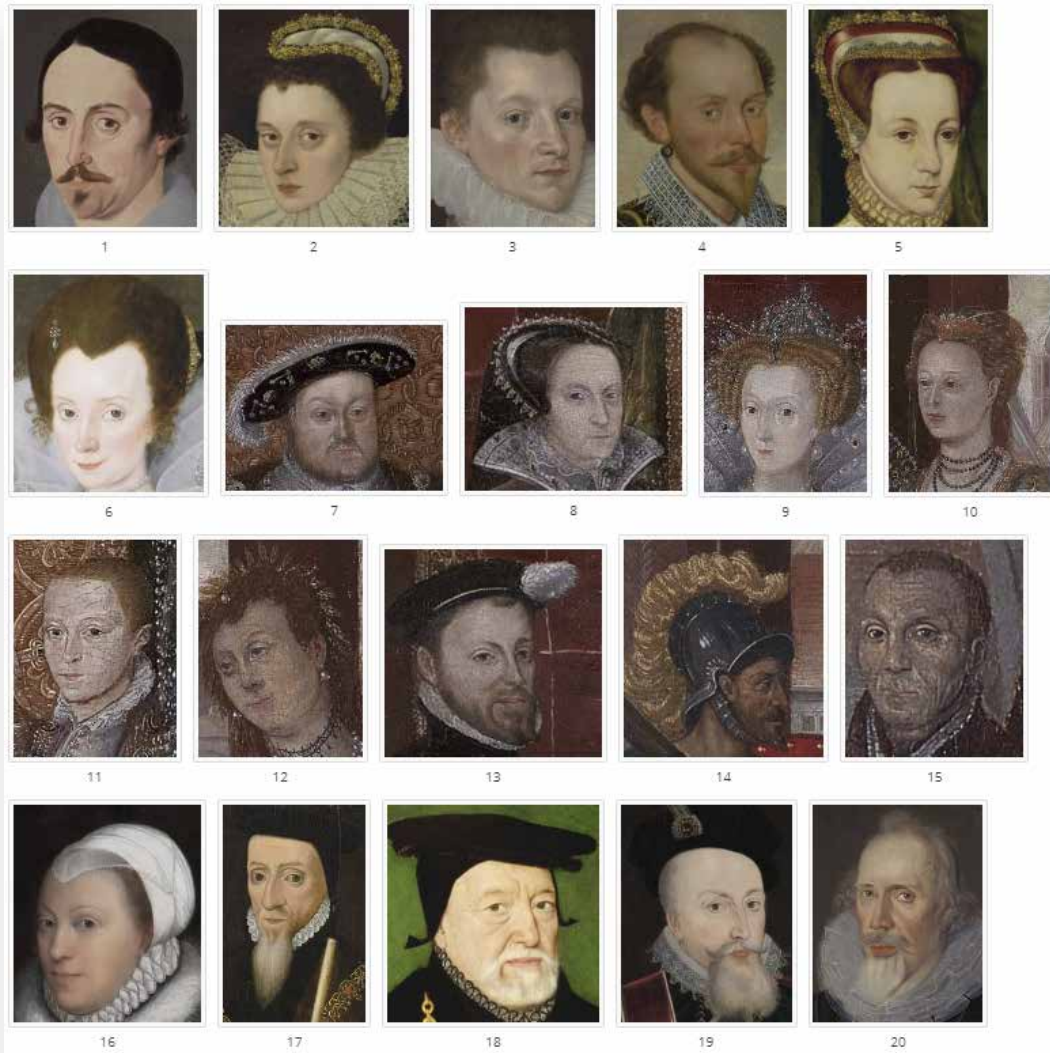4. Gateway to external services enriches possible actions on IIIF content, including machine learning.
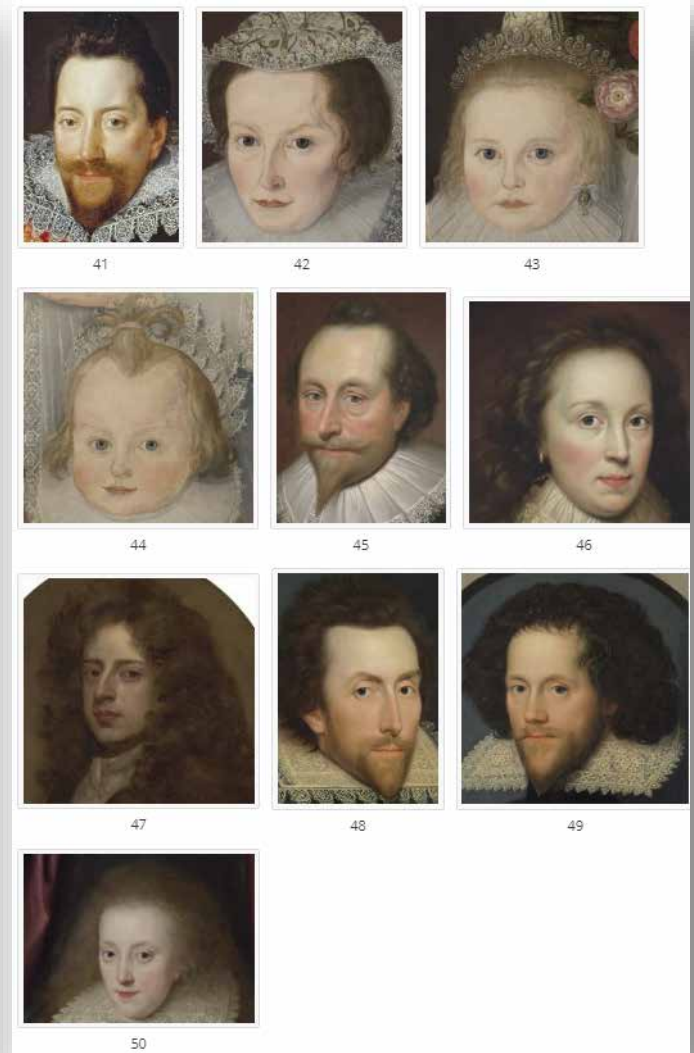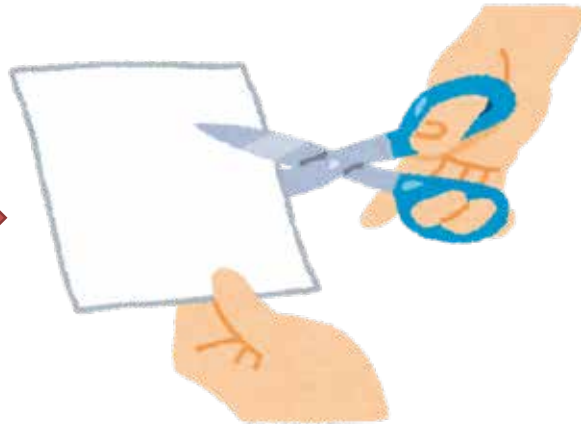
IIIF Curation Viewer (for Timeline)

http://codh.rois.ac.jp/software/iiif-curation-viewer/

Developed on Leaflet-IIIF
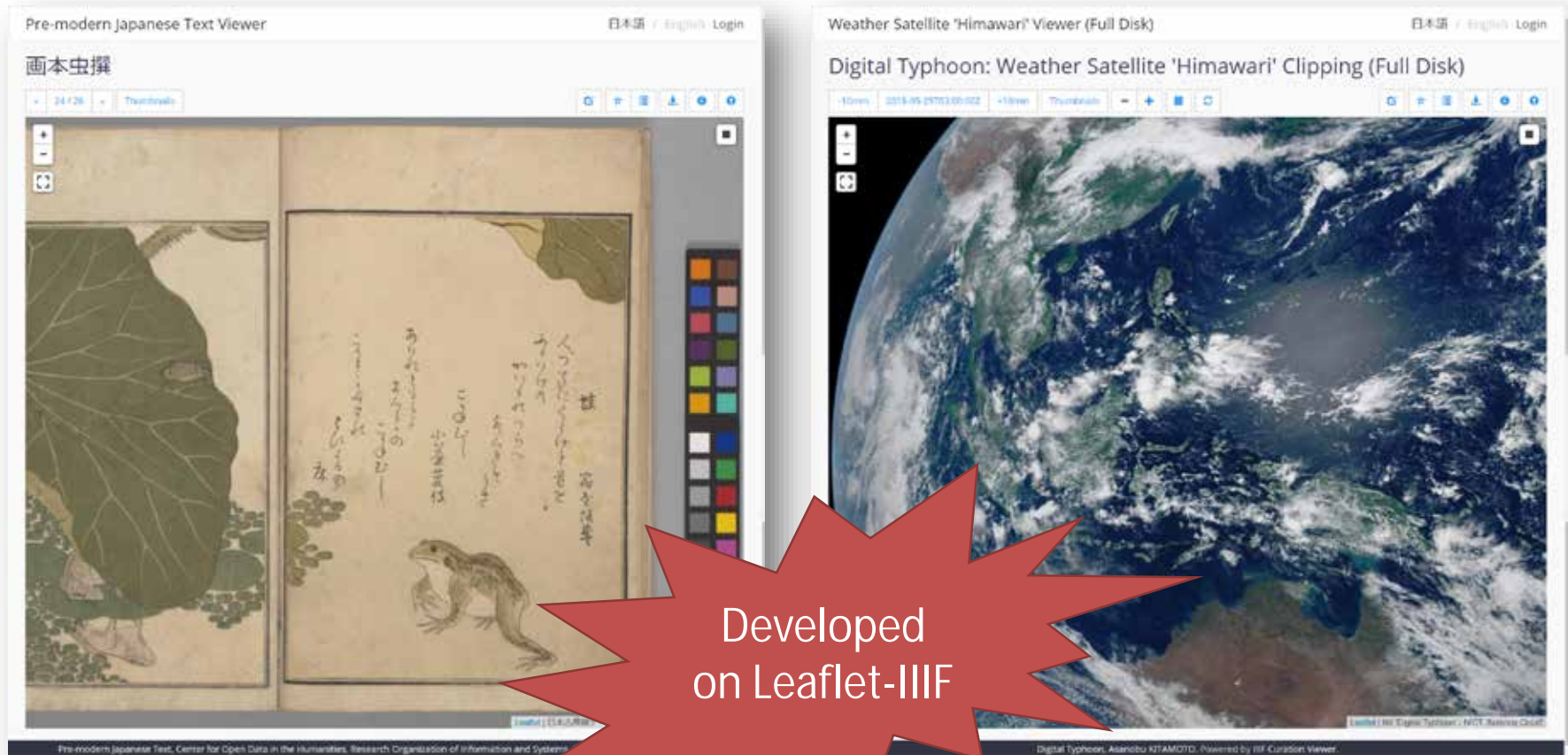
Sixteenth Century

Seventeenth Century

Facial expression data: Portrait http://codh.rois.ac.jp/curation/exhibition/2/index.html.en
Credit: Yale Center For British Art

Good Old Analogue World

1 Scissors   2 Paste

Source: , http://www.irasutoya.com/
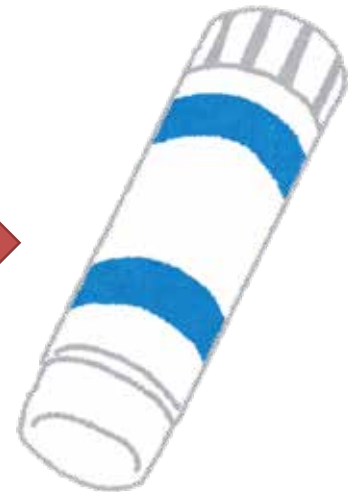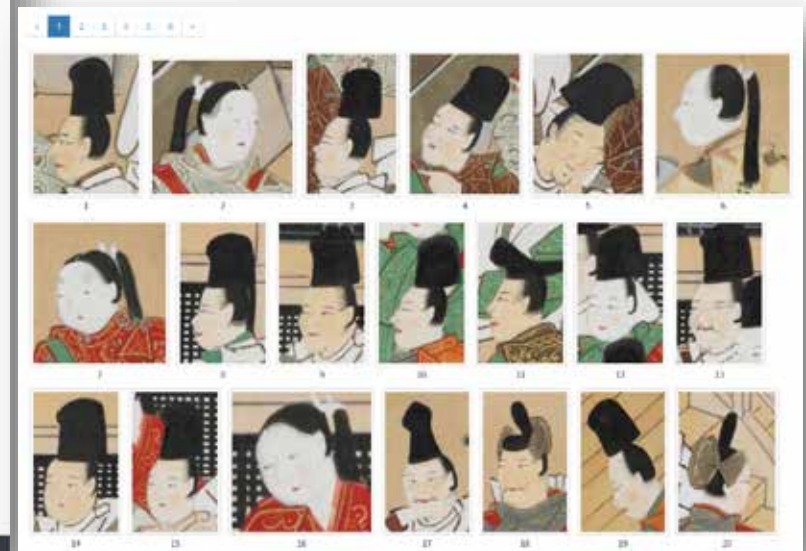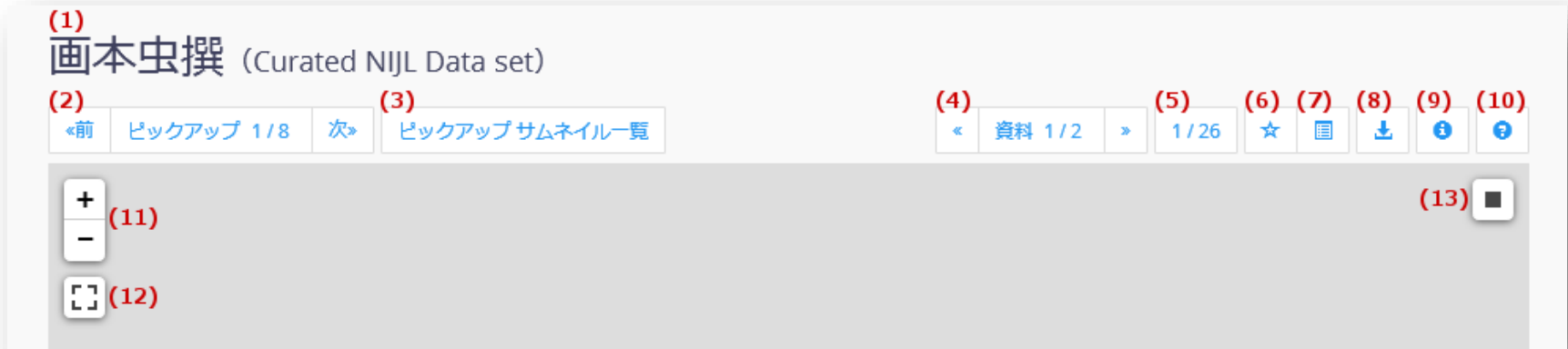
Frictionless Digital World

1. Draw a rectangle.
2. Add to favorites.

Crop and Curate Pattern

1. ' ' (13) is a "crop" button. You can draw a rectangle to specify a part of image.
2. ' ' (6) is a "favorite" button. You can collect any images.
3. These buttons are the minimum requirement to create a new curation.

Curathon!

http://codh.rois.ac.jp/tutorial/dhsi-2019/

At **Digital Humanities Summer Institute 2019** (June 3-7 at Victoria, Canada), 11 participants, including scholars in Asian studies and subject librarians, are asked to create curations **within two days as homework**.
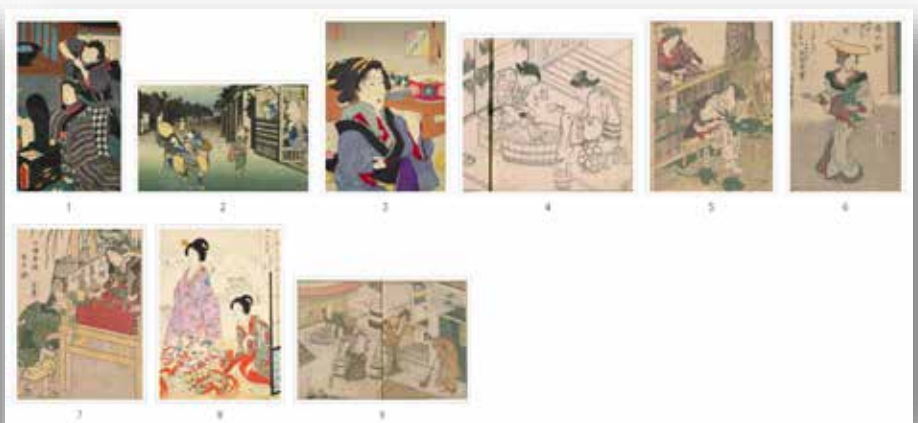
- "Curathon" is an event, like an "ideathon," to enjoy creativity in an open environment.

- Participants are asked to create their own curations based on their motivation and interests.

- Present the result in front of other people.

Part-of-image research data

Storytelling

Theme-based collection

Asking a new question

Personal narrative

User-Driven Interpretation

- Participants showed a different viewpoint on the interpretation of the content.

- Some participants found something new or started to ask a new research question.

- Explicit data structuring practice clarifies the interpretation of the content.

- Sharing user-driven interpretation enriches the world of IIIF.

Providers vs. Users

Provider-Driven	User-Driven
• Memory institutions provide IIIF content.	• Create derivative content from the original content.
• Users access IIIF content in the original structure of the content.	• Derivative content is itself self-contained.
• Users cannot add new information to the original IIIF content.	• Curation is about user-generated content in the world of IIIF.

Manifest and Curation

1. Curation node is located outside of the structure of Manifest for the flexible grouping of canvases.
2. Redundant copying of the Manifest is not required, hence robust to changes.
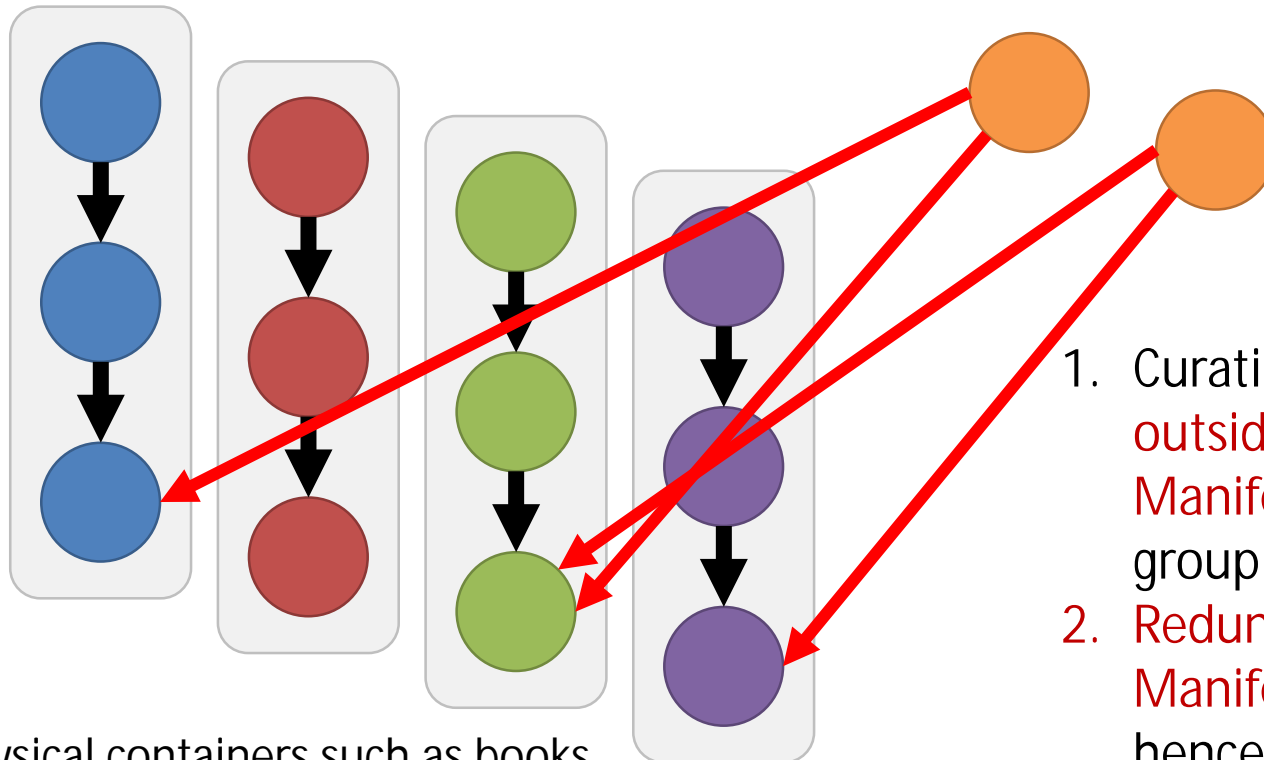
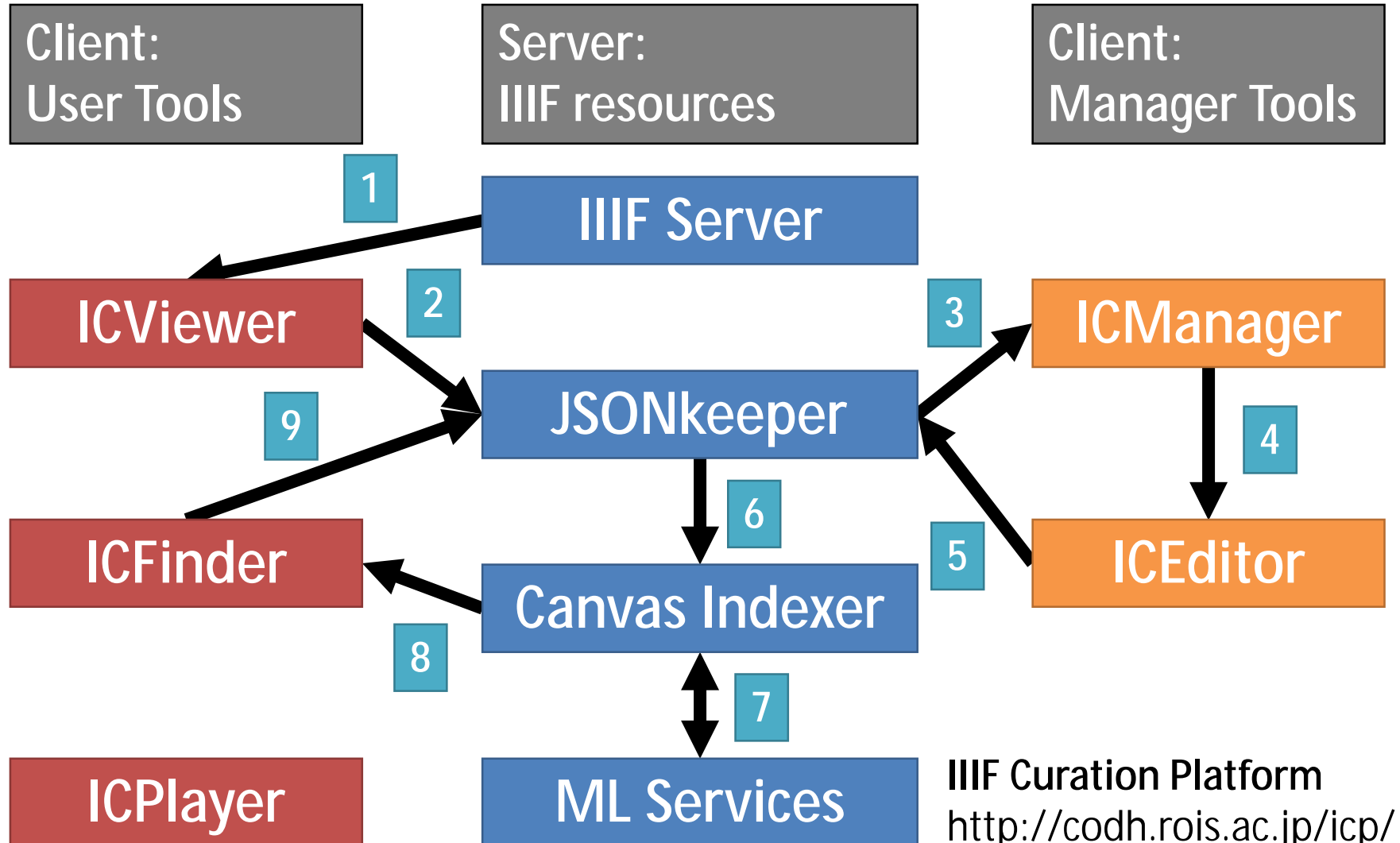Physical containers such as books.

Extension to Presentation API 2
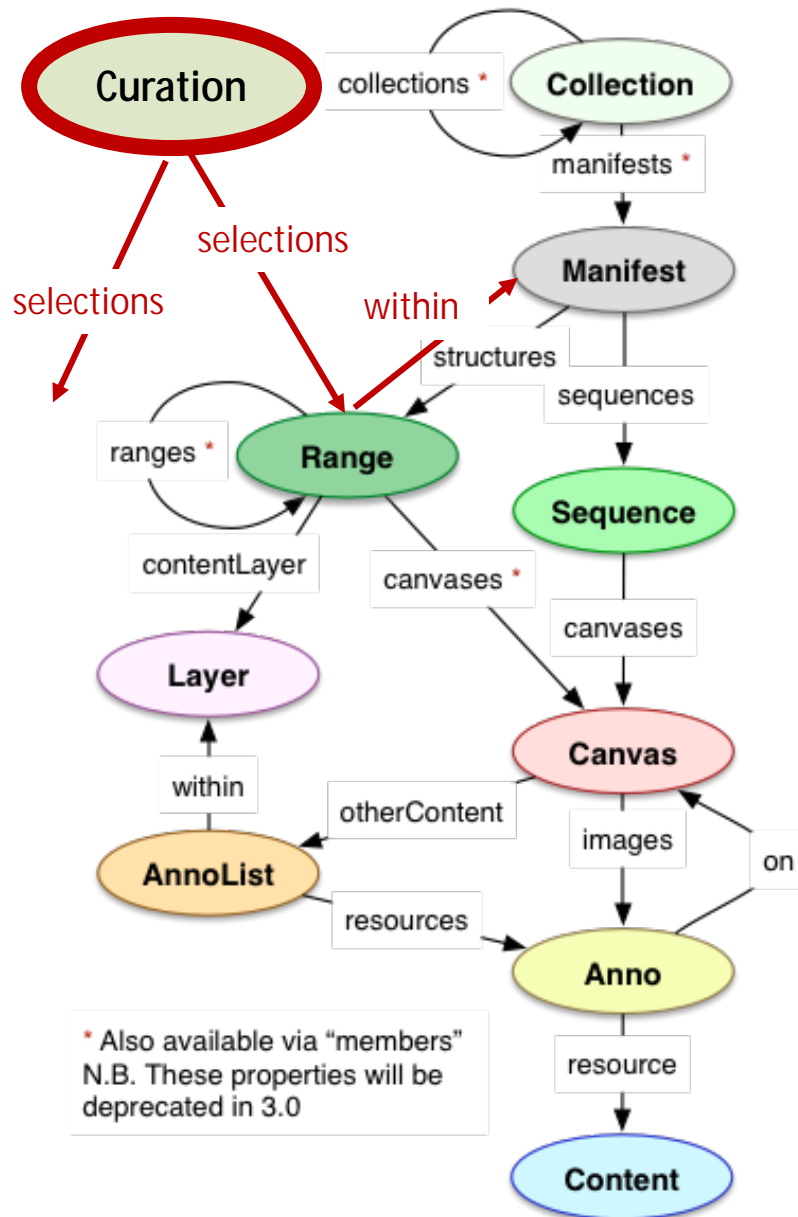
- **Curation** is another upper element of Range.

- **Range** points to **Manifest** using "within" property.

- **Curation is an array of ranges across multiple manifests.**

The diagram labels:
- Curation
- Collection — collections *
- manifests *
- Manifest
- structures
- sequences
- selections
- within
- ranges *
- Range
- contentLayer
- canvases *
- Sequence
- canvases
- Layer
- within
- Canvas
- otherContent
- images
- on
- AnnoList
- resources
- Anno
- resource
- Content

* Also available via "members"
N.B. These properties will be deprecated in 3.0

IIIF Curation Platform

Client: User Tools	Server: IIIF resources	Client: Manager Tools

IIIF Server

1

ICViewer

2

ICManager

3

JSONkeeper

9

4

ICFinder

6

5

ICEditor

Canvas Indexer

8

7

ICPlayer

ML Services

IIIF Curation Platform
http://codh.rois.ac.jp/icp/

Collection of Facial Expressions

http://codh.rois.ac.jp/face/

Tag: (https://en.wikipedia.org/wiki/Minamoto_no_Yoshitsune)

Curation of the same person appearing in different Japanese Emaki handscroll across IIIF services.

Facet Search by Human Metadata

http://codh.rois.ac.jp/software/iiif-curation-viewer/
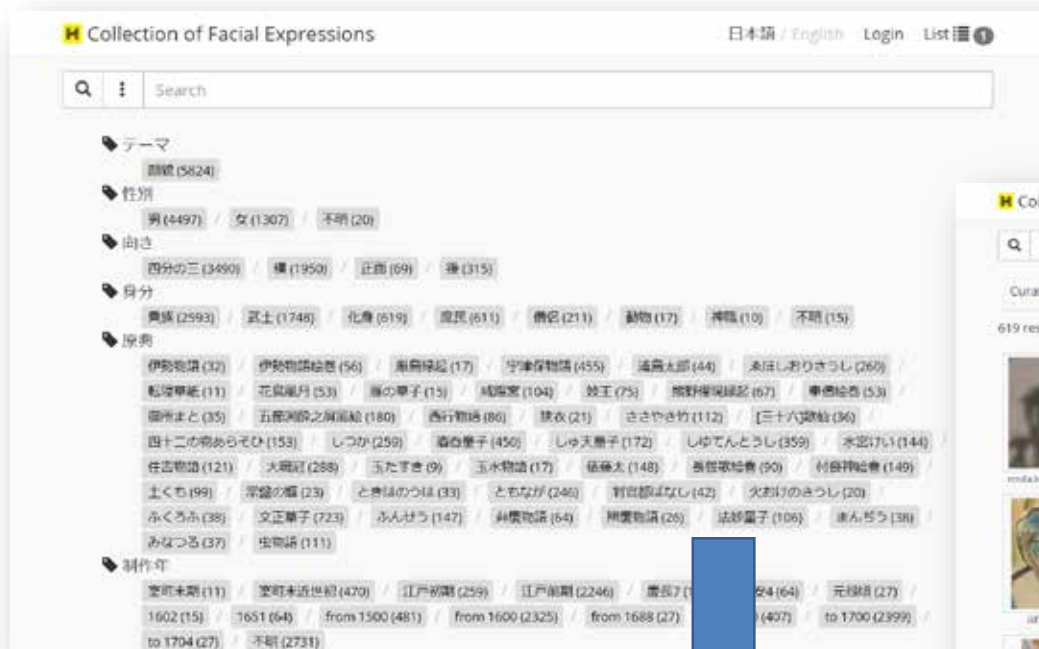
Click the tag, and get the list of a part of canvases annotated by the tag.
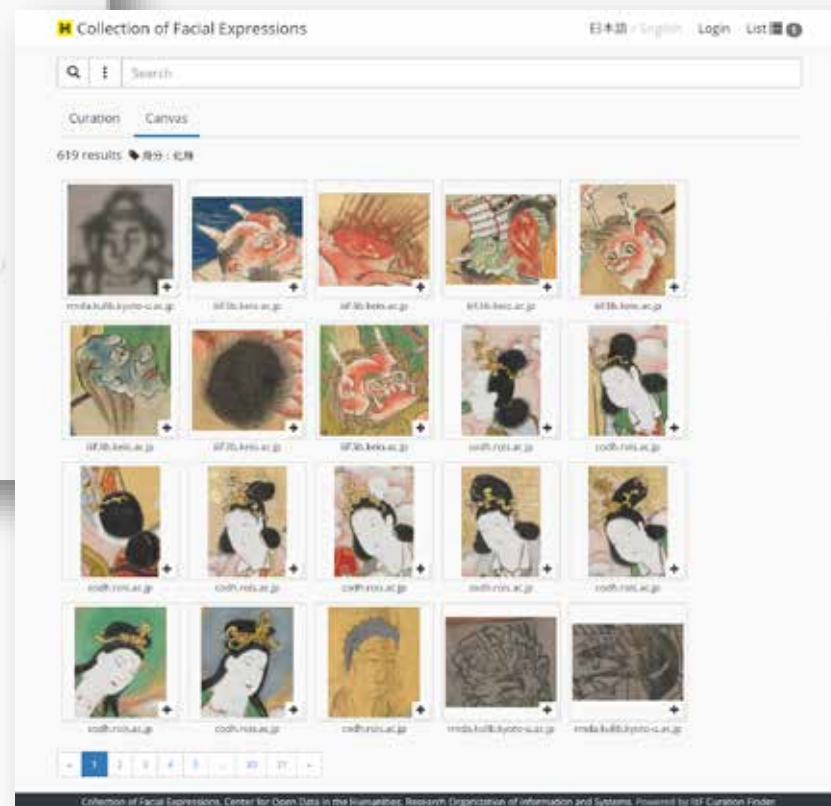
Fine-to-coarse or
from Content to Context
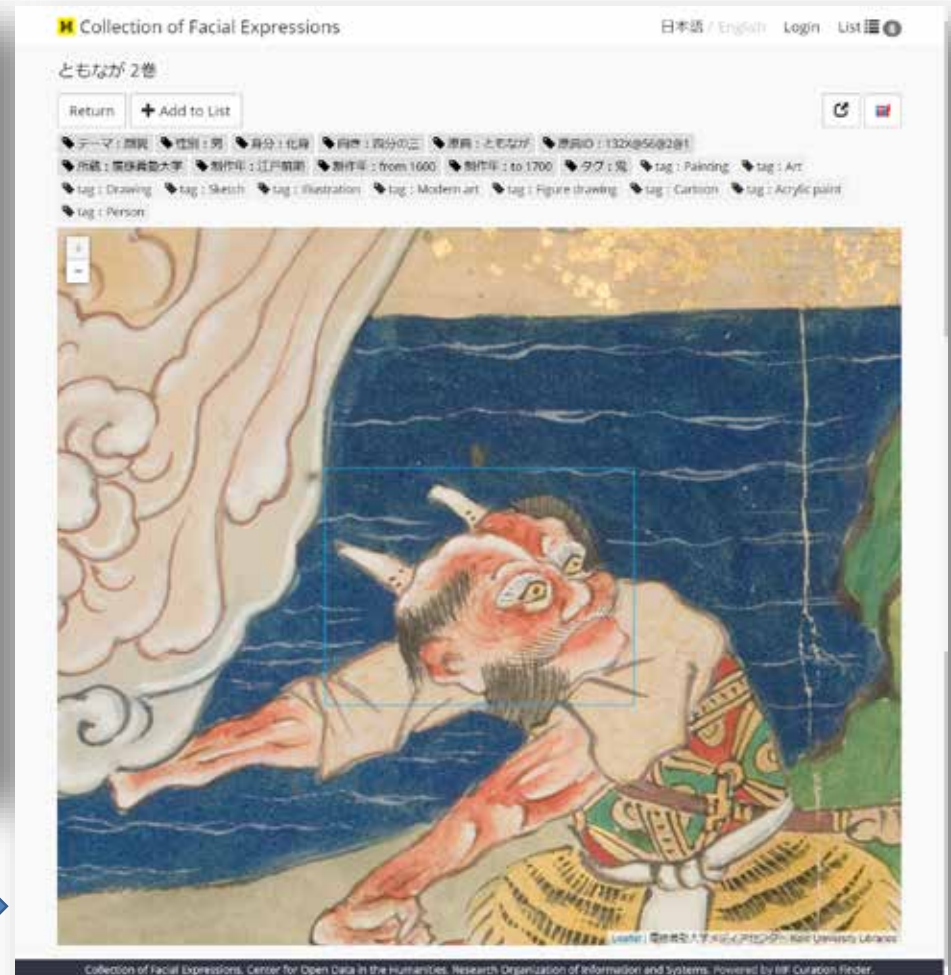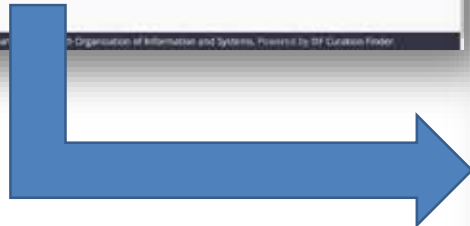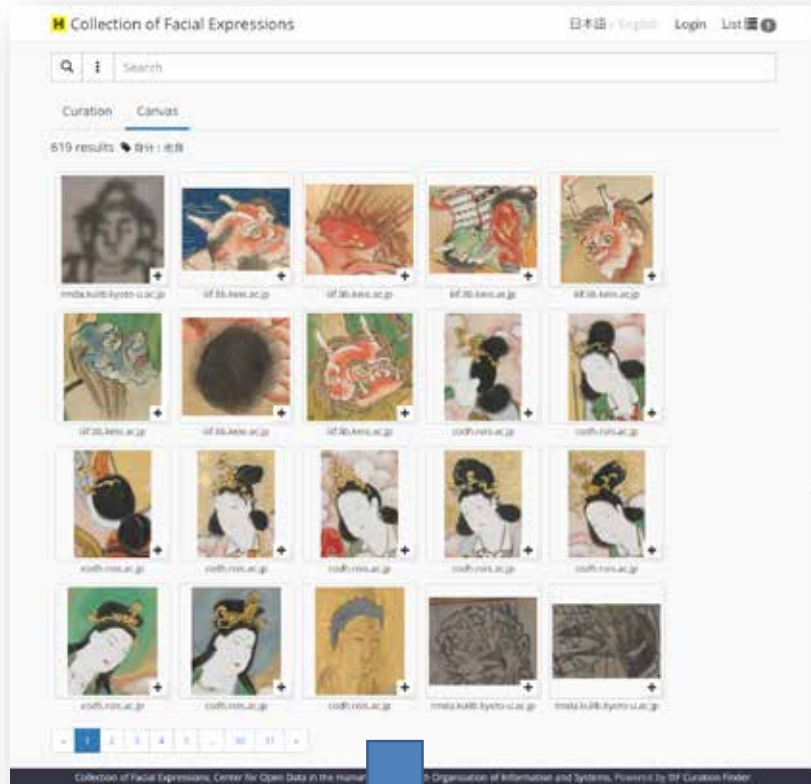
Annotation by Machine Learning

Tag: Circle
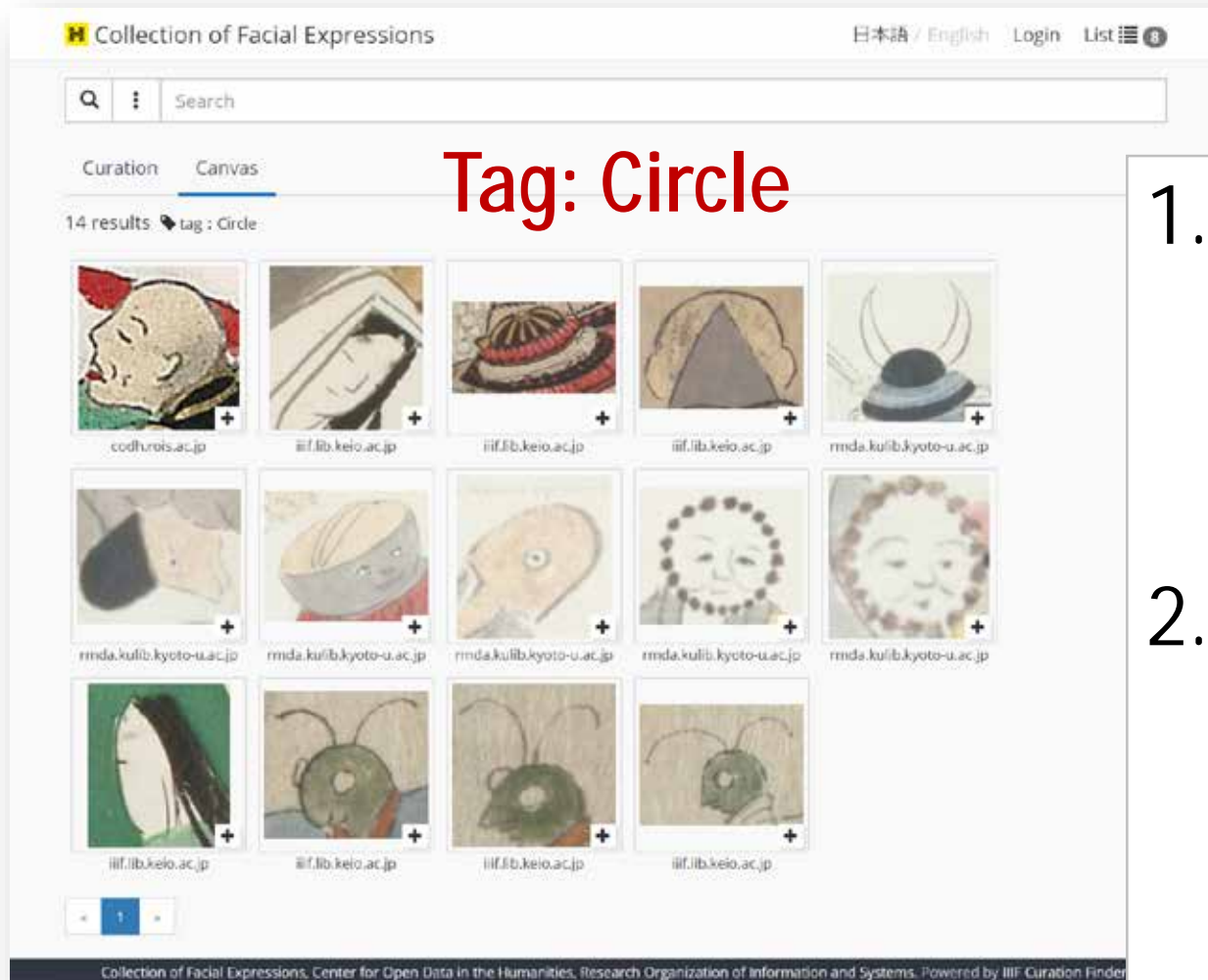
1. Correct or not correct, that is not the question.
2. Serendipity: unexpected encounter with images.

North China Railway Archive
http://codh.rois.ac.jp/north-china-railway/

Automatic Tagging
http://codh.rois.ac.jp/north-china-railway/

Automatic Colorization
http://codh.rois.ac.jp/north-china-railway/

Choice of Images
http://codh.rois.ac.jp/north-china-railway/

Oa:Choice for switching
multiple representations
of the same object.

Museum Exhibition
http://codh.rois.ac.jp/iiif-curation-platform/
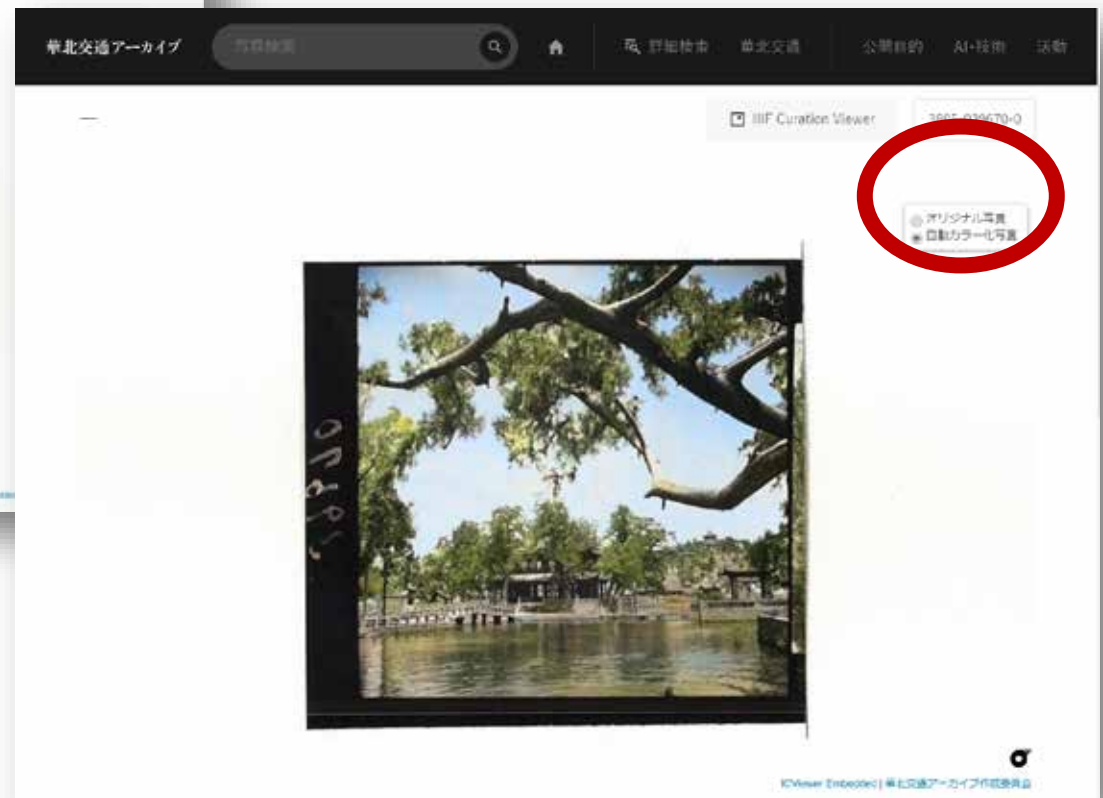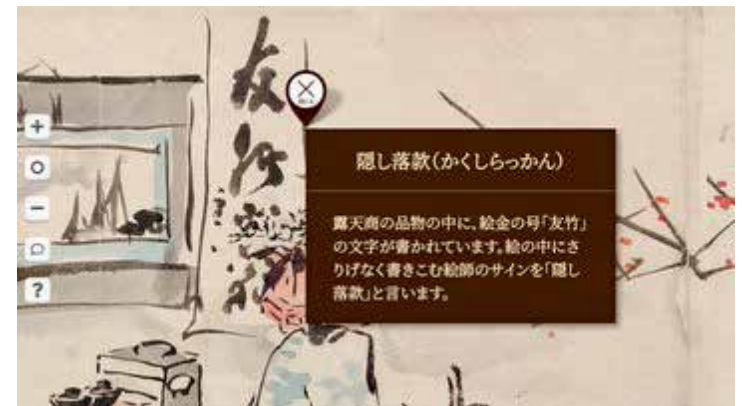
Special exhibition at the musem of art, Kochi. Collaboration with Prof. Akihiko Takano (NII) and Rensou Shuppan.

Curation and Offline to Online

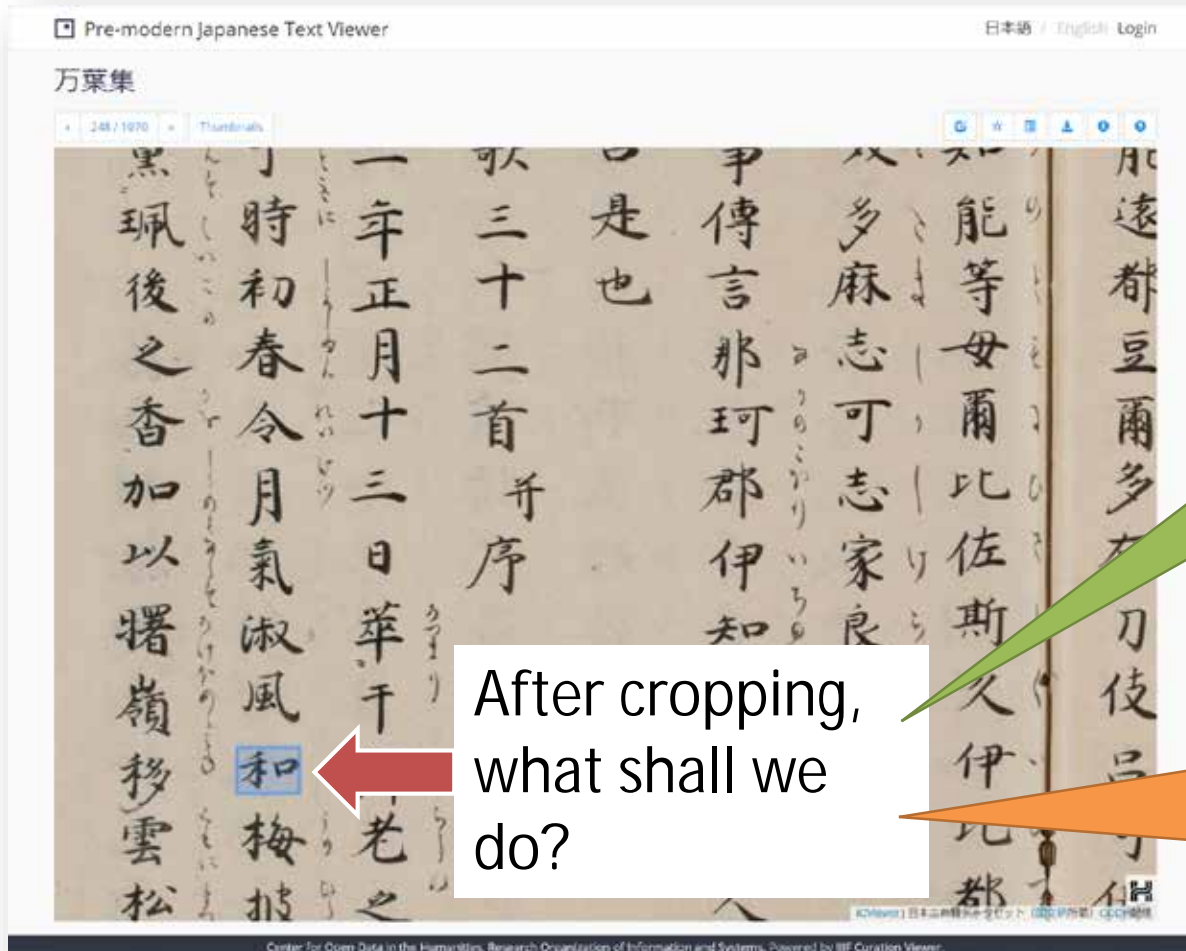Curation for a smartphone-based "museum guide" via the QR code in the museum, and IIIF Curation Player showing (curatorial) descriptions about the work.
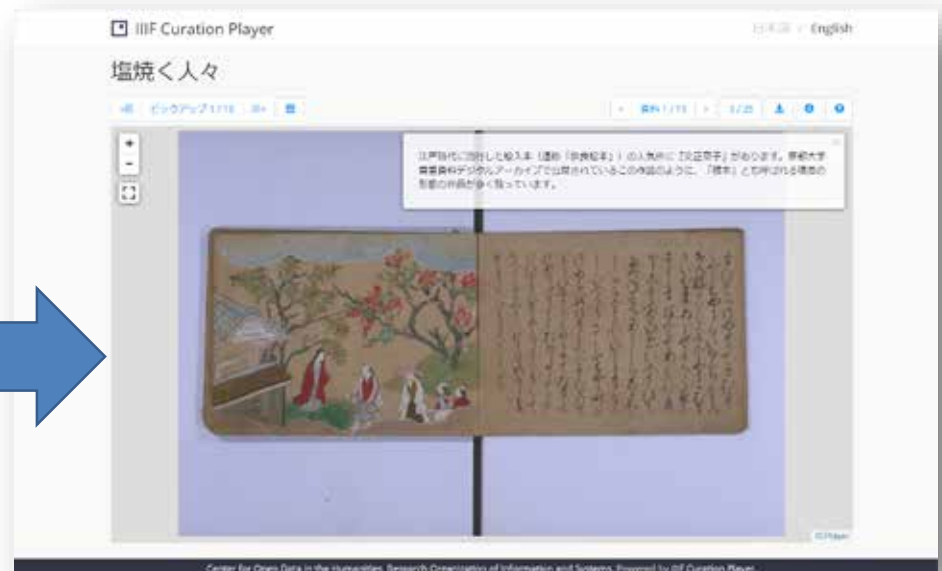
Gateway to External Services

1. Crop and Curate Pattern

2. Crop and Export Pattern

After cropping, what shall we do?

ICP Service Repository

http://codh.rois.ac.jp/icp/service-repository/

1. Share the endpoint setting (a JSON file).
2. Select the endpoint to export the cropped image to the external service.

1. AI Kuzushiji Recognition (Single Character) (ROIS-DS Center for Open Data in the Humanities)

2. Harimazejo Similar Image Search Prototype (UTokyo Digital Archives Project)

3. Ukiyo-e Search (John Resig, ukiyo-e.org)
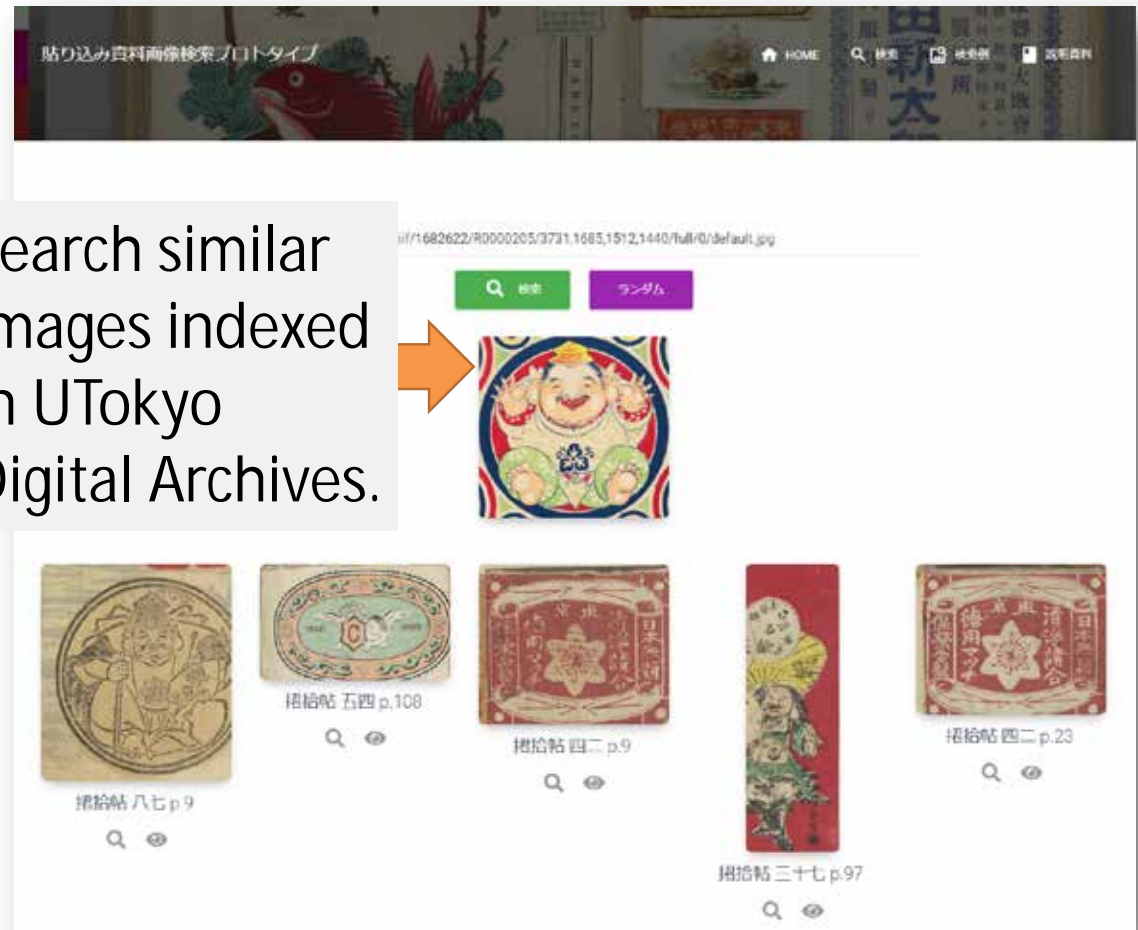
4. Google Images (Google)

AI Kuzushiji OCR (Single)

http://codh.rois.ac.jp/char-shape/app/single-mobilenet/
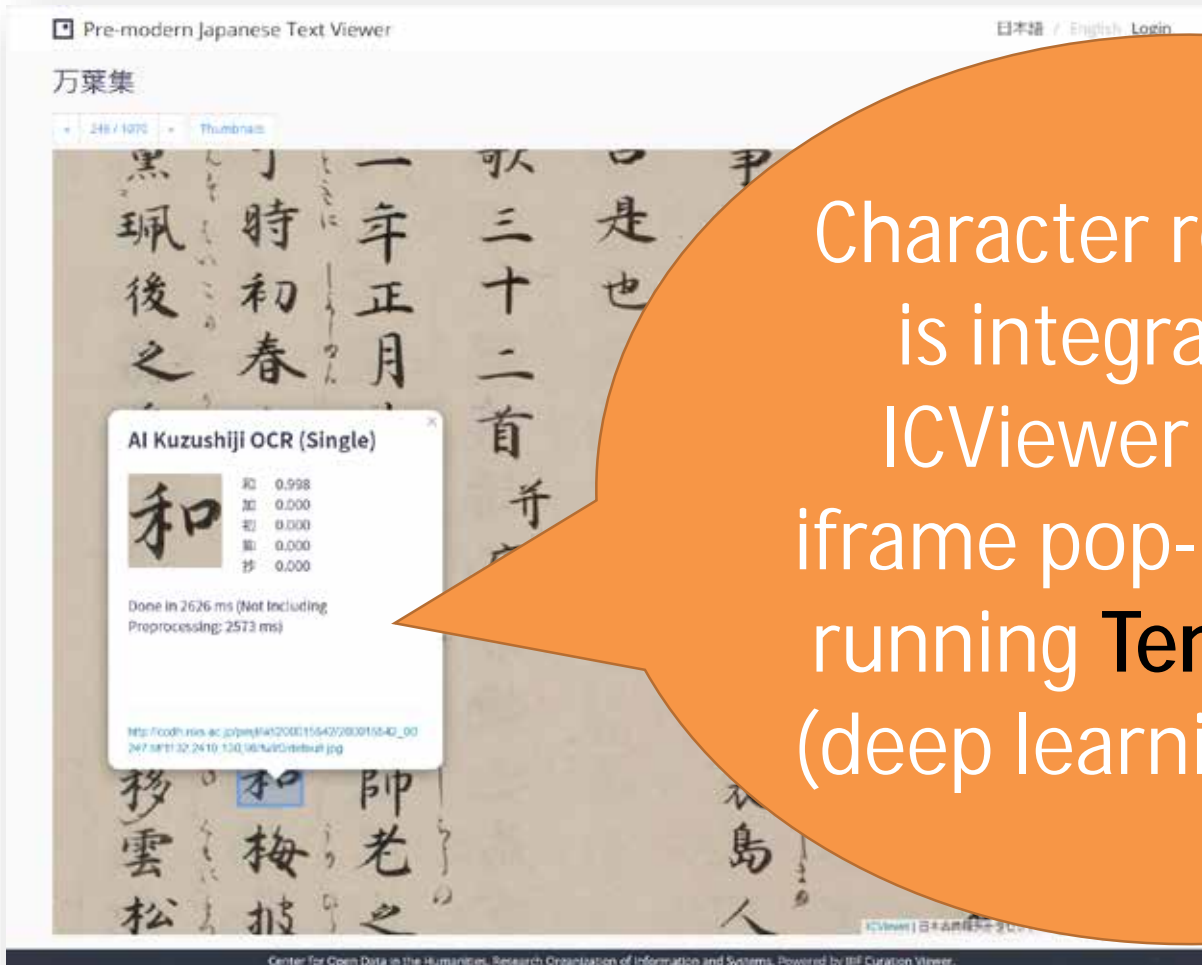
Character recognition is integrated into ICViewer using an iframe pop-up window running **Tensorflow.js** (deep learning library).

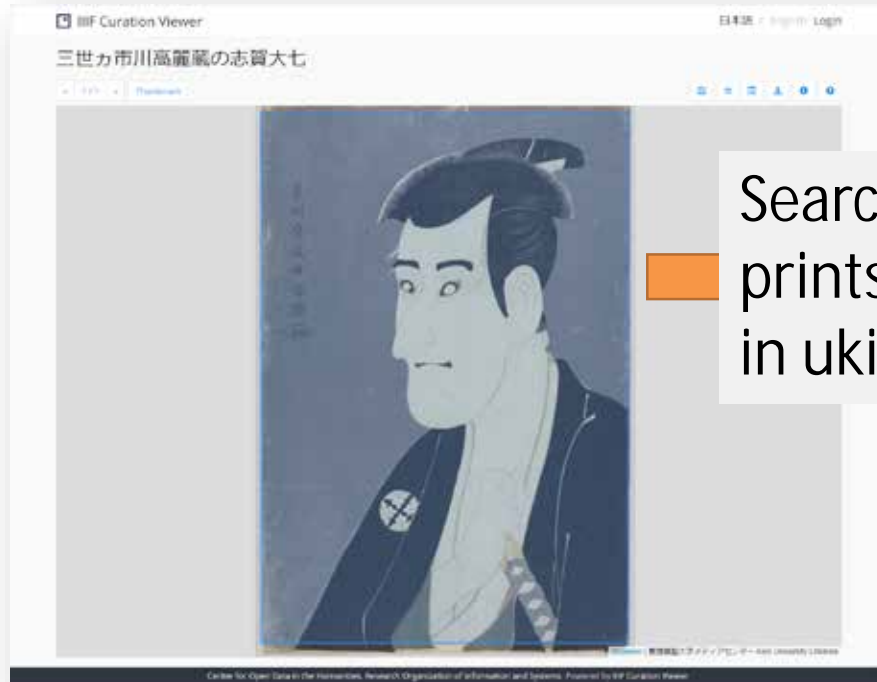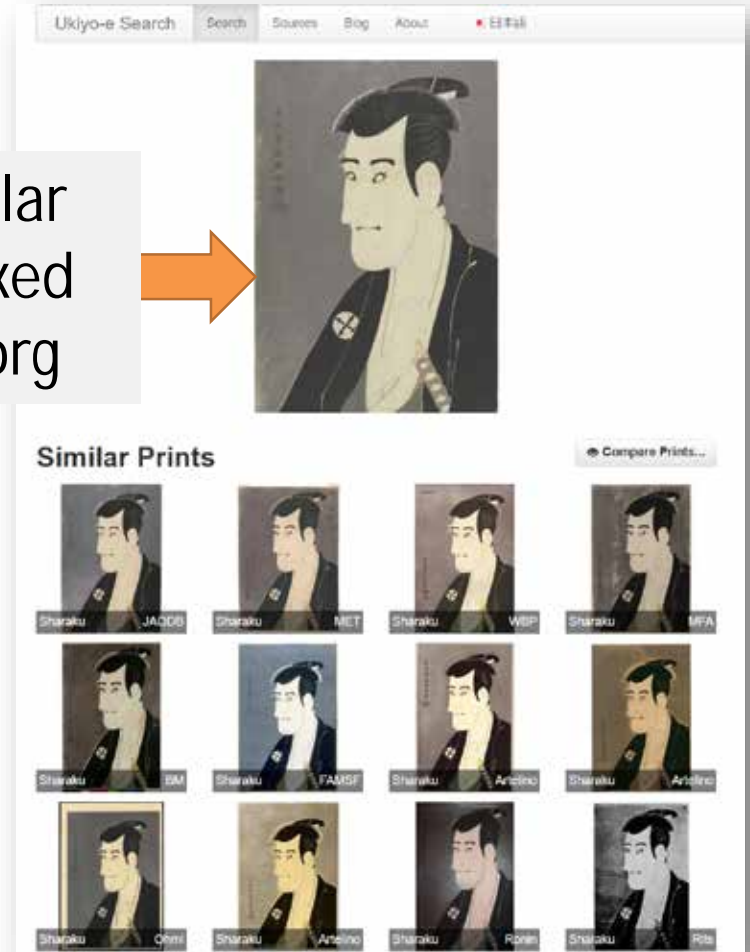# Harimazejo Similar Image Search Prototype (UTokyo Digital Archives Project)

Search similar images indexed in UTokyo Digital Archives.
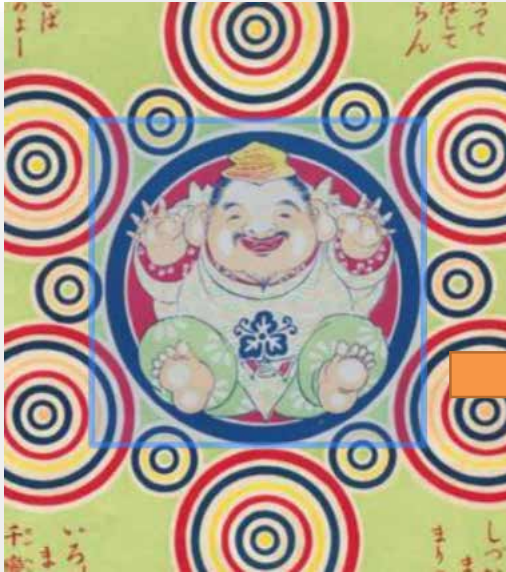
IIIF Image from National Diet Library

Ukiyo-e Search (John Resig, ukiyo-e.org)

Search similar prints indexed in ukiyo-e.org

IIIF Image from Keio University
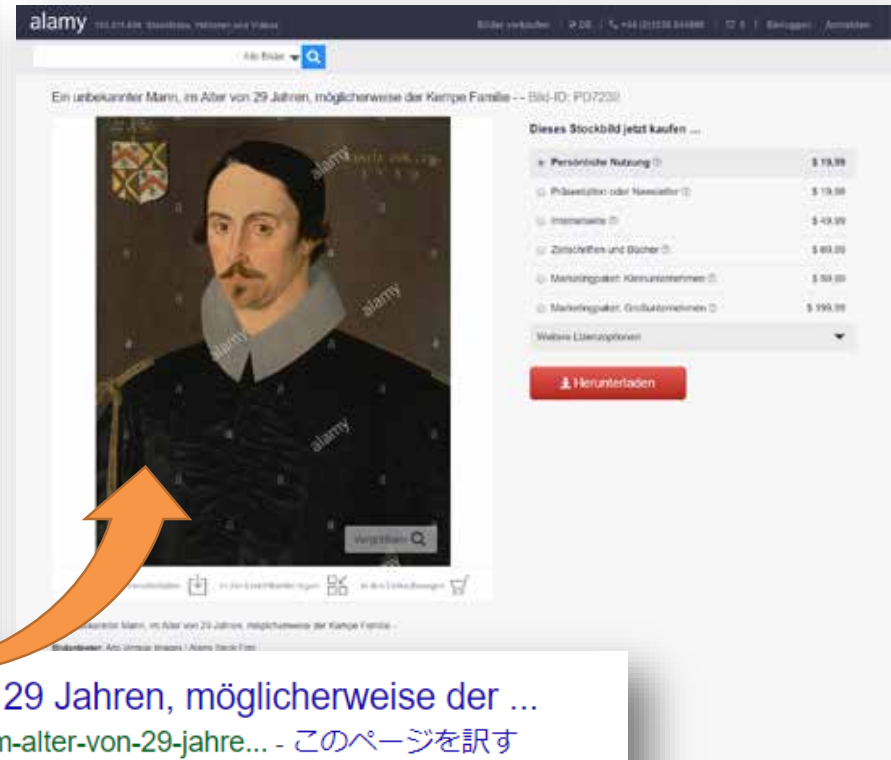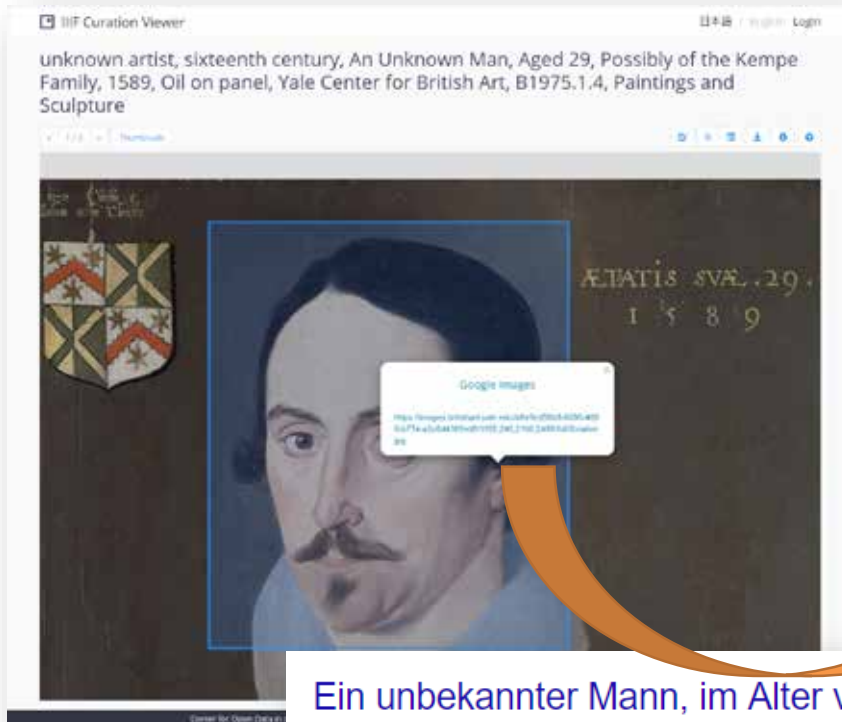
Similar Prints

Google Images (Google)

Data-Driven IIIF Viewers

Most IIIF Image Viewers

- **Suitable for human viewing (reading).**
- Physical materials and their typical usage are transferred to the digital space.

- **Treat content as machine-actionable data.**
- Explore the new potential of data-driven research.

ICP Tutorial (Ja / En)
http://www.ch-suzuki.com/icpt/

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Acknowledgment

IIIF Curation Platform
http://codh.rois.ac.jp/icp/

- Mr. Jack Reed for the development of Leaflet-IIIF.

- Mr. Chikahiko Suzuki (CODH) for creating curations and ICP tutorials.

- DHSI 2019 participants for creating their own curations.