

Annotating and Transcribing IIIF Images WITH IMMARKUS

Import IIIF Manifest

Paste the URL to a IIIF Presentation Manifest. The following links will not work:

- viewer pages – e.g. pages that embed Mirador or Universal Viewer.
- links to image files – jpg, png, etc.
- IIIF Image API endpoints – ending with info.json.

<https://purl.stanford.edu/xt257vq9249/iiif/manifest>

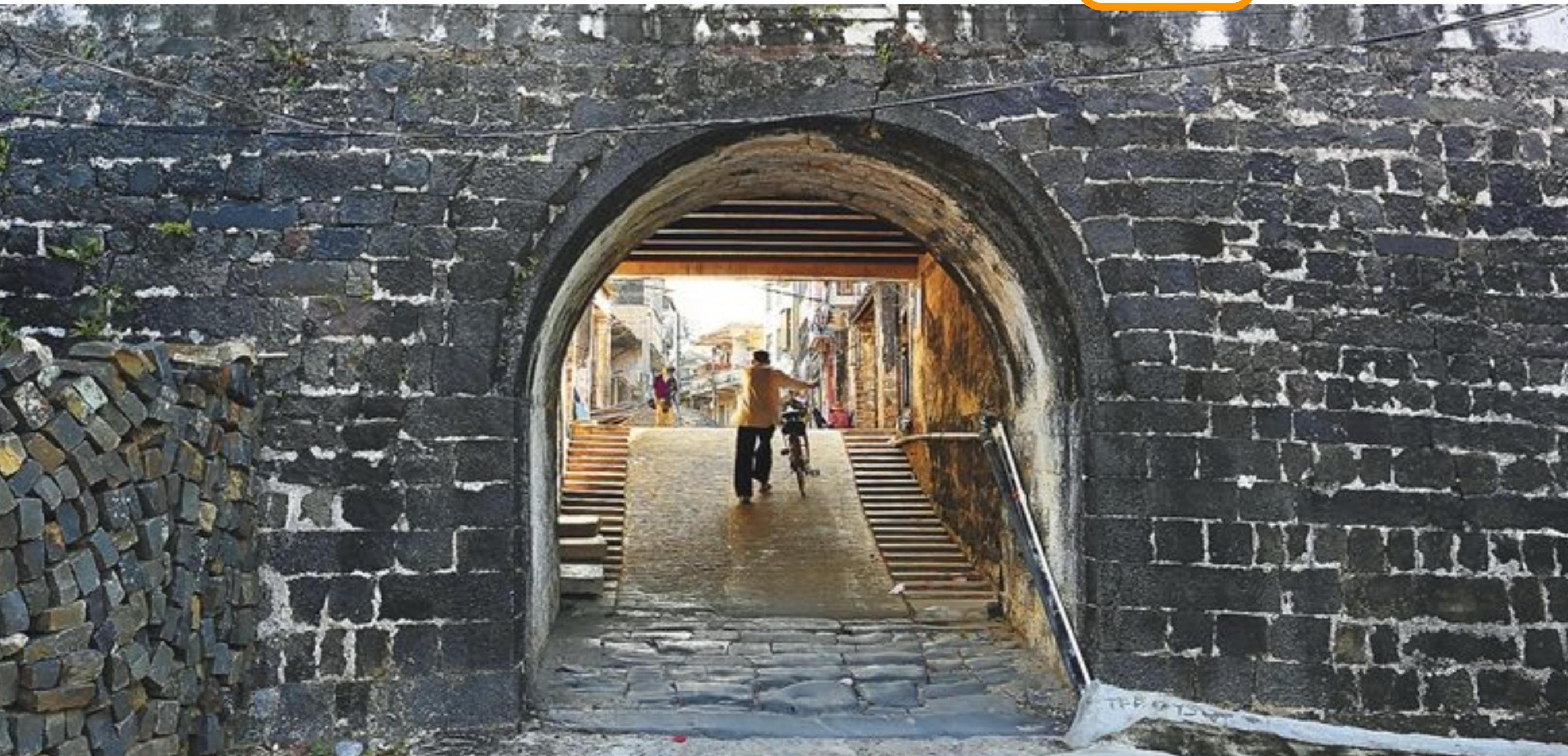
✓ (Xin hui) Sichuan quan sheng ming xi yu tu -- (新繪)四川全省明細輿圖

Cancel Import

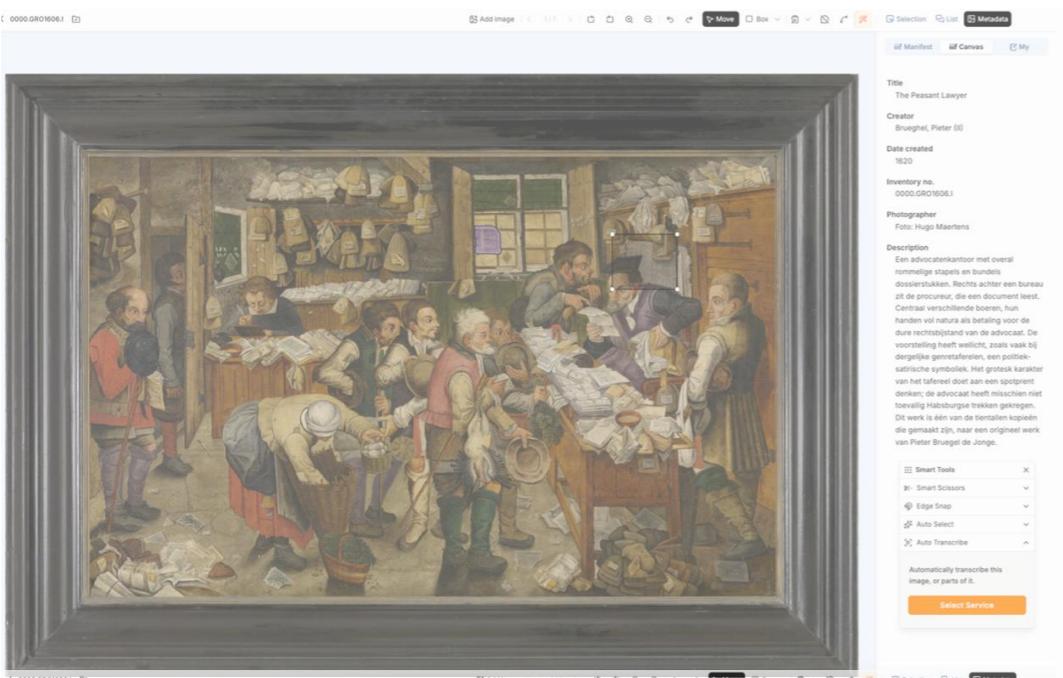
IIIF Images

Hilde De Weerdt, Rainer Simon, Sunkyu Lee, and Dawn Zhuang

The image shows a composite of several software interfaces. At the top right is a IIIF viewer showing a historical map of Sichuan with Chinese characters and figures. Below it is a 'Properties' panel for an annotation. The main area features a IIIF image of a historical map with red annotations. The bottom left is the 'Data Model' interface, and the bottom right is a 'Knowledge Graph' visualization.



<https://www.infrastructurelives.eu/>



1. Collecting Images

(How and which IIIF manifests can I import?)



2. Annotating Images

(what methods and AI models can I use for annotating image regions)



and for transcribing text in images?)

IMMARKUS

Images

Data Model

Knowledge Graph

Export

X-MARKUS

About

Help

Data Model

Entity Classes Relationships Image Metadata Folder Metadata

Use Entity Classes to annotate specific concepts or things with your annotations, and record details like the the material of an item, or the number of legs on an animal.

Entity Class	Display Name	Description
location_site	site	Excavated/surveyed area
excavation	excavation	
survey area	survey	
obj_main	main object	
grave	grave	

[Create New Entity Class](#) [Import Model](#)

3. What is a data model? (should I use data models; how?)

4. Visualising annotations

(what is knowledge graph and how do I use it for exploring annotation data?)

5. Exporting annotations and models (what other kinds of analysis can I do with image annotations?)

Timeline

4:00-4:40 Introduction

Collecting (IIIF) Images

Annotating Images

Transcribing Text from Images

4:40-5:00 Questions and Break

5:00-5:40 Annotation Data Models

Metadata Models

Visualising and Querying Annotations in Knowledge Graph

Exporting Annotations

5:40-6:00 Discussion and Questions

IMMARKUS

Back to Gallery

Add image | Selection | List | Metadata

Move | Rectangle | Selection | List | Metadata

gate

id: datong_southern_pass

name: southern_pass

location: datong

TGАЗ: hvd_115139

descriptor: 南至懷仁縣七十里

color:

pattern: plain

sanzhentushuo_datongche

taiyuanzhigar

shanxidatong

gate

id

name

location

TGАЗ

descriptor

color

pattern

Hilde De Weerdt, Rainer Simon, Lee Sunkyu, Iva Stojević, Dawn Zhuang, Meret Meister, and Xi Wangzhi. IMMARKUS: Image Annotation in X-MARKUS. 2024-. immarkus.xmarkus.org

05 Annotating Images

fonziedw edited this page 4 days ago · [105 revisions](#)

To add annotations to your images, click the subfolder containing the images you want to work with in the image gallery. This will open the images in the folder, and you can start annotating.

Overview

The following functionalities are available in the annotation mode (numbers correspond to those in [Figure 1](#))

1. [Add an image](#)
2. Browse the images in the same subfolder / click arrows to display the previous or next image
3. Rotate image 90° to the left or to the right
4. Zoom in or zoom out of an image
5. Undo/redo
6. Move (pan) across the image
7. [Draw a shape](#) (select box, polygon, ellipse, or path)
8. Copy image snippet (exact shape or bounding box) to clipboard
9. Hide annotations
10. Add relation between two entities
11. Smart tools for selecting irregular shapes or automatically transcribing an image (or parts of it) with AI models
12. See details of the currently selected annotation
13. List your annotations
14. Add or edit [individual image metadata](#)

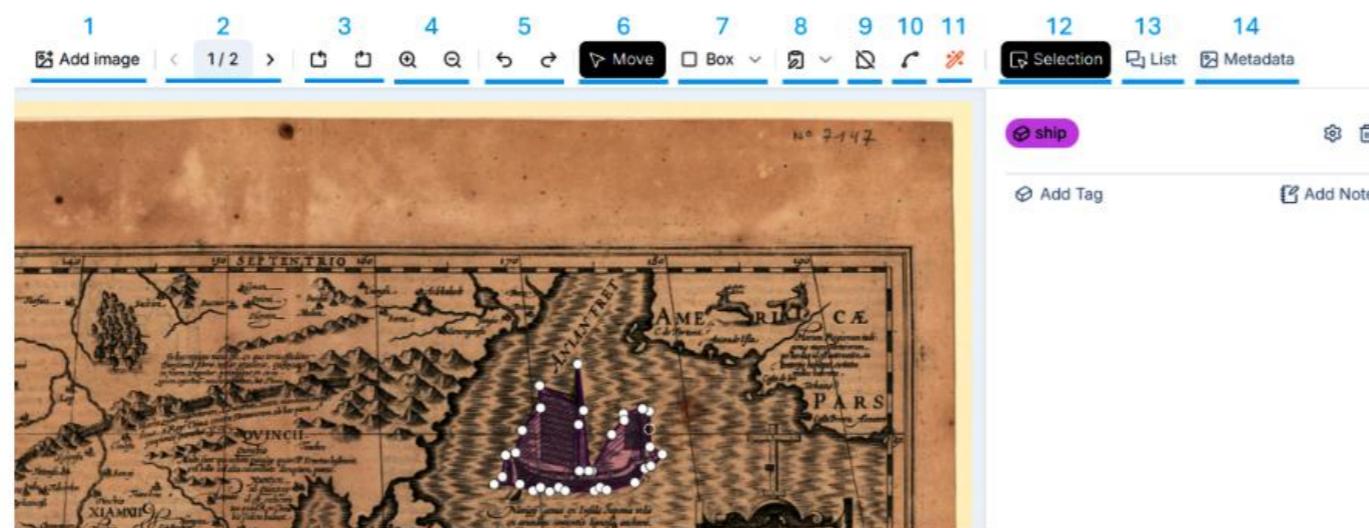


Figure 1. Workspace in Annotation Mode

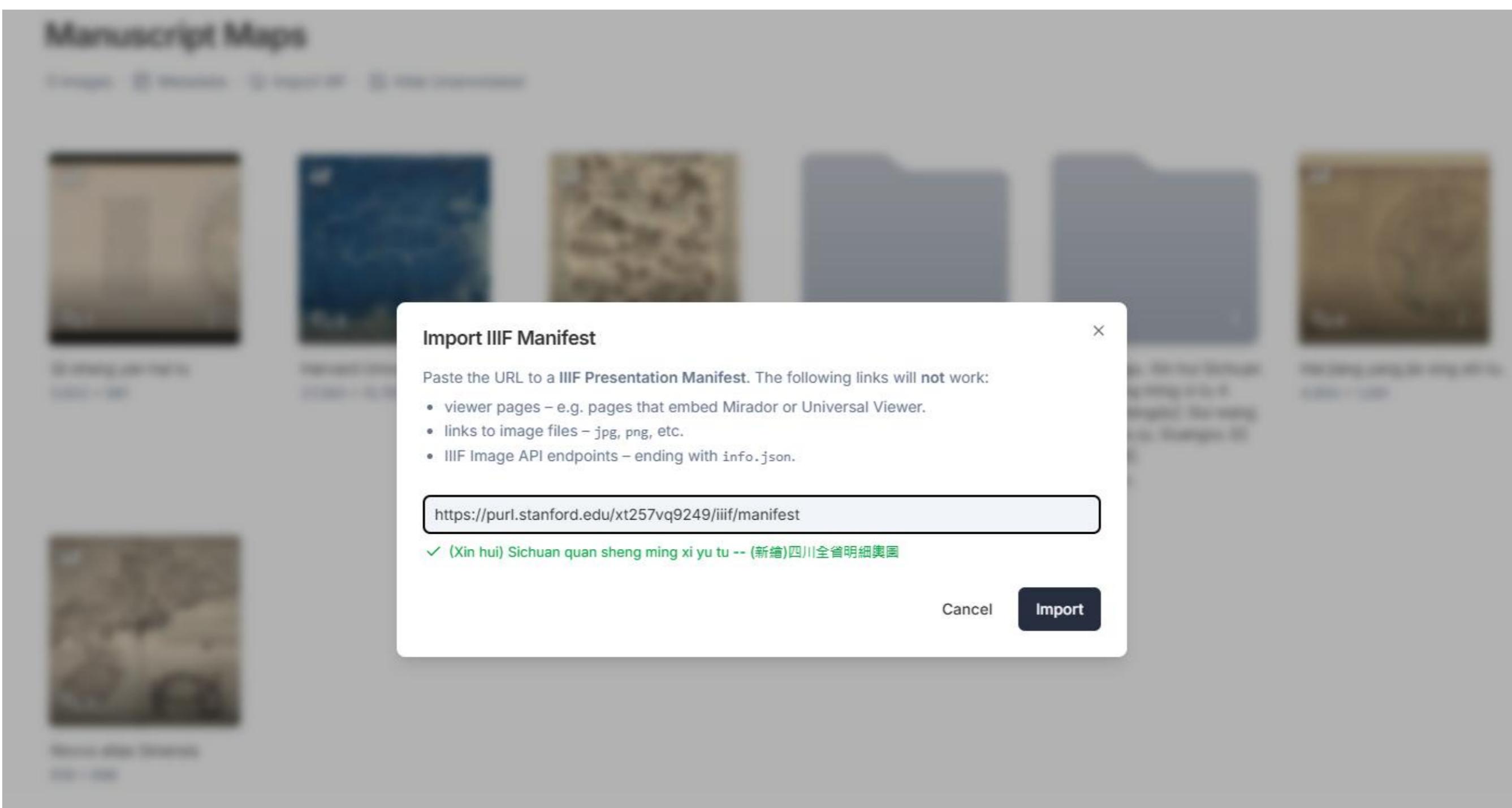
Recommended reading:

- De Weerdt Hilde. “Creating, Linking, and Analyzing Chinese and Korean Datasets: Digital Text Annotation in MARKUS and COMPARATIVUS,” *Journal of Chinese History* 4.2 (2020): 519-527. <https://doi.org/10.1017/jch.2020.23>
- De Weerdt, Hilde, Brent Ho, Rainer Simon, Lee Sunkyu, Sander Molenaar, Xi Wangzhi, Dawn Zhuang, Iva Stojević, Tu Hsieh-Chang, Taylor Zaneri, Lin Nung-yao, and Meret Meister. **“Contextual Semantic Text and Image Annotation in the MARKUS Environment.”** *Digital Humanities Quarterly* 19.4 (2025).
<https://dhq.digitalhumanities.org/vol/19/4/000808/000808.html>

On Image Annotation: Uses

- to analyze “large” image corpora by user-defined properties, relations between properties, and metadata
- to allow for linking to external “authorities” (e.g., geo-referencing)
- to transcribe and translate text in images of manuscripts, paintings, printed books, maps, objects, graphs and diagrams, etc.
- to compare transcriptions and translations, edit, *and save them for later use*
- to link text and image sources of different kinds and use them jointly in historical analysis and interpretation
- other uses: create training data for text and image recognition, etc.
- creative uses: logs with images and snippets

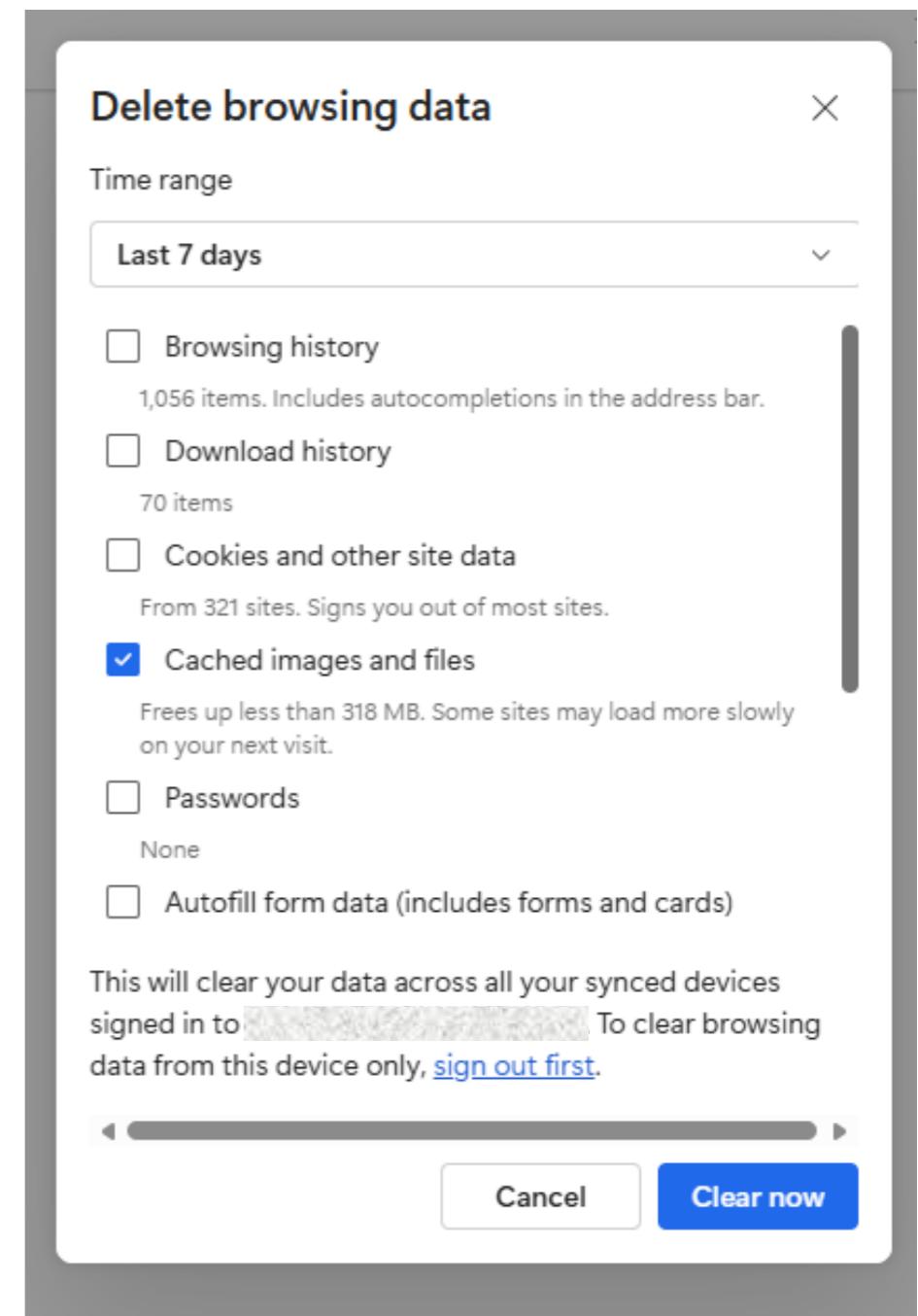
1. Collecting (IIIF) Images



Before We Start

1. Open your browser and clear your browser cache

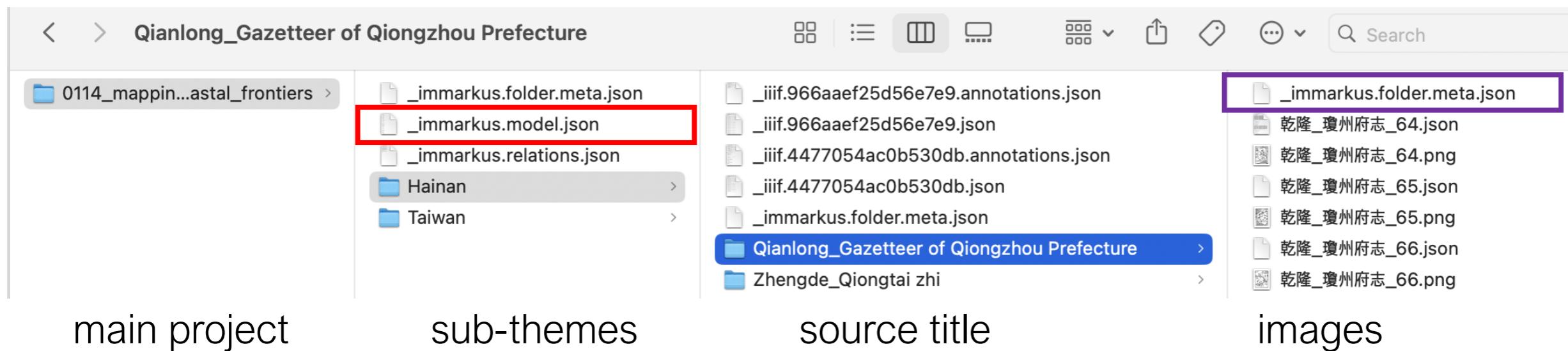
- On **Chrome** : Go to : > **Settings** > **Privacy and security** > **Delete browsing data** → Select **Cached images and files** > Click **Delete data** , then restart the browser
- On **Edge** : Go to ... > **Settings** > **Privacy and security** > **Clear browsing data** → Select **Cached images and files** > Click **Clear now**, then restart the browser



Before We Start

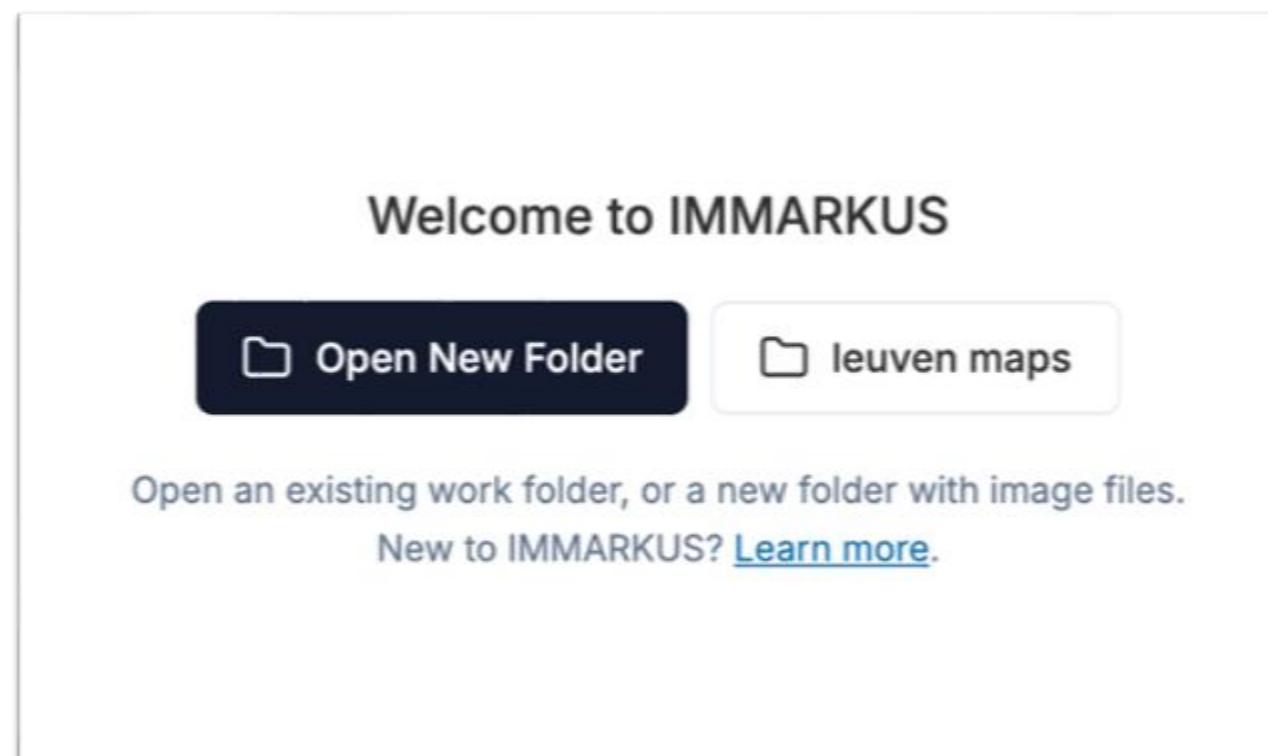
2. Prepare a **folder** on your computer

- Create an **(empty) folder** even if you plan to use only IIIF images
- This folder may also contain **locally saved image files (.jpeg or .png)** if you use both IIIF and local images
- In case you use locally saved images, you may organize images into **one or more subfolders** based on shared features (e.g. same publication)

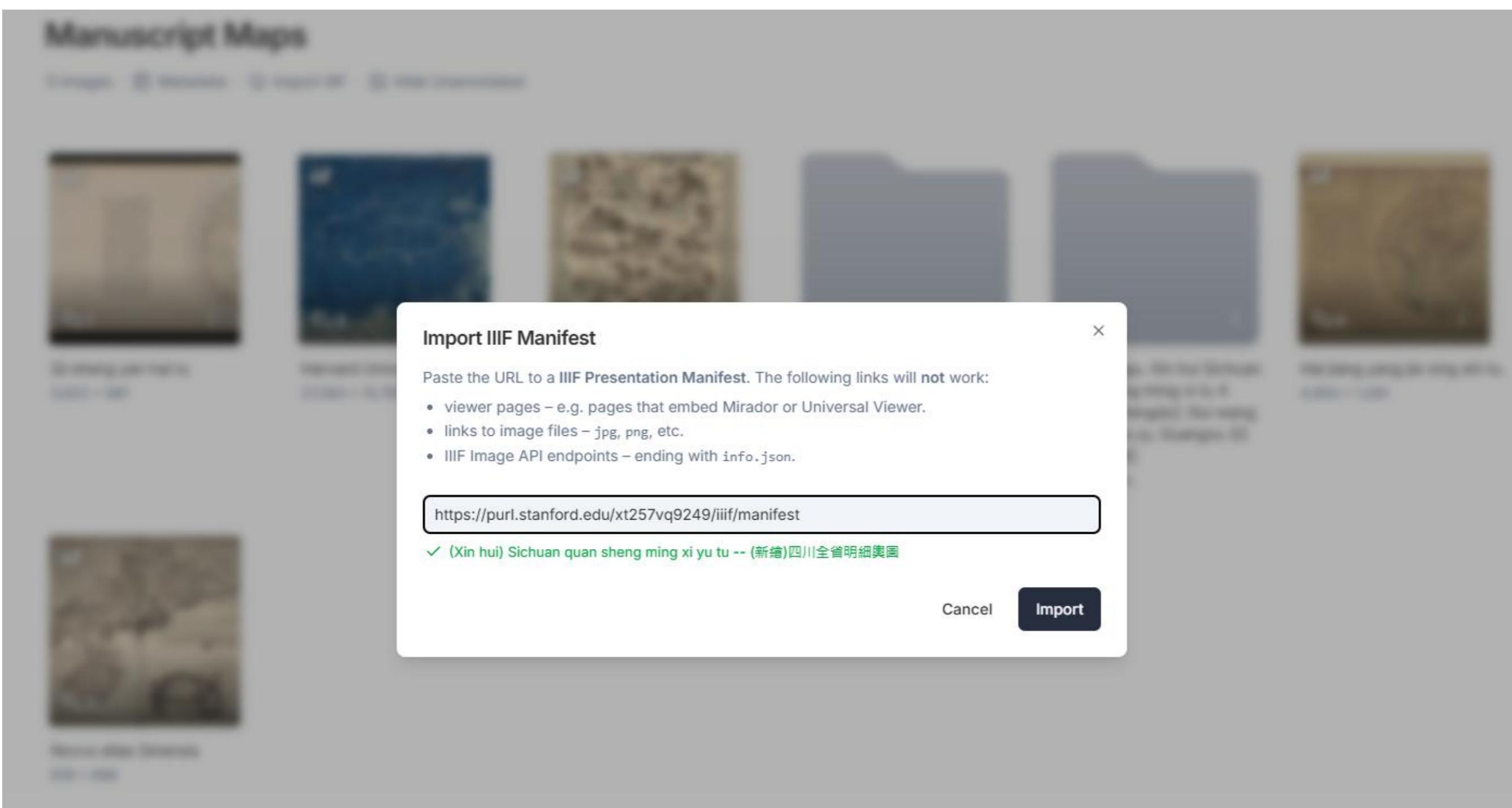


Importing a Folder

1. Go to **IMMARKUS** immarkus.xmarkus.org
 - Use **Chrome** or **Edge**
2. Click **Open New Folder** and select your image folder
3. Click **Edit Files** to allow IMMARKUS to edit the files



Importing IIIF URLs

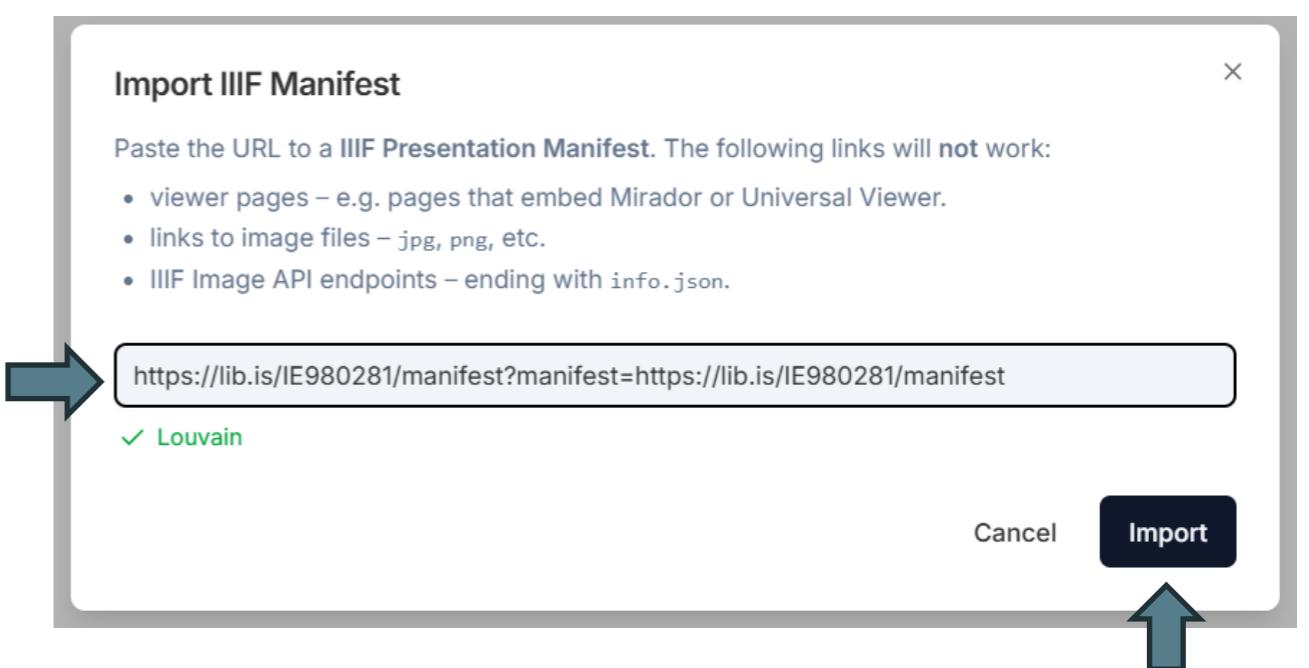
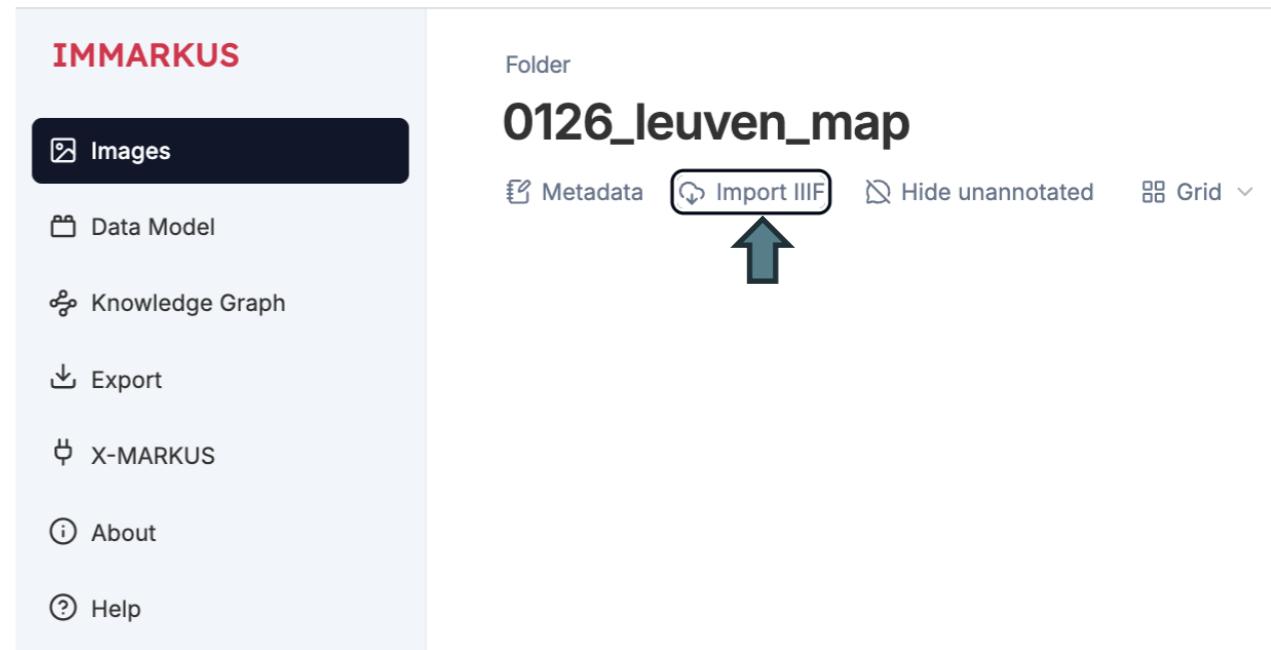


Importing IIIF URLs

1. Click Import IIIF

2. Paste the URL to the dialogue box

3. Click Import



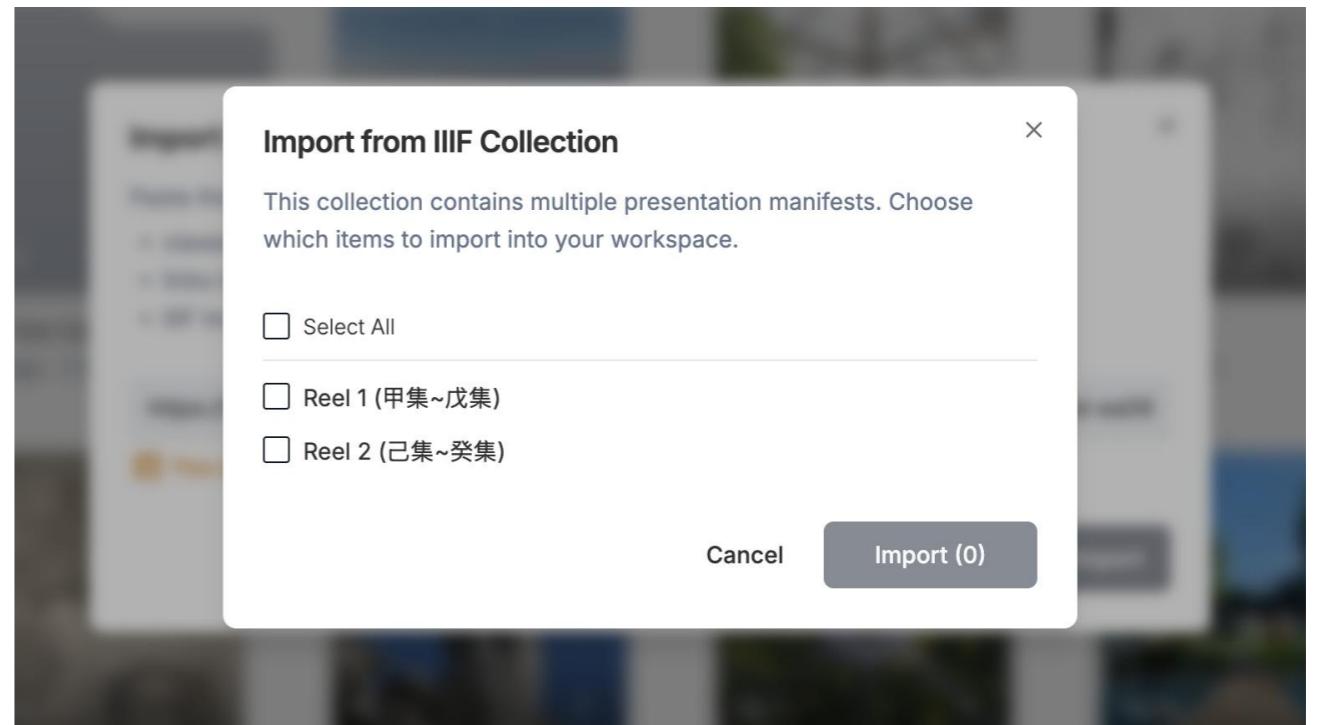
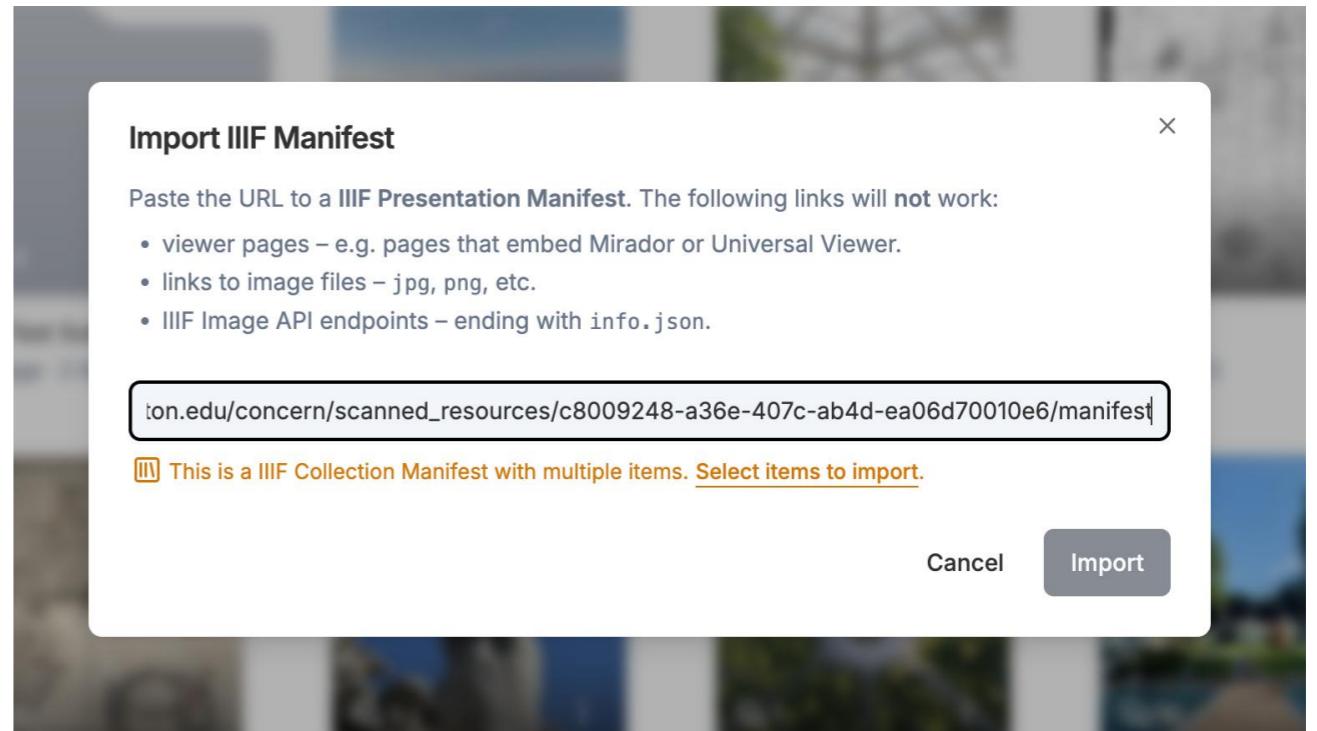
Supported Manifest Types

1. Presentation API 2 & 3

2. Collection manifests

3. Full support for simple image and Level 0 (!)

4. But **NOT** Image API directly (info.json URLs)

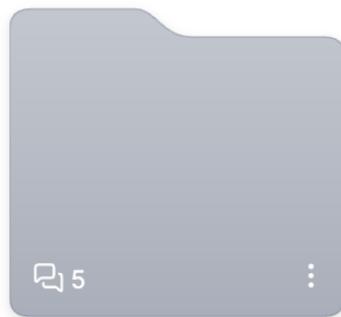


Importing IIIF URLs

0114_mapping_coastal_frontiers >

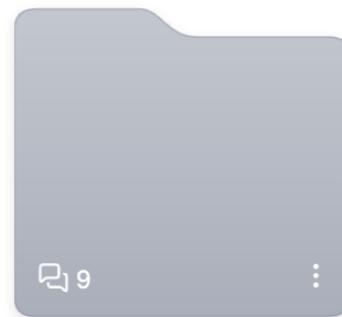
Taiwan

 Metadata  Import IIIF  Hide unannotated  Grid ▾



Carte de ce qui appartient...

1 IIIF



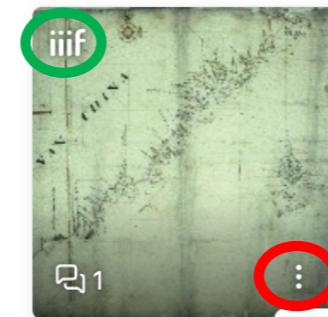
Taiwan qianhou shantu_LOC

1 IIIF



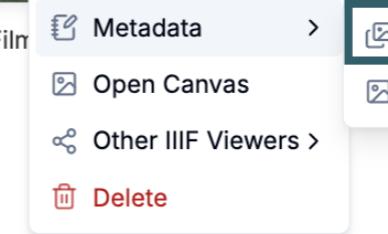
Bodleian Library MS.Selde...

11 Canvases



Bodleian Library Film

1,818 x 1,228



BnF, département Cartes ...

3 Canvases

 IIIF  My 

Homepage

[View on Digital Bodleian](#)

Title

[Formosa Strait by Anon. Dutch, early 18th century]

Shelfmark

Bodleian Library Filmstrip Roll 235.5, frame 17

Language

Dutch

Date Statement

early 18th century

Description

Portolan chart joining three places of interest to the Dutch: Canton, Taiwan, and Amoy

Extent

1015 x 710 mm

Extent

35mm slide

Collection

Maps and Atlases

Importing IIIF URLs

IMMARKUS

practice >  Andreæ Vesalii Brvxellens... >

Table of Contents

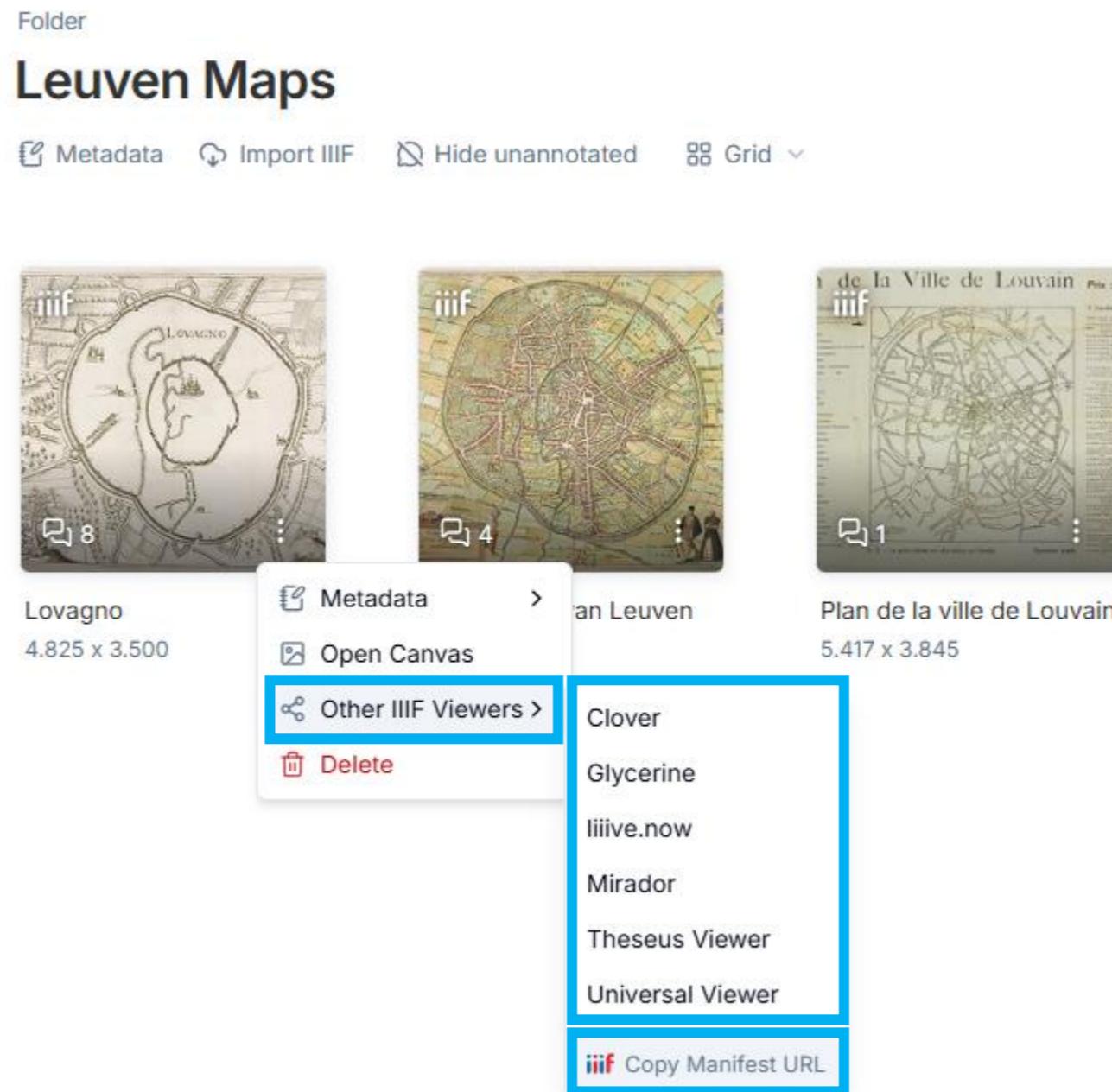
 Metadata ·  Other IIIF Viewers ·  Hide unannotated ·  Grid · 

iiif	iiif	iiif	iiif	iiif	iiif
 0	 0	 0	 0	 0	 0
Binding	Title	Ad divm Carolvm Qvintvm ... Andreæ Vesalii ... Præfatio	Ioanni Oporino ... amico chariBimo suo	Liber primvs, iis qvæ vniversvm corpvs sustinent ac suffulciunt, quibusq; omnia stabiliuntur & adnascuntur, dedicatus [The bones and cartilages]	Liber secvndvs, ligamentis ossa cartilagineq; inuicem committentibus, & musculis uoluntariorum motum instrumetis, dedicatus ... [The ligaments and muscles]
 0	 0	 0	 0	 0	 0
Liber tertivs, qvo venarvm arteriarvmqve per uniuersum corpus series describitur ... [The veins and arteries]	Liber qvartvs, nervis proprivs, ac ipsi peculiares figuras in capitum, quibus præcipuè conueniunt, fronte exhibens [The nerves]	Liber qvintvs, organis nvtritioni qvæ cibo potuq; sit, & dein propter partium connexum ac uiciniam instrumentis generationi famulantibus dedicatus ... [The organs of nutrition and	Liber sextvs, cordi ipsi'qve famulantibus organis dedicatus ... [The heart and associated organs]	Liber septimvs, cerebro principis animalis'qve facultatum sedi, & sensuum organis dedicatus ... [The brain]	Binding

 Exit

Tip

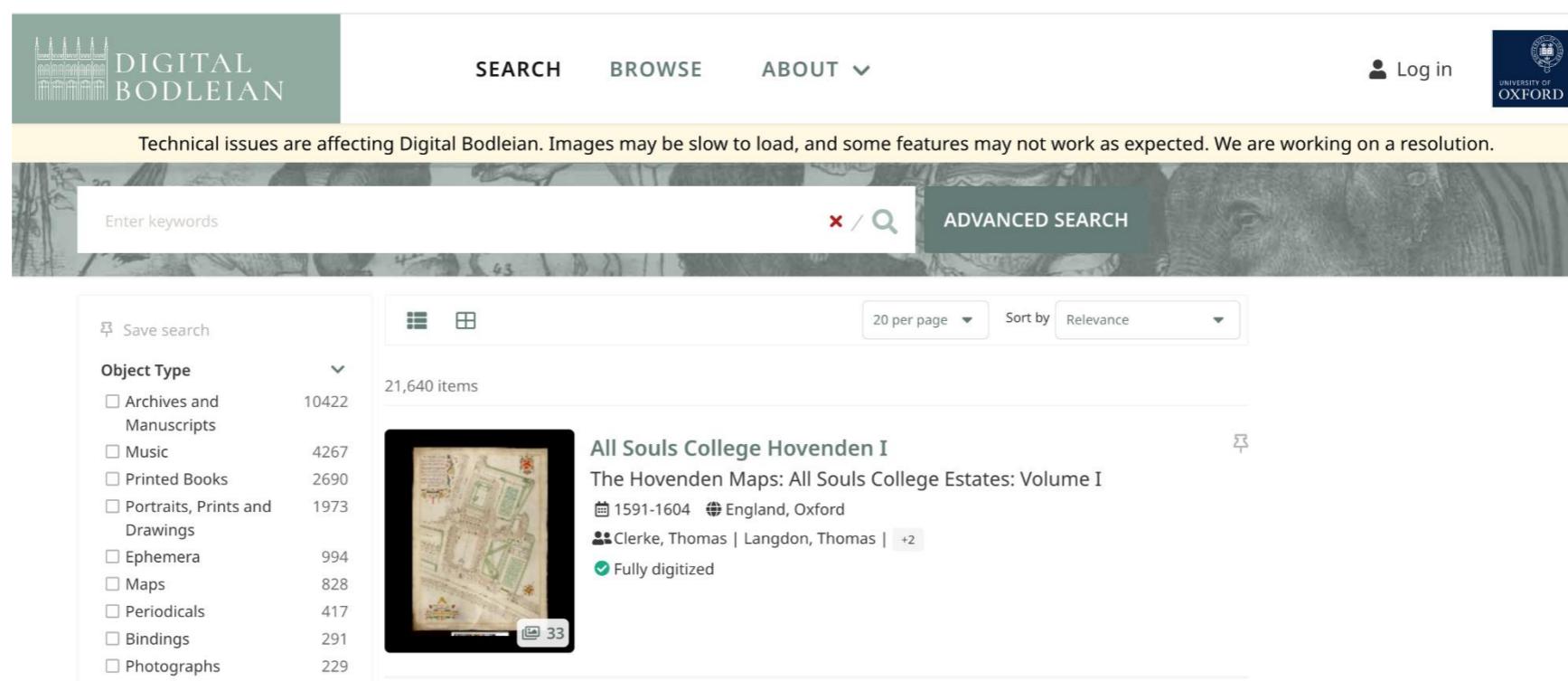
You can also open an imported IIIF manifest in other viewers or copy its manifest URL to validate it and compare its rendering across platforms



Practice 1: Importing IIIF URLs

- If you already have a IIIF URL you would like to work with, please copy and paste it into the chat so we can see what you plan to use (and troubleshoot if needed)
- If you do not yet have a IIIF URL, please visit **the digital collections of the Bodleian Libraries**, locate one or more IIIF resources, and import them into IMMARKUS

<https://digital.bodleian.ox.ac.uk/search/>



- Find and Paste a IIIF URL: ending with **/manifest** or **/manifest.json**

DIGITAL BODLEIAN

SEARCH BROWSE ABOUT

All Souls College Hovenden I

View in Mirador for advanced features

View in Universal Viewer

View IIIF manifest

I:01, recto

Image 1 of 33

The Hovenden Maps: All Souls College Estates: Volume I

Shelfmark: All Souls College Hovenden I

Holding Institution: All Souls College, University of Oxford

Related Resource: The Hovenden Maps - The Library, All Souls College

Date Statement: 1591-1604

iiif.bodleian.ox.ac.uk/iiif/manifest/acd9492e-25fa-4286-9fe6-e0cf2fc28106.json

Pretty print

```
["@context":"http://iiif.io/api/presentation/2/context.json","@id":"https://iiif.bodleian.ox.ac.uk/iiif/manifest/acd9492e-25fa-4286-9fe6-e0cf2fc28106.json","@type":"sc:Manifest","label":"All Souls College Hovenden I","description":"The Hovenden Maps: All Souls College Estates: Volume I","metadata":[{"label":"Homepage","value":<span><a href=\"https://digital.bodleian.ox.ac.uk/objects/acd9492e-25fa-4286-9fe6-e0cf2fc28106/\">View on Digital Bodleian</a></span>},{"label":"Related Resource","value":<a href=\"http://library.asc.ox.ac.uk/hovenden/\">The Hovenden Maps - The Library, All Souls College</a>},{"label":"Title","value":"The Hovenden Maps: All Souls College Estates: Volume I"}, {"label":"Shelfmark","value":"All Souls College Hovenden I"}, {"label":"Cartographer","value":"Clerke, Thomas"}, {"label":"Cartographer","value":"Langdon, Thomas"}, {"label":"Patron","value":"Hovenden, Robert"}, {"label":"Patron","value":"All Souls College, Oxford"}, {"label":"Date Statement","value":"1591-1604"}, {"label":"Place of Origin","value":"England, Oxford"}, {"label":"Description","value":"Estate maps of All Souls College, commissioned by"}]
```

Library of Congress

- IIIF manifests usually have in their URL structure: **/manifest** or **/manifest.json**
- Go to [IMMARKUS Wiki](#) for more tips

loc.gov/resource/lcnclscd.2012402171.1A001/?sp=4&r=-0.123,-0.039,1.245,0.772,0

image

LCCN Permalink
<https://lccn.loc.gov/2012402171>

Additional Metadata Formats
[MARCXML Record](#)
[MODS Record](#)
[Dublin Core Record](#)

IIIF Presentation Manifest
[Manifest \(JSON/LD\)](#)

[+ Rights & Access](#)

[+ Cite This Item](#)

loc.gov/item/2012402171/manifest.json

Pretty-print

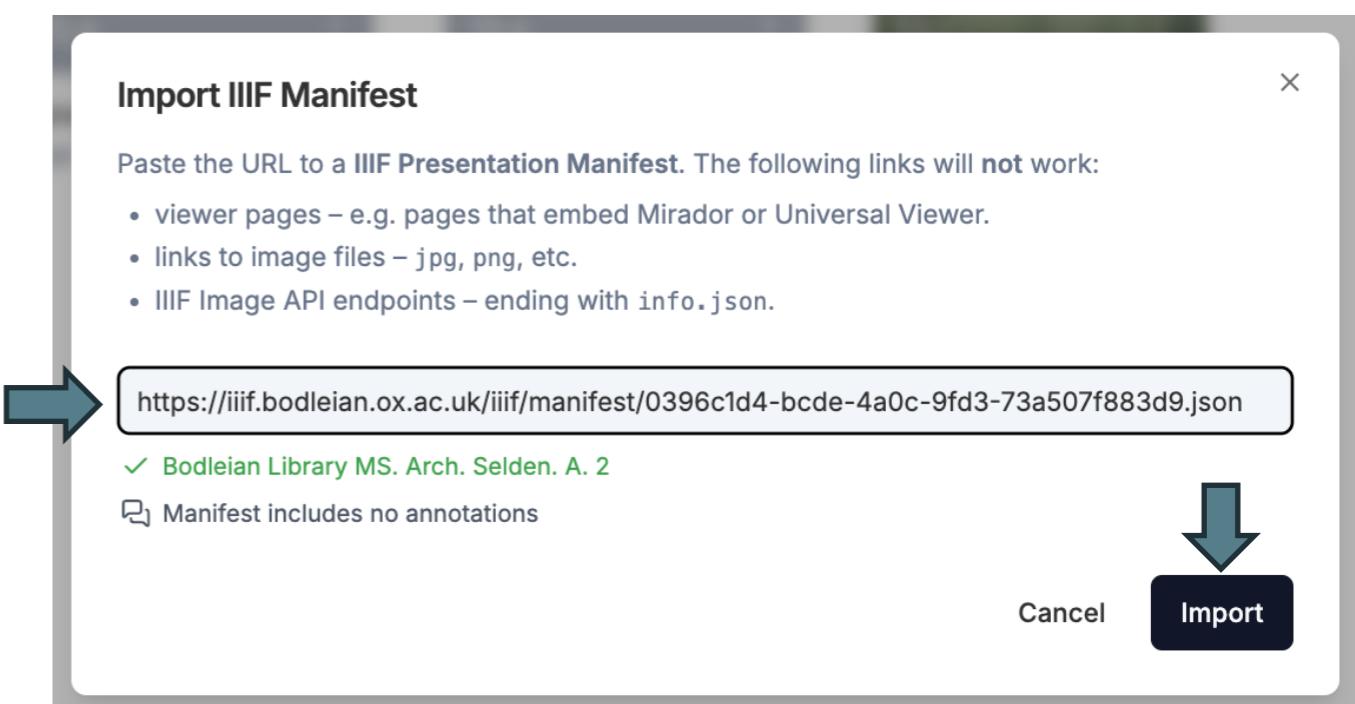
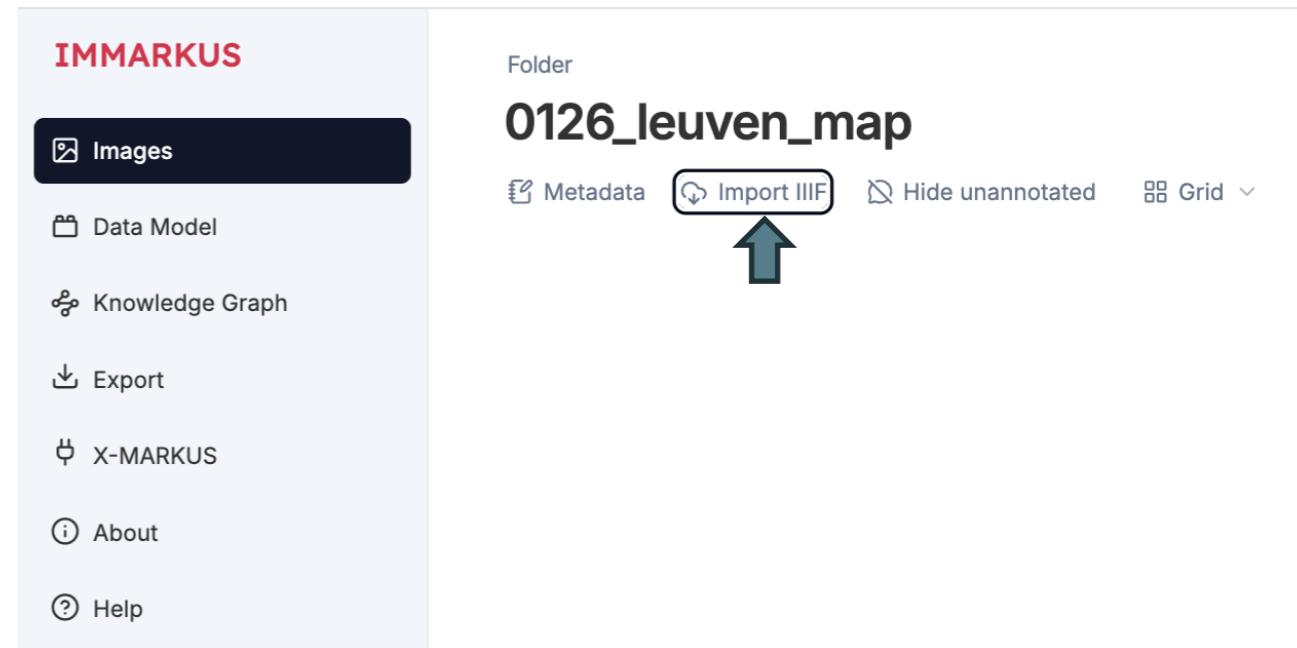
```
{"@context": "http://iiif.io/api/presentation/2/context.json", "@id": "https://www.loc.gov/item/2012402171/manifest.json", "paintings is a record of the land and people of the island of Taiwan more than a hundred years ago. The surfaces of the pa", "are thus an important resource for the study of the history of Taiwan. The album contains a preface in English by Arthur W", "Oriental Division (predecessor to the Asian Division) at the Library of Congress. World Digital Library.", "label": "Taiwan", "Citation Style", "value": "Hummel, A. W. & Chinese Rare Book Collection. (1747) <cite>Taiwan Fan She Feng Su</cite>. [", "https://www.loc.gov/item/2012402171/."], {"label": "MLA Citation Style", "value": "Hummel, Arthur W. , Sr., Writer Of Pref", "Manuscript/Mixed Material. Retrieved from the Library of Congress, <www.loc.gov/item/2012402171/>."}, {"label": "Chi", "cite": "Taiwan Fan She Feng Su</cite>. [China: s.n., between 1747 and 1800?, 1747] Manuscript/Mixed Material. https://www.lo", "of preface", "Chinese Rare Book Collection (Library of Congress)"], {"label": "Created Published", "value": "[[China : s.", "Subjects", "value": []}, {"label": "Online Format", "value": ["image"]}, {"label": "Item Url", "value": "https://www.loc.", "https://lccn.loc.gov/2012402171/marcxml", "format": "text/xml"}, {"@id": "https://lccn.loc.gov/2012402171/mods", "format": "sc:Sequence", "canvases": [{"@id": "https://tile.loc.gov/image-services/iiif/service:asian:lcnclscd:2012402171:1A000:00001/"}], "@type": "oa:Annotation", "motivation": "sc:painting", "on": "https://tile.loc.gov/image-services/iiif/service:asian:"}
```

Importing IIIF URLs

1. Click Import IIIF

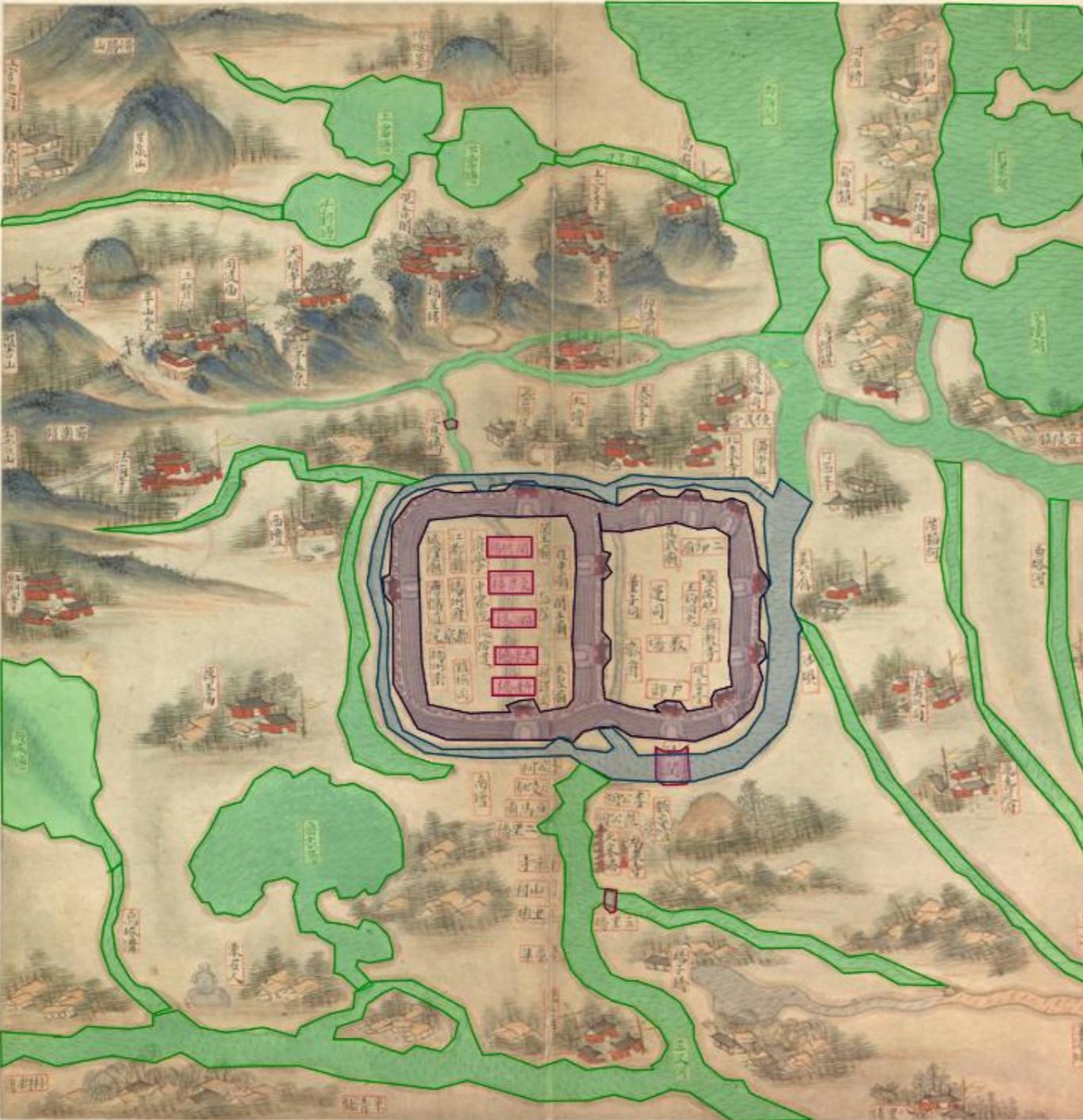
2. Paste the URL into the dialogue box

3. Click Import



2. Annotating Images

2



4 / 26

Add image | Move | Selection | List | Metadata

Sort by custom order | Show All

Drag cards to change order

city_wall **city_wall_outer_wall**

yangzhou_cheng · 揚州府城 ·
<https://maps.cga.harvard.edu/tgaz/placename...>

16:31 May 23

bridge

yangzhou Ying'en qiao · 迎恩橋 · unadorned ·
#9d9080 · basic bridge · extramural · no

10:50 May 23

bridge

yangzhou Chaoguan qiao · 鈔關 · striped ·
#816f59 · floating bridge · extramural · no

10:01 May 28

water

yangzhou Ivyang hu · 绿洋湖 · lake · extramural

11:00 May 23

water

yangzhou Fengsai hu · 莲塞湖 · lake ·
extramural

11:01 May 23

Image Gallery

IMMARKUS

Images

Folder

Leuven University Hall

Metadata Import IIIF Show unannotated Grid


véritable représentation de...
4,259 x 1,314


Université de Louvain - Le...
2,910 x 4,313

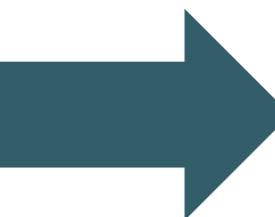

La Halle aux Draps
2,919 x 2,509

Export

X-MARKUS

About

Help



Overview

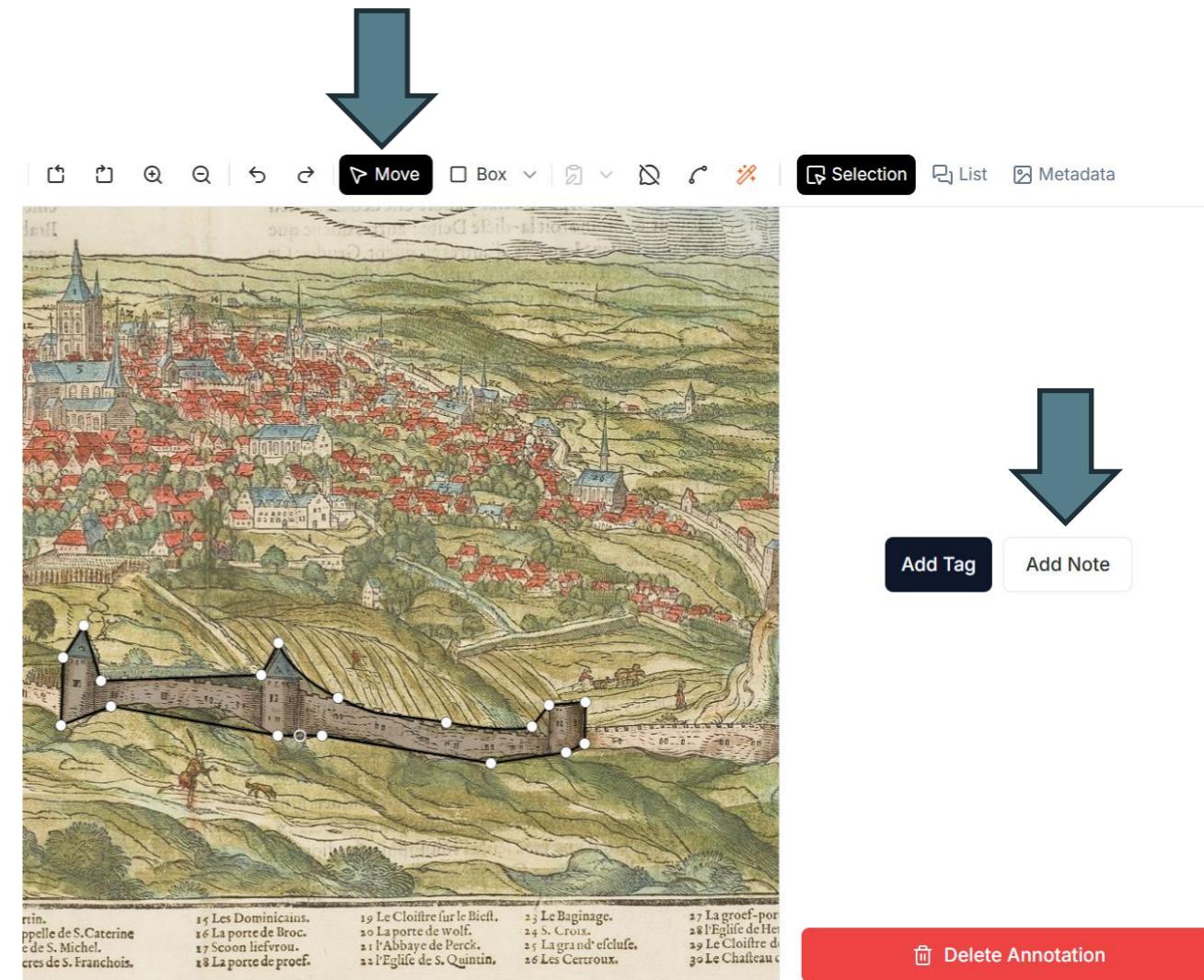
1 2 3 4 5 6 7 8 9 10 11 12 13 14



1. Add an image
2. Browse images in the same subfolder
3. Rotate image 90° left or right
4. Zoom in or out
5. Undo or redo
6. Move (pan) across the image
7. Draw a shape (select box, polygon, ellipse, or path)
8. Copy an image snippet to the clipboard
9. Hide all annotations
10. Use smart tools to select irregular shapes or transcribe text
11. Add a relation between two entities
12. View details of the currently selected annotation
13. List all annotations
14. Add or edit individual image metadata

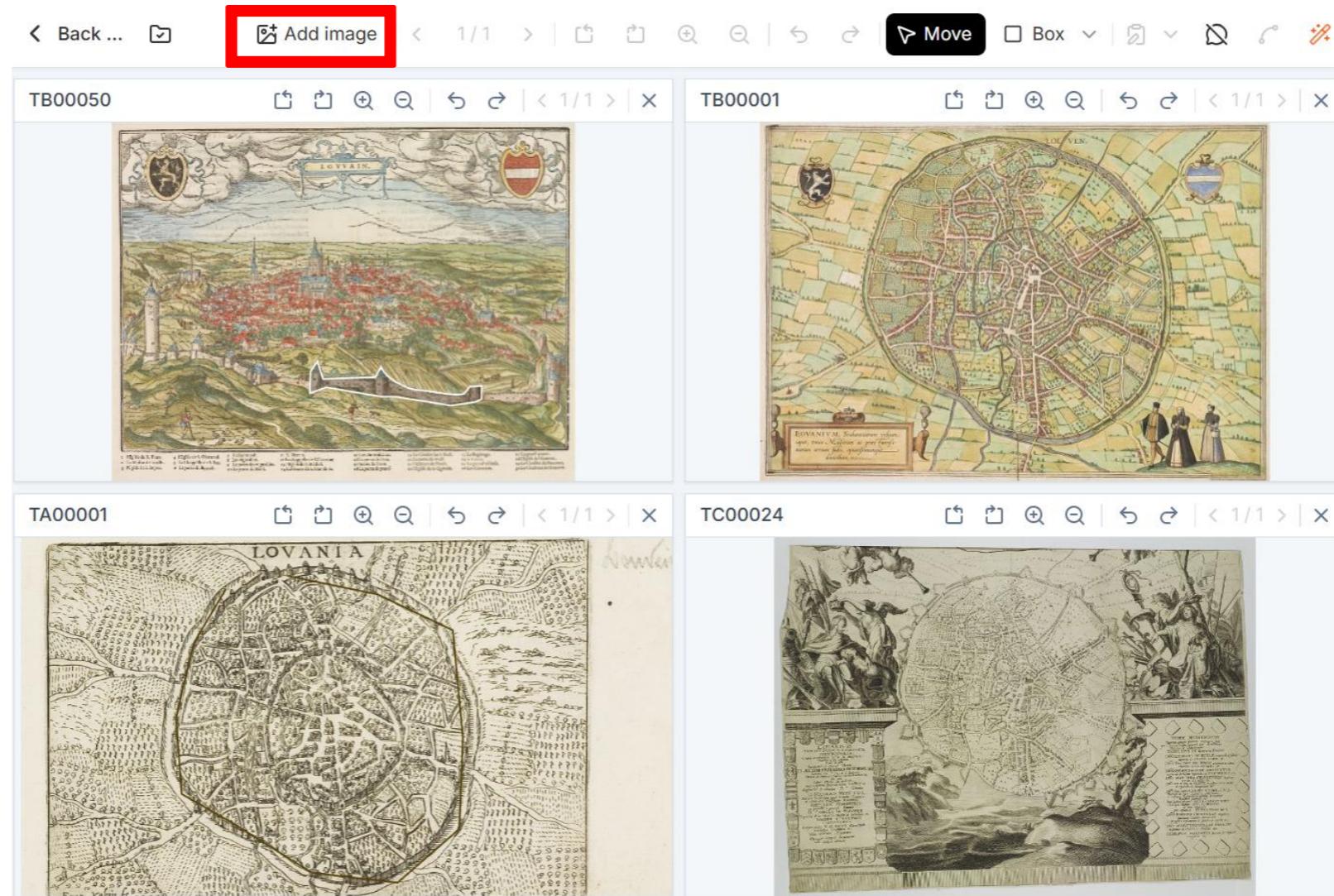
Drawing Annotations

1. Click the draw button (blue arrow) and select a shape (box, polygon, ellipse, or path)
2. Click once (without holding the mouse button) to start drawing
3. For polygons: each click adds a point
4. **Double click** to close the shape
5. Add Tag or Note



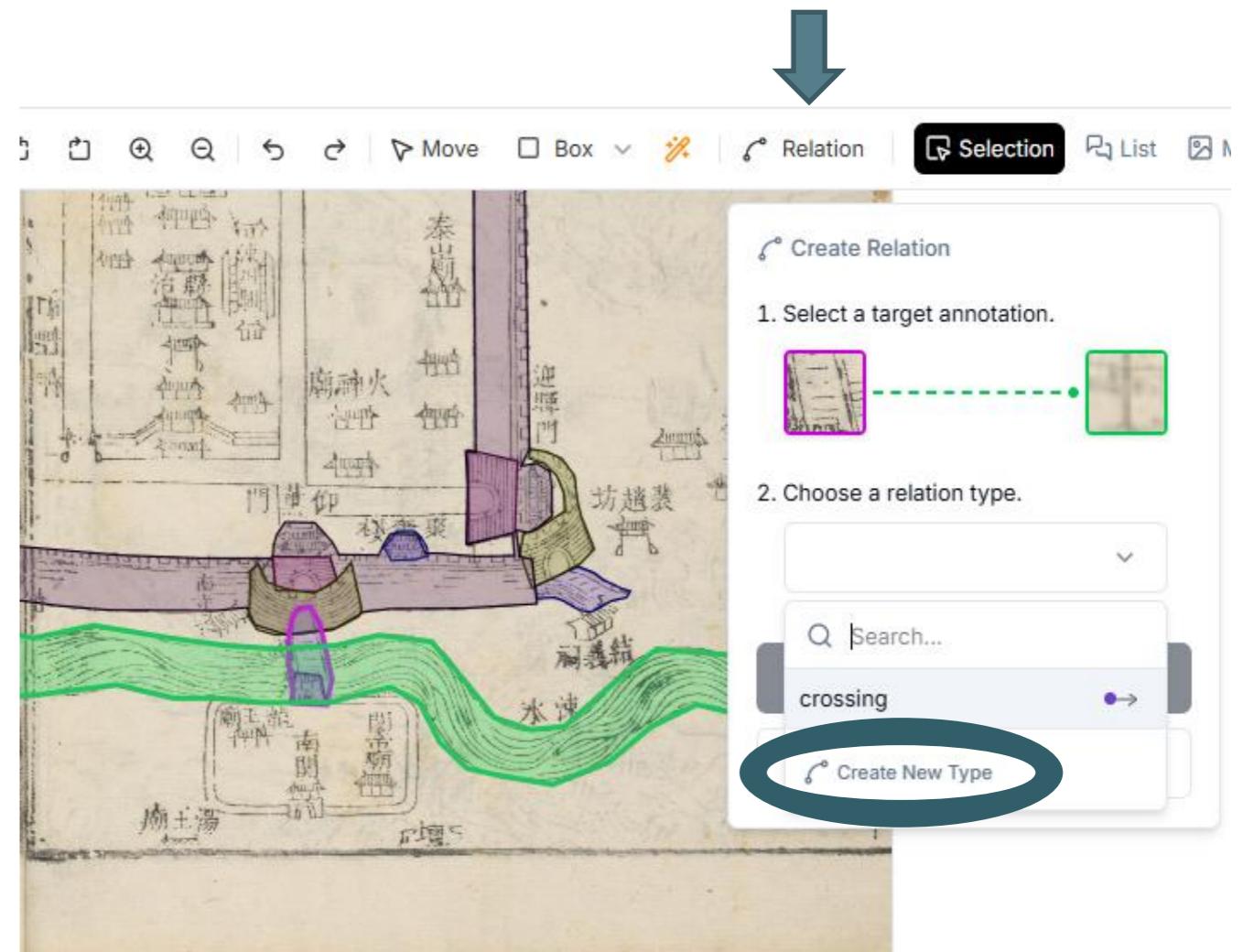
Annotating Multiple Images Simultaneously

1. Click **Add Image** and select the images you want to annotate together
2. You can drag and drop windows to adjust the layout



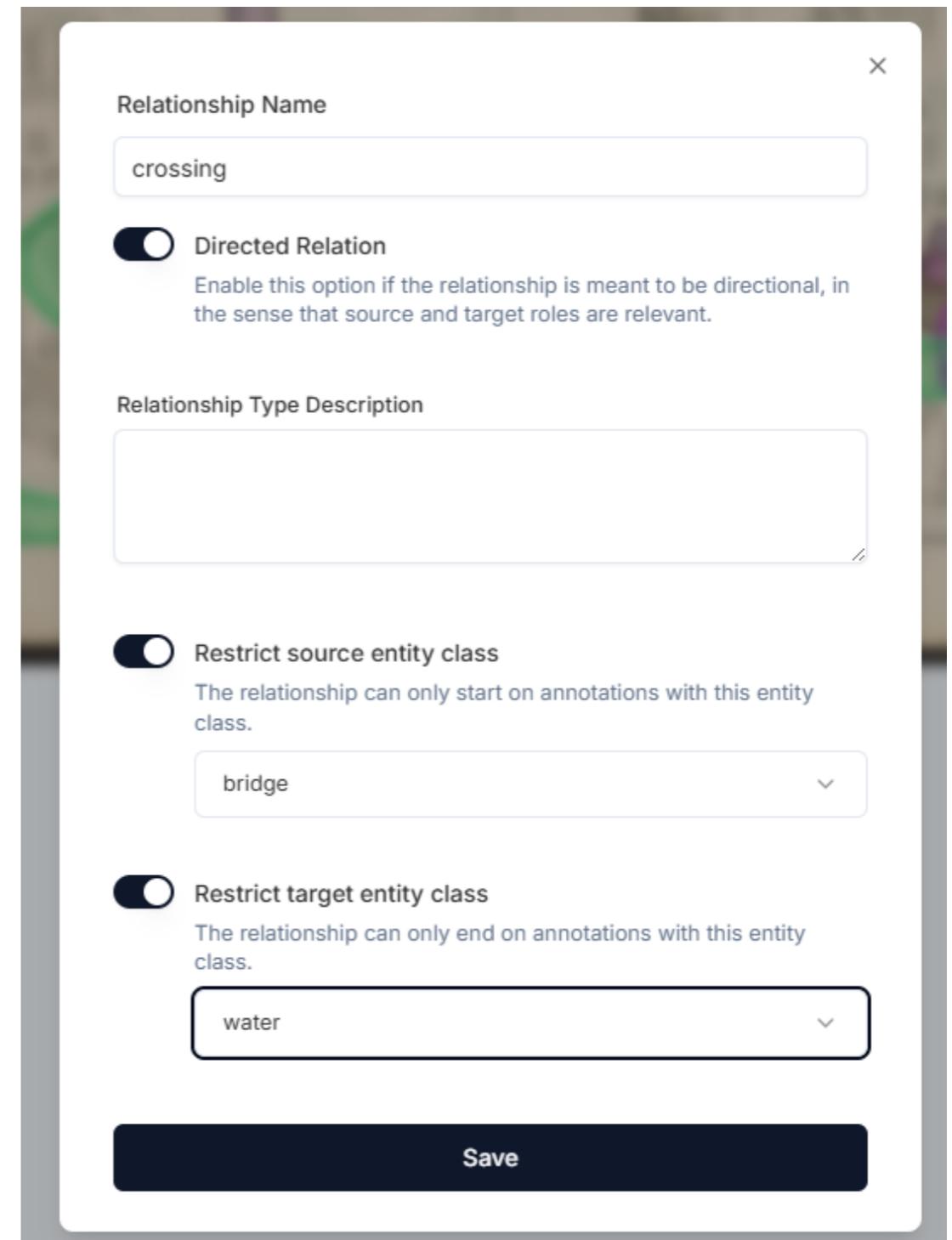
Defining Relationships between Image Regions

1. Select the **source** entity
2. Click **Relation** in the menu bar
3. Select the **target** entity
4. **Create New Type** or choose an existing relation type

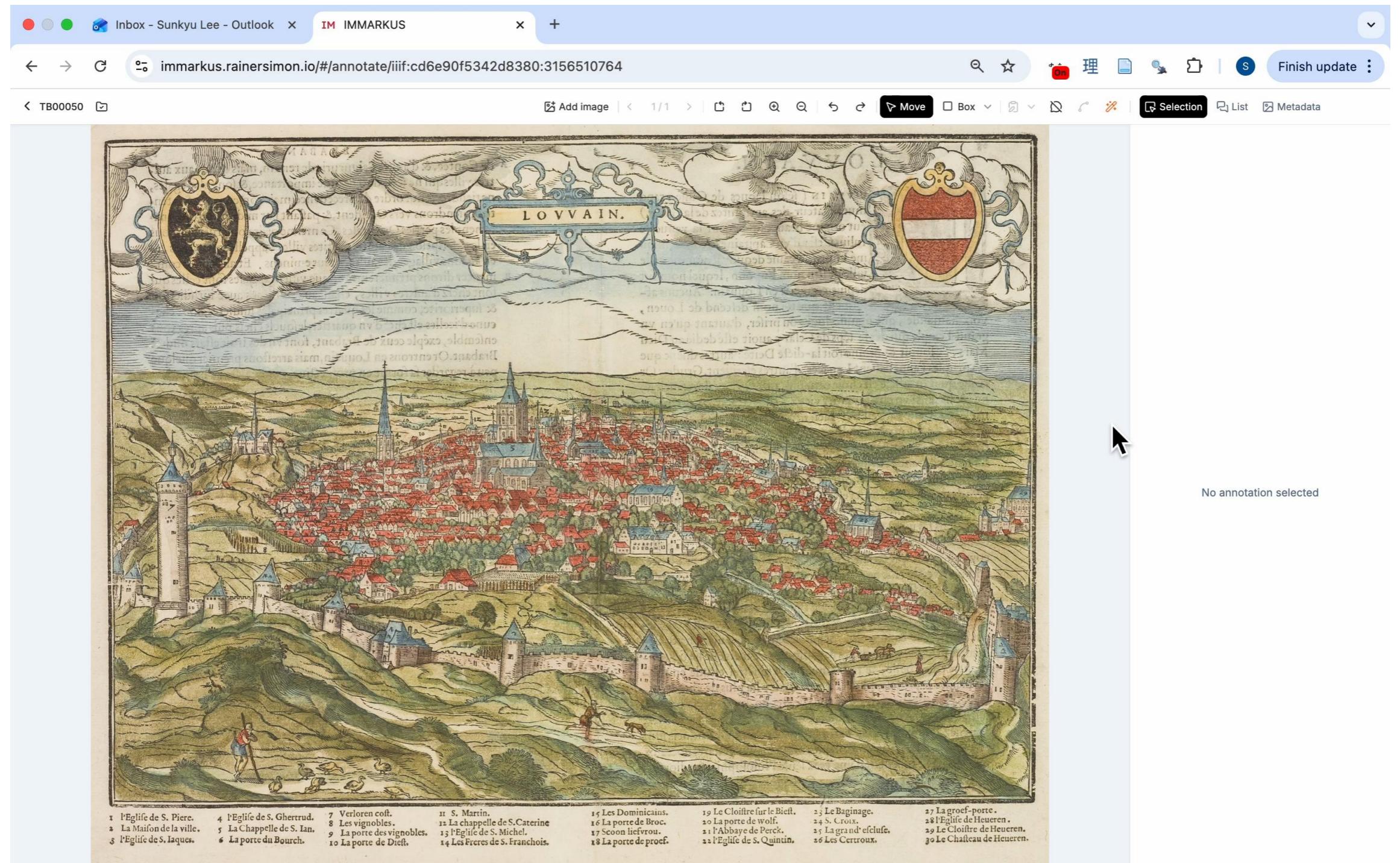


Defining Relationships

1. Enter the **Relationship Name**
2. (Optional) Indicate direction
3. (Optional) Set restrictions for **source** and/or **target** entity classes
4. Click **Save**

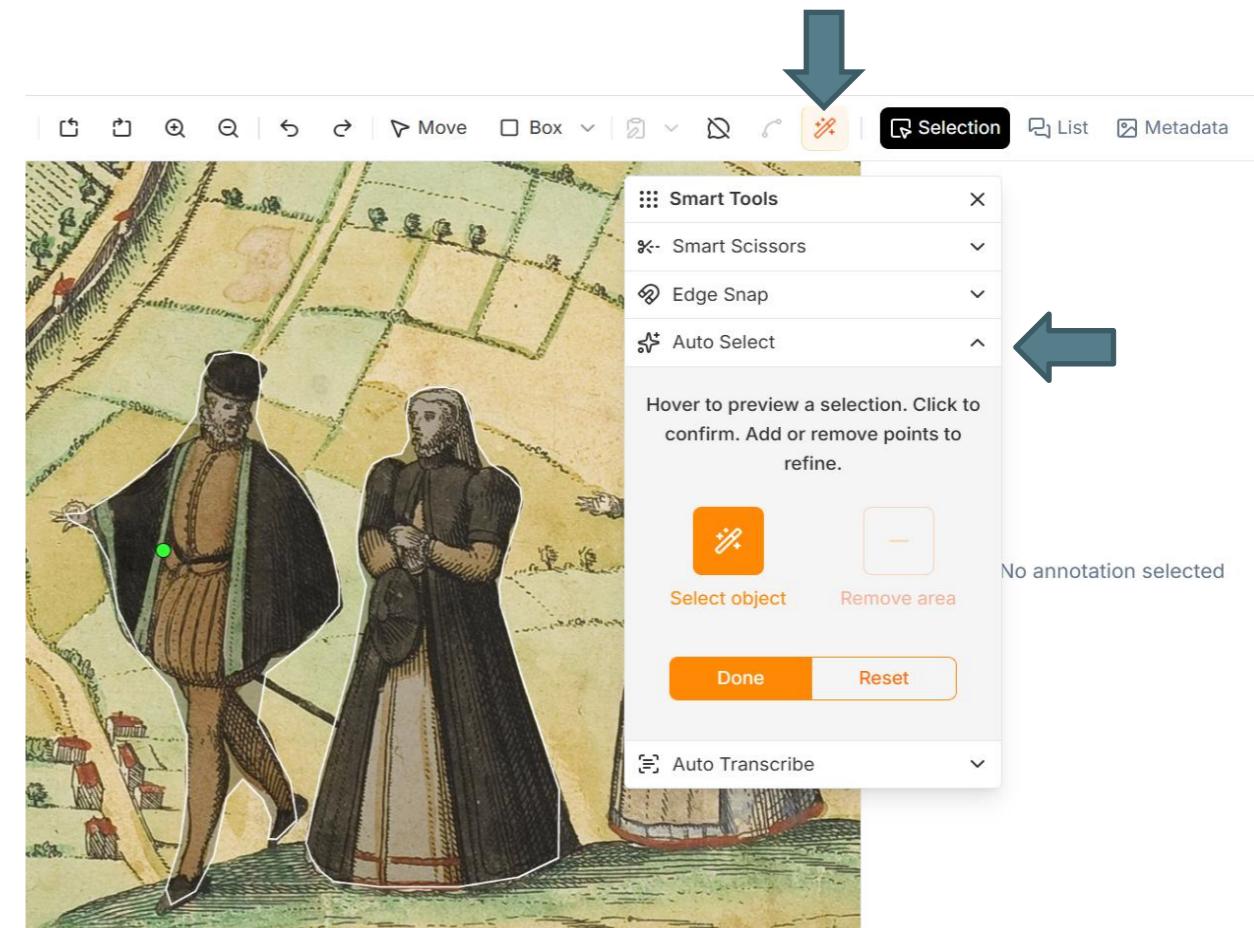


Smart Selection Tools: Auto Select

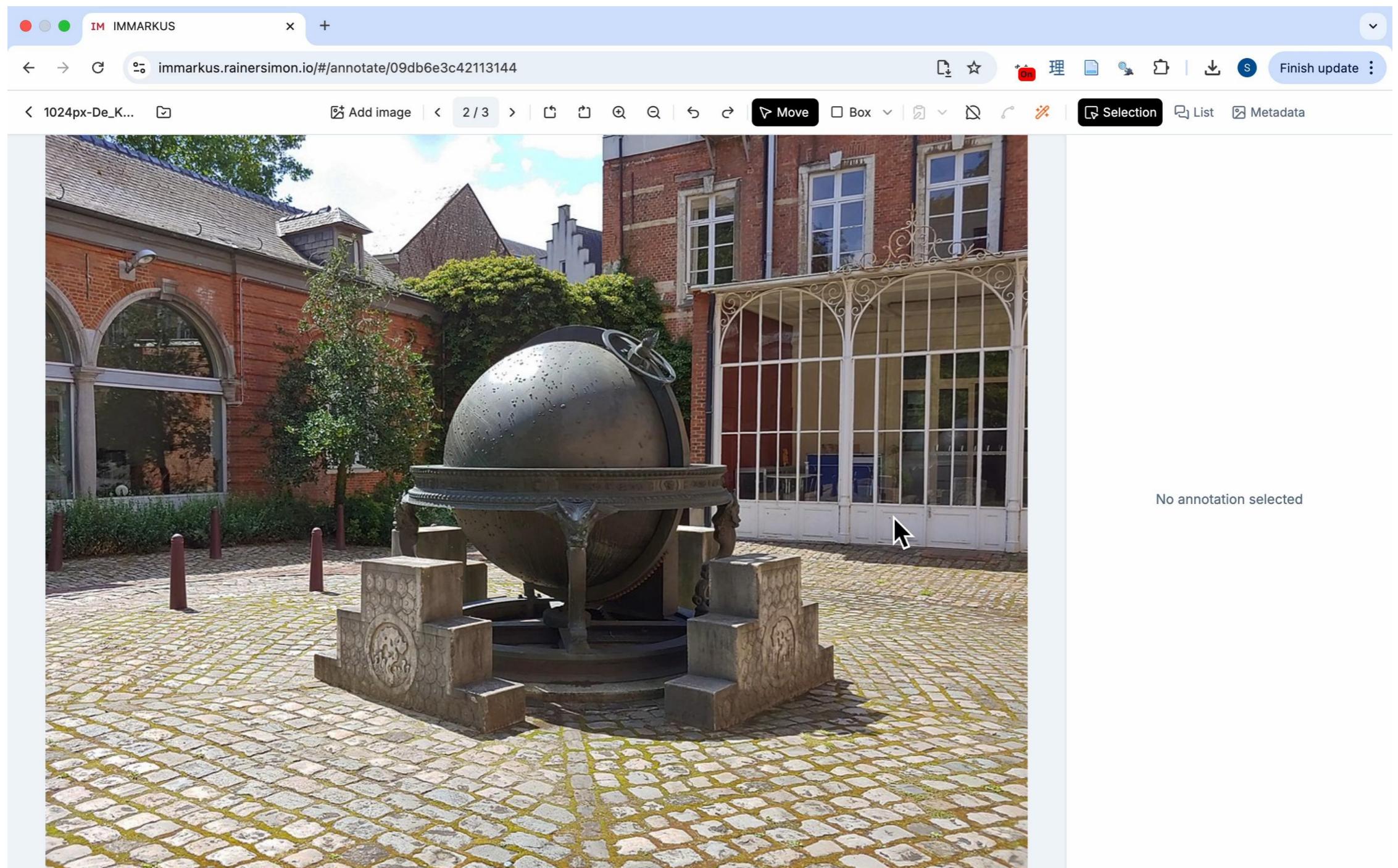


Smart Selection Tools

1. Click the  magic wand icon
2. Click **Auto Select** and **Select object**
3. Wait for the detection model to load
4. Hover to preview the detected object (highlighted area)
5. Click the highlighted area to confirm selection
6. To refine:
 - click nearby points to add areas (**green** dots)
 - click **Remove area** and then click areas (**red** dots) to exclude them
7. Click **Done** to generate a polygon
8. Click the X close icon to exit the tool



Smart Selection Tools: Smart Scissors



Copying Image Snippets



< 1024px-De_K... Add image < 2 / 3 > Move Box Selection List Metadata

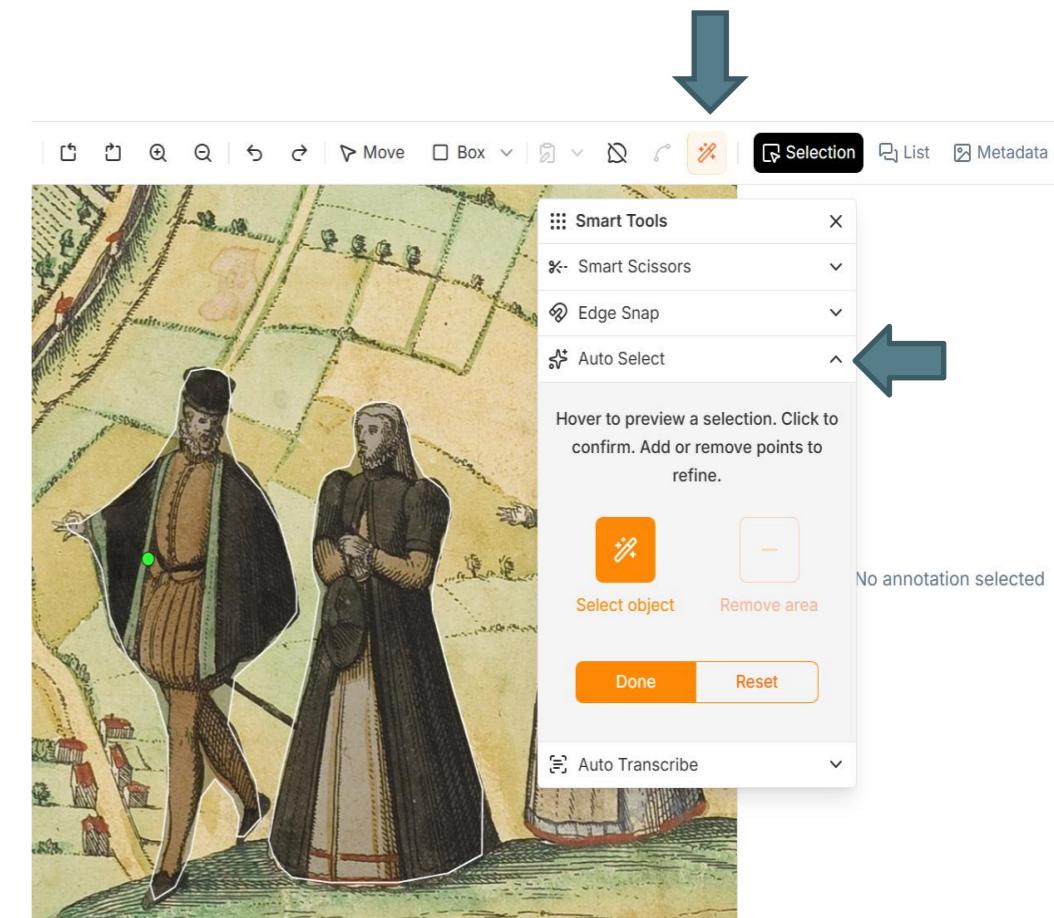


Practice 2. Annotating Images with AI assistance

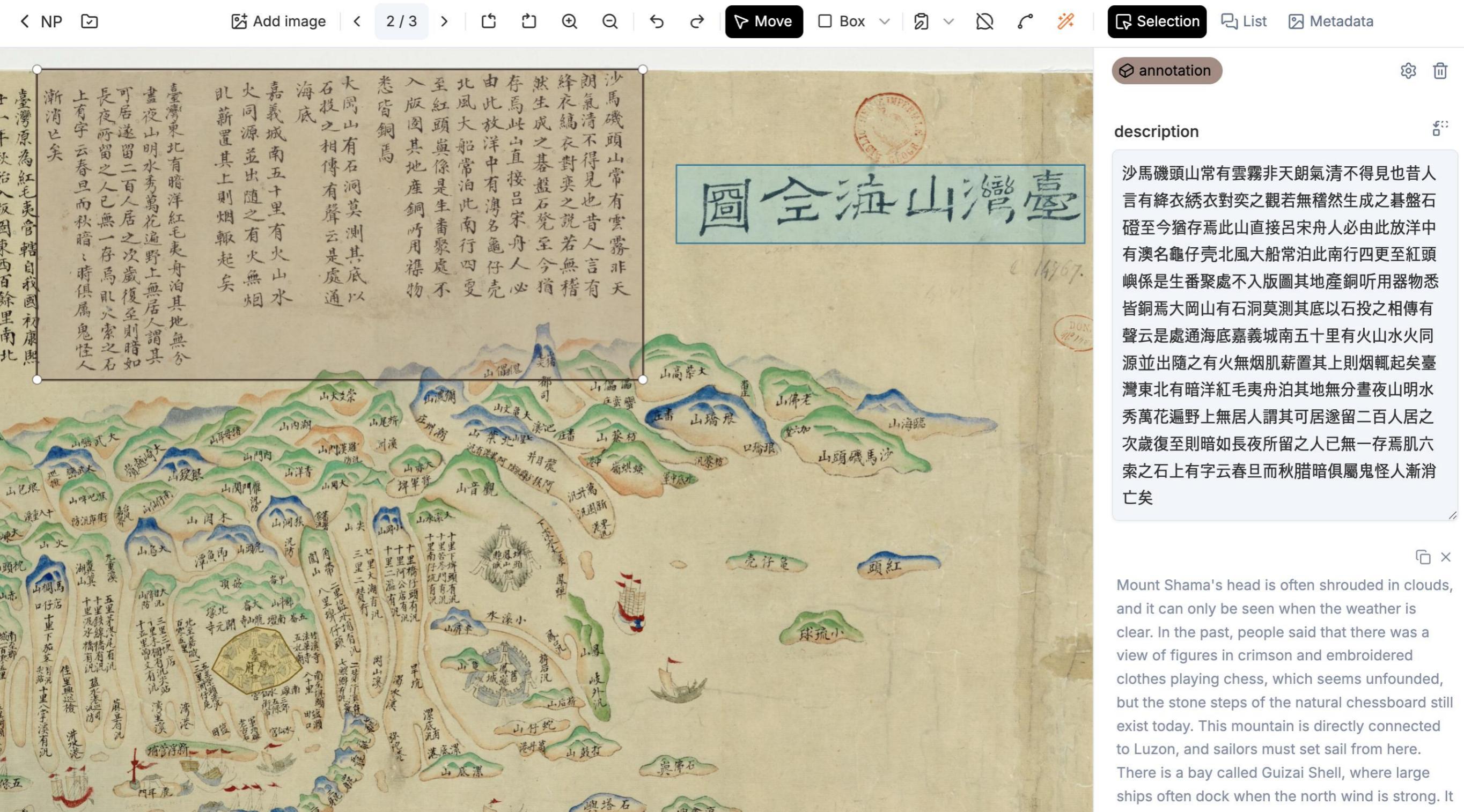
Use the **magic wand** to annotate images

1. Try using smart tools (**smart scissors** or **auto select**) to draw a shape
 - Wait for the detection model to load and hover to preview a selection
 - Click on the highlighted area to confirm
 - Click **Done**
2. Add tags or notes to the shape you drew
3. Click **List** to view all annotations

➤ Stuck? Try again after refreshing the page!



Transcribing (& Translating) Text from Images



Auto-Transcribe

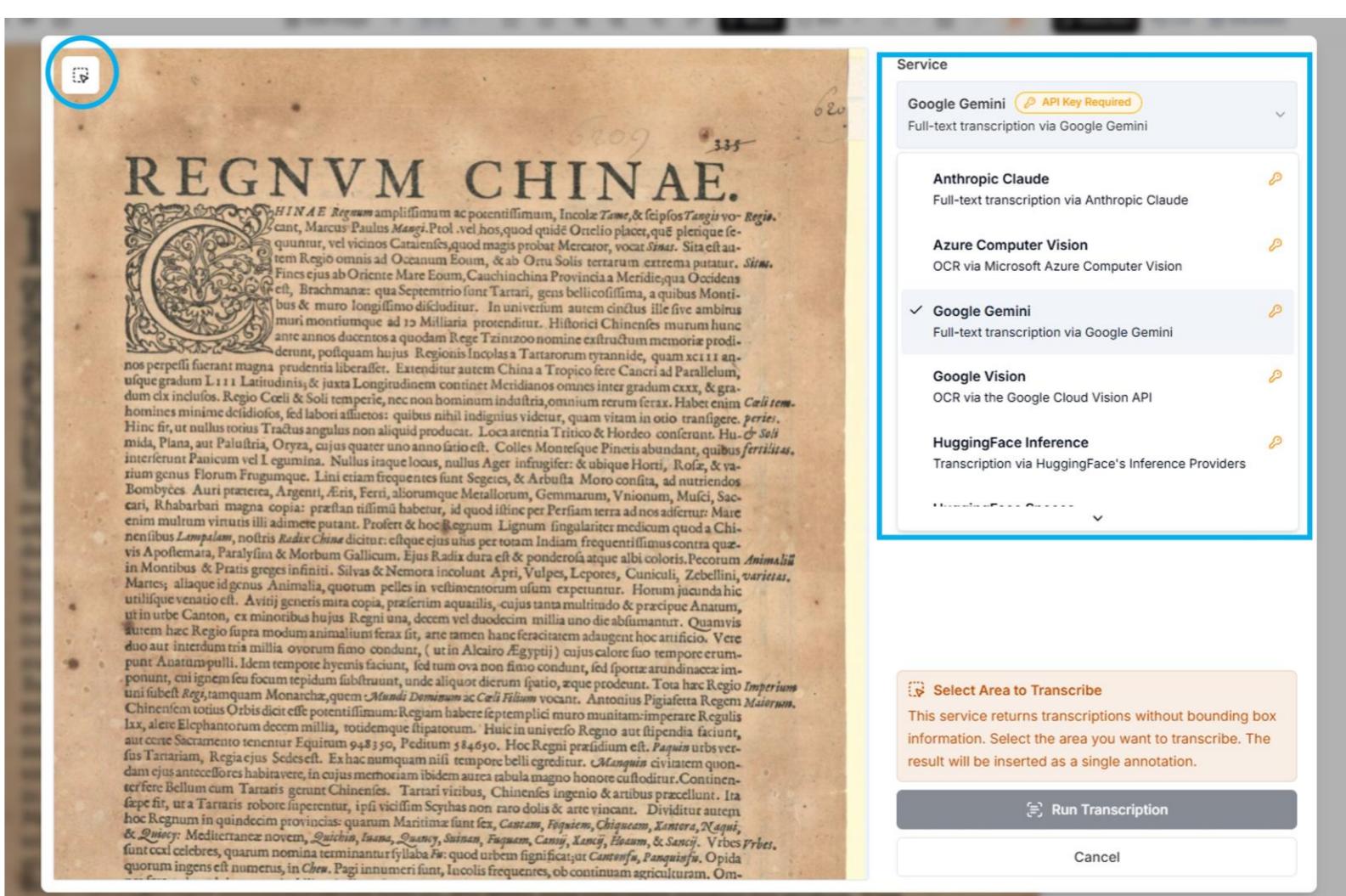
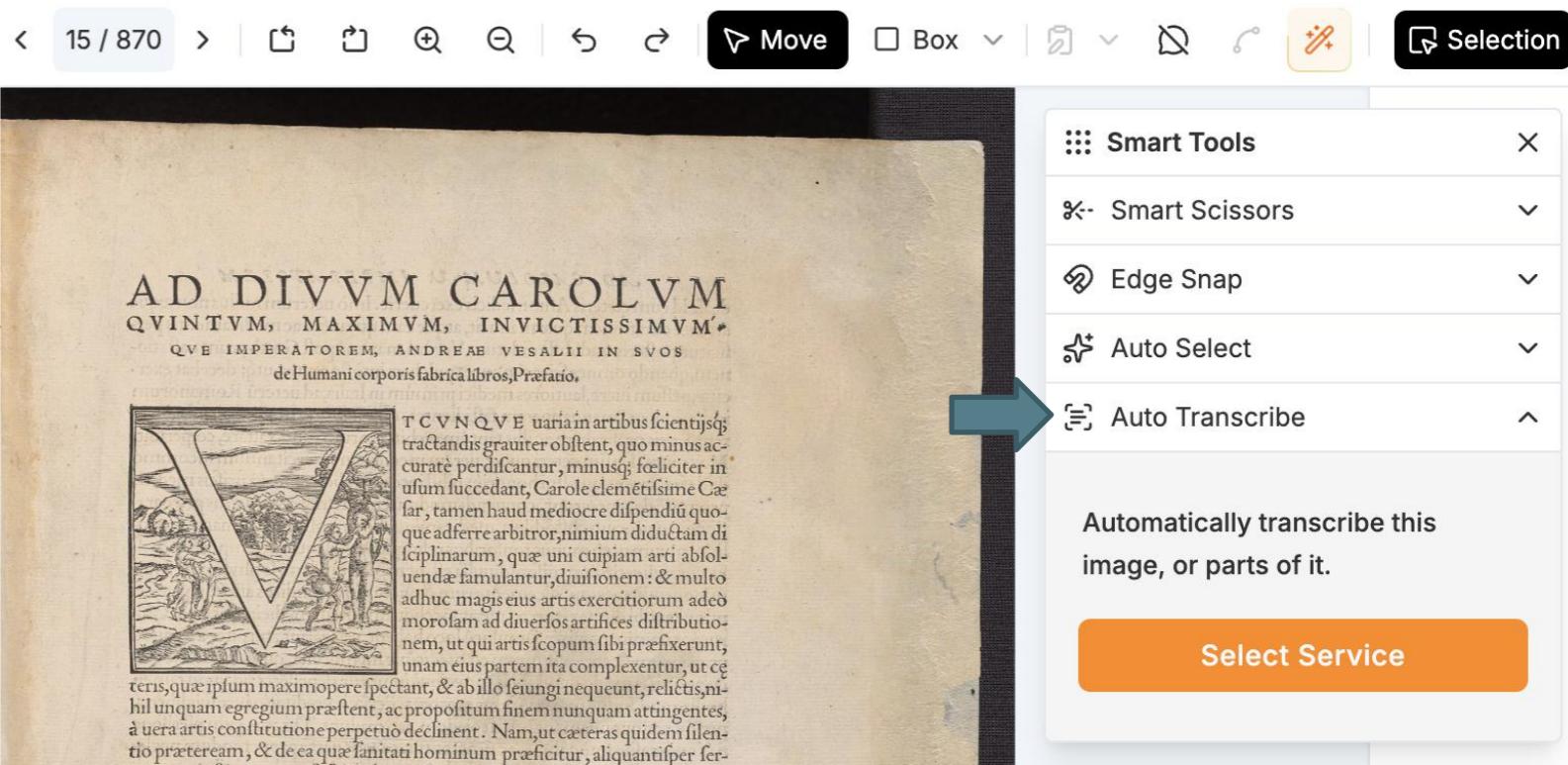
1. Click Auto Transcribe

2. Click **Select Service**

3. Select a transcription service

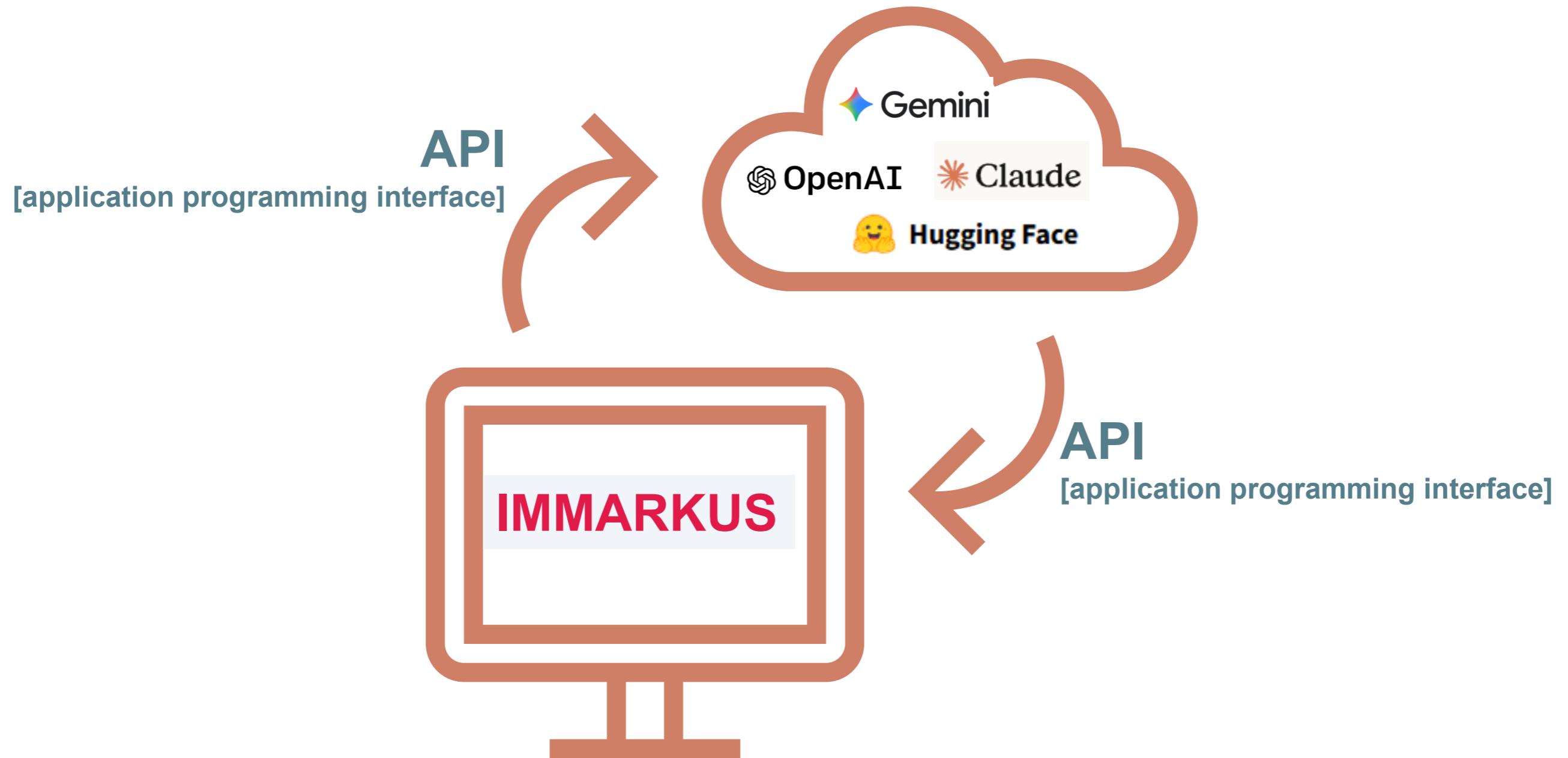
! Some services require an API key (see [IMMARKUS Wiki](#) for instructions) !

4. Click Run Transcription



What is an API key?

API: a mechanism for computers or services to communicate with each other



What is an API key?

API **key**: a unique "digital key" provided by an AI service that unlocks its features and allows your app (e.g., IMMARKUS) to access them

Access Tokens

User Access Tokens

Access tokens authenticate your identity to the Hugging Face Hub and allow applications to perform actions based on token permissions.

❶ Do not share your **Access Tokens** with anyone; we regularly check for leaked Access Tokens and remove them immediately.

Name	Value	Last Refreshed Date	Last Used Date	Permissions	
IMMARKUS auto transcribe	hf_...iqfW	Aug 4	about 6 hours ago	FINEGRAINED	



Hugging Face

open-source AI platform and community that currently offers an easy, low-cost way to run transcription models using your own API key

How to Get an API key

1. Click the [link](https://huggingface.co/):
<https://huggingface.co/>

2. Sign up a or log in your **Hugging Face account**

3. Click **Settings**

4. Click **Access Tokens**

5. Click **Create new token**

The screenshot shows the Hugging Face website interface. At the top, there is a navigation bar with a search bar, 'Models', and 'Datasets' buttons. Below the navigation bar, a yellow banner says 'Hugging Face is way more fun with friends and colleagues! [Join an organization](#)'.

The main content area shows a sidebar on the left with a user profile for 'dawnzlz' and a list of options: '+ New', 'Profile', 'Inbox (0)', 'Settings', '\$ Billing', and 'Get PRO'. Below this is a section for 'Organizations' with a '+ Create New' button. To the right of the sidebar, there is a 'Following' section with a count of 0, and a 'Follow your favorite AI creators' section with three items: 'black-forest-labs', 'Etched', and 'meta-llama', each with a 'Follow' button.

On the far right, a large green arrow points down to the 'Access Tokens' section. This section has a sub-section for 'User Access Tokens' with a note: 'Access tokens authenticate your identity to the Hugging Face Hub and allow applications to perform actions based on token permissions. **Do not share your Access Tokens with anyone**; we regularly check for leaked Access Tokens and remove them immediately.' Below this is a table of access tokens:

Name	Value	Last Refreshed Date	Last Used Date	Permissions
immarkus-new	hf_...srld	about 1 hour ago	about 1 hour ago	FINEGRAINED
IMMARKUS auto transcribe	hf_...iqfW	Aug 4	about 5 hours ago	FINEGRAINED

A green box highlights the '+ Create new token' button at the bottom of the 'User Access Tokens' section, with a green arrow pointing to it from the left.

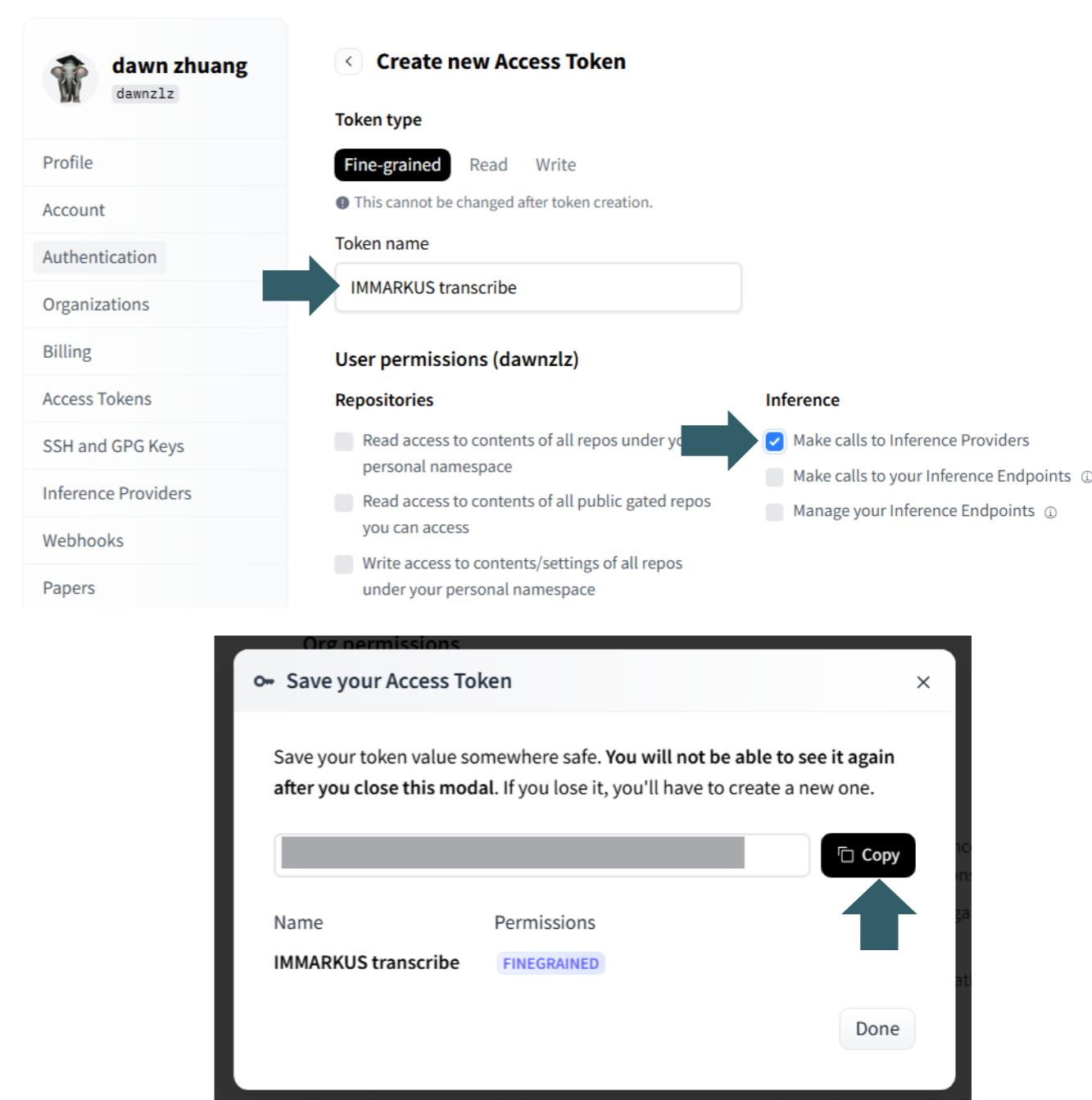
How to Get an API key

6. Name your token

7. Check Make calls to Inference Providers under Inference

8. Click Create token

9. Copy the token (API key) and paste it to the IMMARKUS interface under service HuggingFace Inference



Profile **Account** **Authentication** **Organizations** **Billing** **Access Tokens** **SSH and GPG Keys** **Inference Providers** **Webhooks** **Papers**

Token type
 Fine-grained Read Write
This cannot be changed after token creation.

Token name
IMMARKUS transcribe

User permissions (dawnzlz)

Repositories

Read access to contents of all repos under your personal namespace

Read access to contents of all public gated repos you can access

Write access to contents/settings of all repos under your personal namespace

Inference

Make calls to Inference Providers
 Make calls to your Inference Endpoints ①
 Manage your Inference Endpoints ①

Org permissions

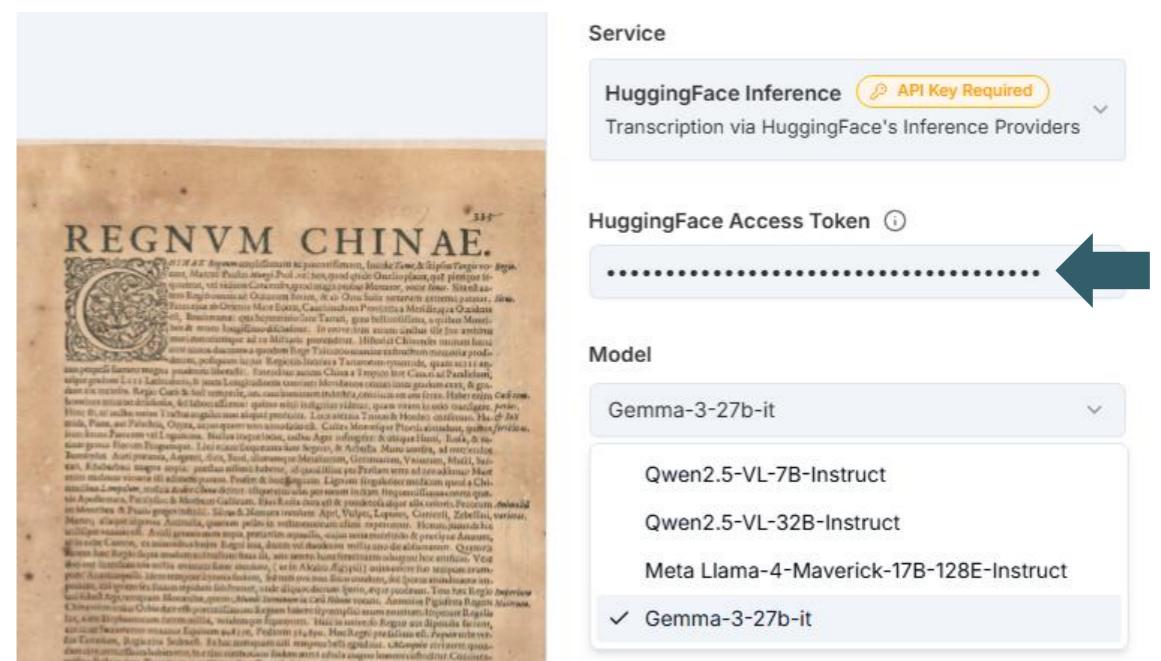
Save your Access Token

Save your token value somewhere safe. You will not be able to see it again after you close this modal. If you lose it, you'll have to create a new one.

Name **Permissions**

IMMARKUS transcribe **FINEGRAINED**

Copy **Done**



Service

HuggingFace Inference API Key Required
Transcription via HuggingFace's Inference Providers

HuggingFace Access Token ①

.....

Model

Gemma-3-27b-it

Qwen2.5-VL-7B-Instruct

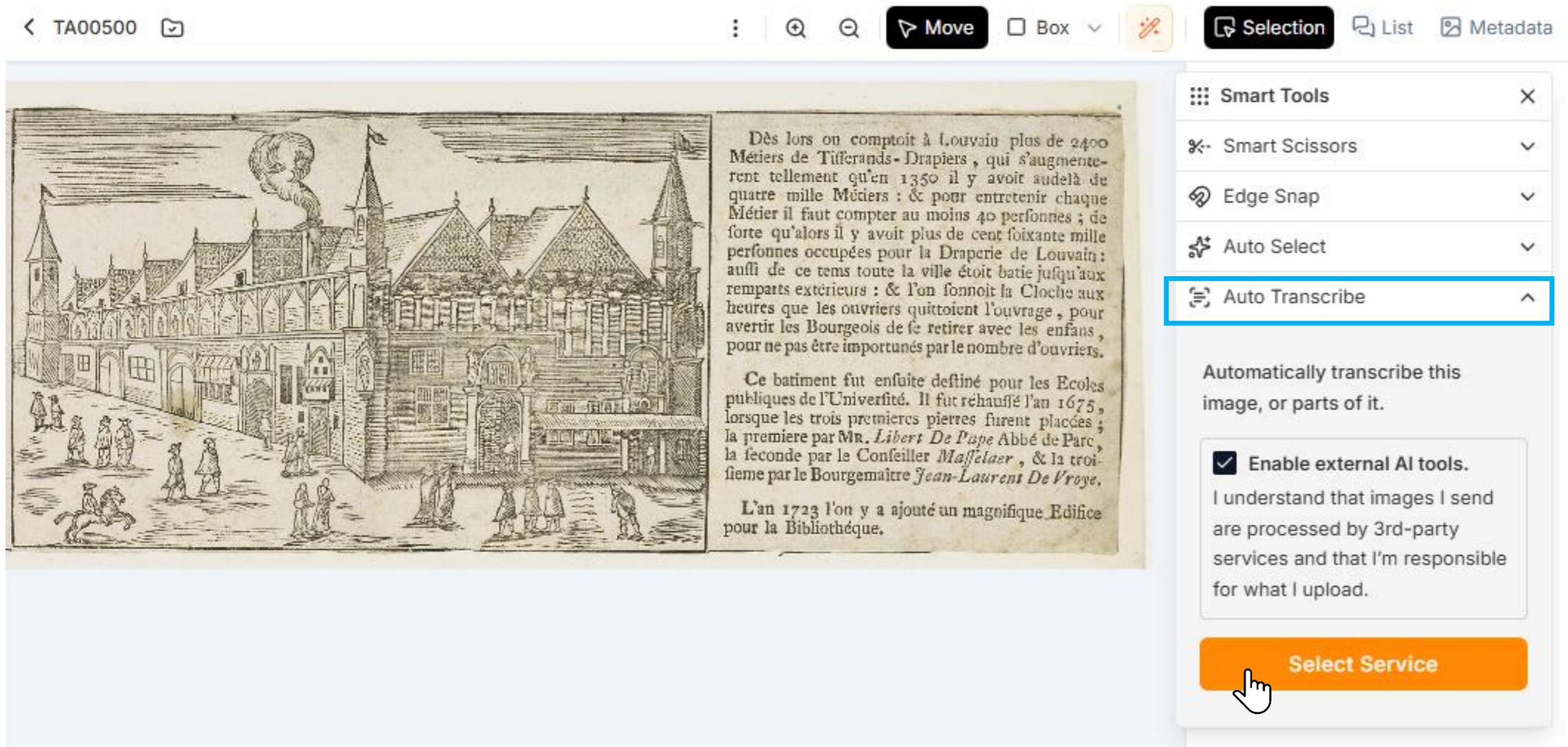
Qwen2.5-VL-32B-Instruct

Meta Llama-4-Maverick-17B-128E-Instruct

Gemma-3-27b-it

Transcribing Text from Images

1. Open the Auto Transcribe feature and select a service



TA00500

Move Box Selection List Metadata

Dès lors on comptoit à Louvain plus de 2400 Métiers de Tisserands- Drapiers , qui s'augmenterent tellement qu'en 1350 il y avoit audelà de quatre mille Métiers : & pour entretenir chaque Métier il faut compter au moins 40 personnes ; de sorte qu'alors il y avoit plus de cent soixante mille personnes occupées pour la Draperie de Louvain : aussi de ce tems toute la ville étoit bâtie jusqu'aux remparts extérieurs : & l'on sonnoit la Cloche aux heures que les ouvriers quittaient l'ouvrage , pour avertir les Bourgeois de se retirer avec les enfans , pour ne pas être importunés par le nombre d'ouvriers.

Ce batiment fut ensuite destiné pour les Ecoles publiques de l'Université. Il fut réhaussé l'an 1675 , lorsque les trois premiers pierres furent placées ; la première par Mr. *Libert De Pape* Abbé de Parc , la seconde par le Conseiller *Maffelaer* , & la troisième par le Bourgemaître *Jean-Laurent De Vroye*.

L'an 1723 l'on y a ajouté un magnifique Edifice pour la Bibliothéque.

Smart Tools

Smart Scissors

Edge Snap

Auto Select

Auto Transcribe

Automatically transcribe this image, or parts of it.

Enable external AI tools.

I understand that images I send are processed by 3rd-party services and that I'm responsible for what I upload.

Select Service

Transcribing Text from Images

2. Set up your **API key** and select an area to transcribe

3. Click **Run Transcription**.

Dès lors on comptoit à Louvain plus de 2400 Métiers de Tisserands- Drapiers , qui s'augmentèrent tellement qu'en 1350 il y avoit audelà de quatre mille Métiers : & pour entretenir chaque Métier il faut compter au moins 40 personnes ; de forte qu'alors il y avoit plus de cent soixante mille personnes occupées pour la Draperie de Louvain : aussi de ce tems toute la ville étoit bâtie jusqu'aux remparts extérieurs : & l'on fonoit la Cloche aux heures que les ouvriers quittaient l'ouvrage, pour avertir les Bourgeois de se retirer avec les enfans, pour ne pas être importunés par le nombre d'ouvriers. Ce batiment fut ensuite destiné pour les Ecoles publiques de l'Université. Il fut réhaussé l'an 1675, lorsque les trois premières pierres furent placées ; la premiere par Mr. Libert De Pape Abbé de Parc, la seconde par le Conseiller Masselaer, & la troisième par le Bourgemaître Jean-Laurent De Vroye. L'an 1723 l'on y a ajouté un magnifique Edifice pour la Bibliothèque.

Service

HuggingFace Inference API Key Required
Transcription via HuggingFace's Inference Providers

HuggingFace Access Token

Model

Qwen2.5-VL-32B-Instruct

Select Area to Transcribe

This service returns transcriptions without bounding box information. Select the area you want to transcribe. The result will be inserted as a single annotation.

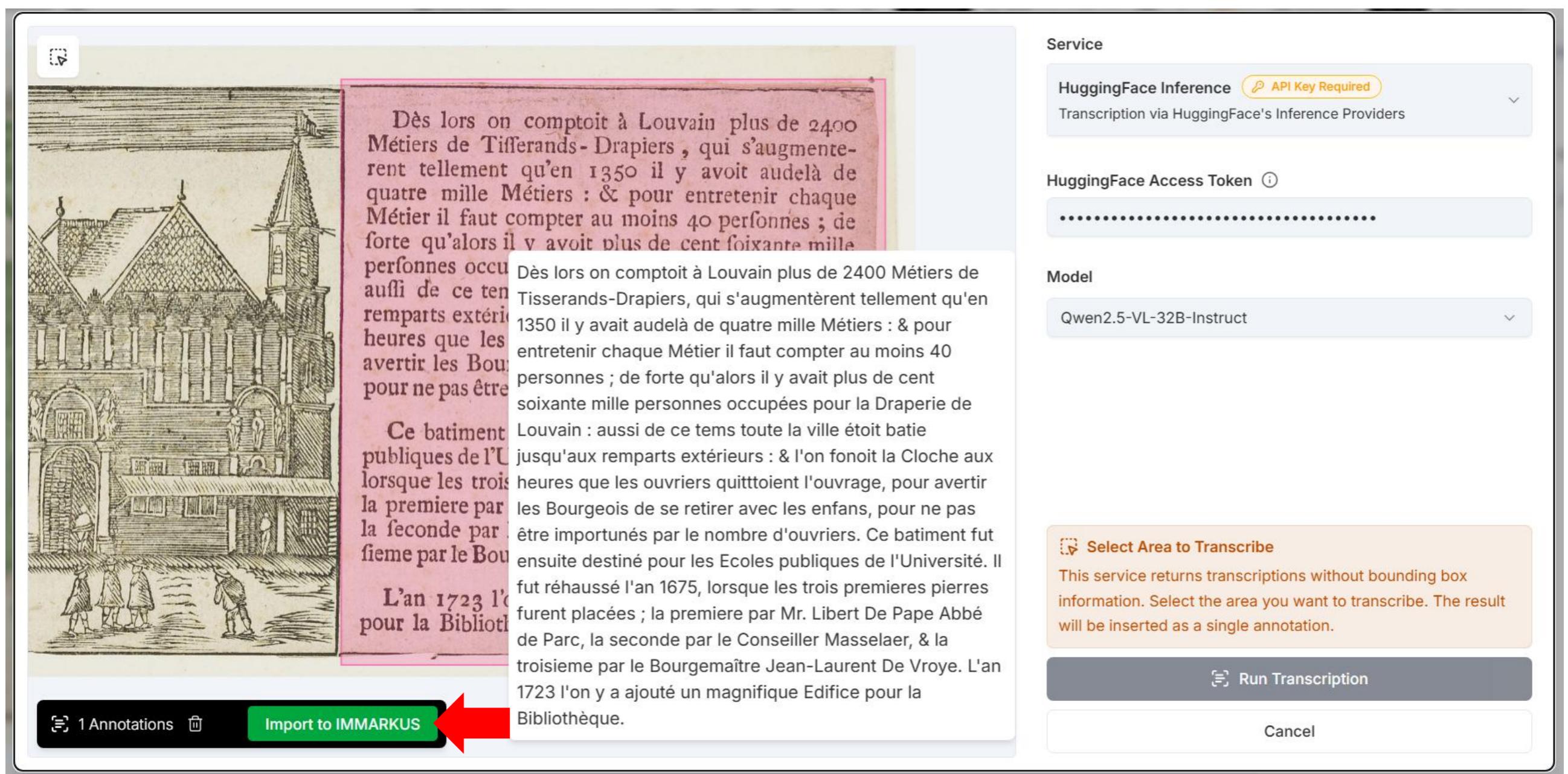
Run Transcription

Cancel

1 Annotations Import to IMMARKUS

Transcribing Text from Images

4. Hover over the selected area to view the transcription, and import it into IMMARKUS to store, edit, or translate it



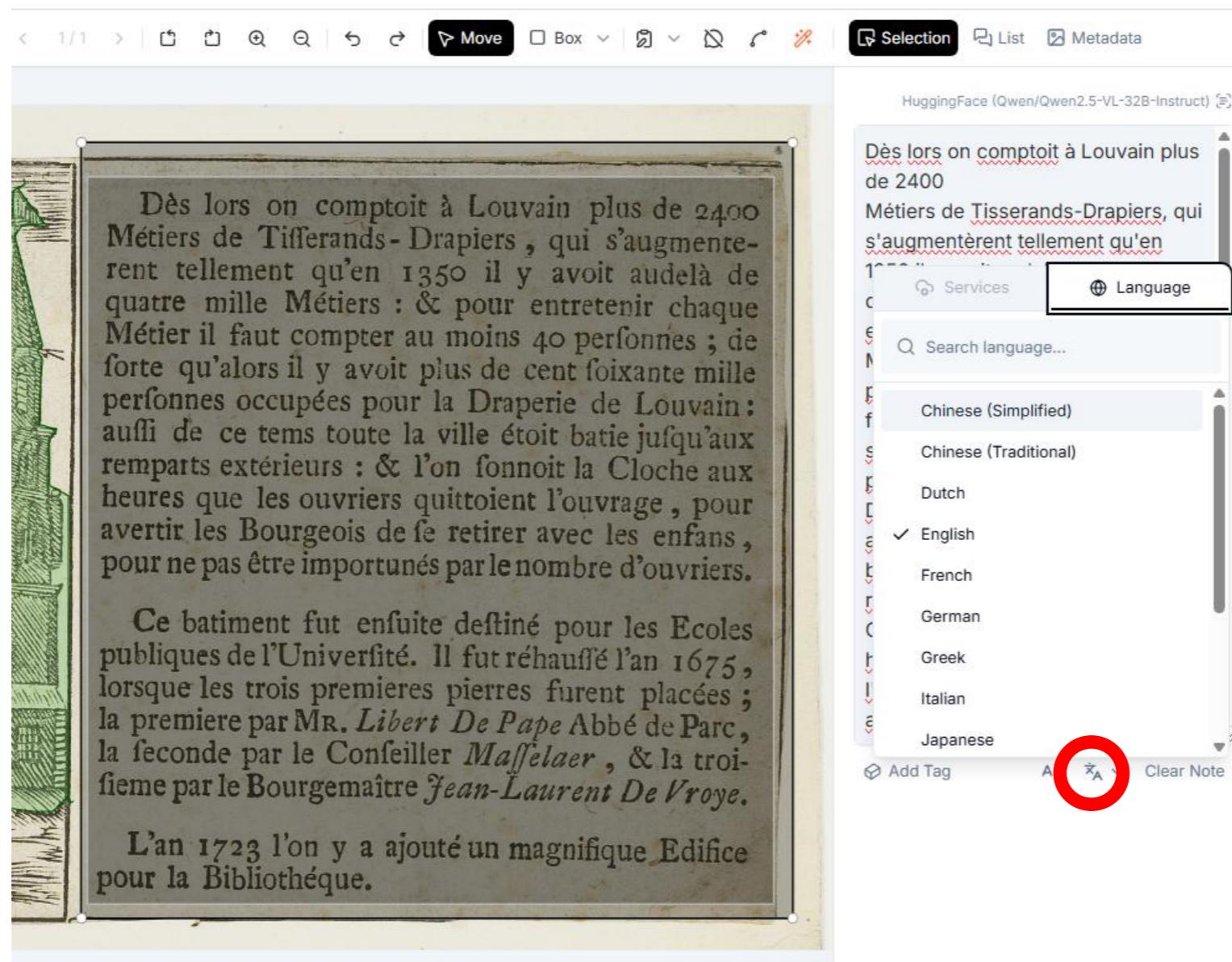
The screenshot shows a digital interface for transcribing text from images. On the left, there is a historical illustration of a building with a tower and several figures in the foreground. Overlaid on the image are two text snippets, both in French. The top snippet is a larger block of text, and the bottom snippet is a smaller block of text. A red arrow points to a green button at the bottom left that says "Import to IMMARKUS". To the right of the image, there is a configuration panel with the following sections:

- Service:** HuggingFace Inference (API Key Required) - A dropdown menu showing "Transcription via HuggingFace's Inference Providers".
- HuggingFace Access Token:** A text input field containing a series of dots (.....).
- Model:** Qwen2.5-VL-32B-Instruct - A dropdown menu.
- Select Area to Transcribe:** A box containing the text: "This service returns transcriptions without bounding box information. Select the area you want to transcribe. The result will be inserted as a single annotation."
- Run Transcription:** A large grey button.
- Cancel:** A button at the bottom right.

Transcribing Text from Images

5. After importing, click **Show Translation** (red circle)

6. Select the translation service model and the **target language**



Transcribing Text from Images

7. View the translated version of the transcription

TA00500

Move Selection List Metadata



Dès lors on comptoit à Louvain plus de 2400 Métiers de Tisserands- Drapiers , qui s'augmenterent tellement qu'en 1350 il y avoit audelà de quatre mille Métiers : & pour entretenir chaque Métier il faut compter au moins 40 personnes ; de sorte qu'alors il y avoit plus de cent soixante mille personnes occupées pour la Draperie de Louvain : aussi de ce tems toute la ville étoit bâtie jusqu'aux remparts extérieurs : & l'on sonnoit la Cloche aux heures que les ouvriers quittaient l'ouvrage , pour avertir les Bourgeois de se retirer avec les enfans , pour ne pas être importunés par le nombre d'ouvriers ,

Ce batiment fut ensuite destiné pour les Ecoles publiques de l'Université. Il fut réhaussé l'an 1675 , lorsque les trois premières pierres furent placées ; la première par Mr. *Libert De Pape* Abbé de Parc , la seconde par le Conseiller *Maffelaer* , & la troisième par le Bourgemaître *Jean-Laurent De Vroye* ,

L'an 1723 l'on y a ajouté un magnifique Edifice pour la Bibliothéque.

From then on, there were more than 2400 weaving trades in Louvain - Drapers, which increased so much that by 1350 there were more than four thousand trades: and to maintain each trade, at least 40 people had to be counted; so that at that time there were more than one hundred and sixty thousand people employed in the drapery trade in Louvain: also at that time the whole city was built up to the outer ramparts: and the bell was rung at the hours when the workers left work, to warn the citizens to withdraw with their children, so as not to be bothered by the number of workers. This building was subsequently intended for the public schools of the University. It was rebuilt in 1675, when the first three stones were laid; the first by Mr. Libert De Pape, Abbot of Parc, the second by Councilor Maffelaer, and the third by Mayor Jean-Laurent De Vroye. In 1723, a magnificent building was added for the Library.

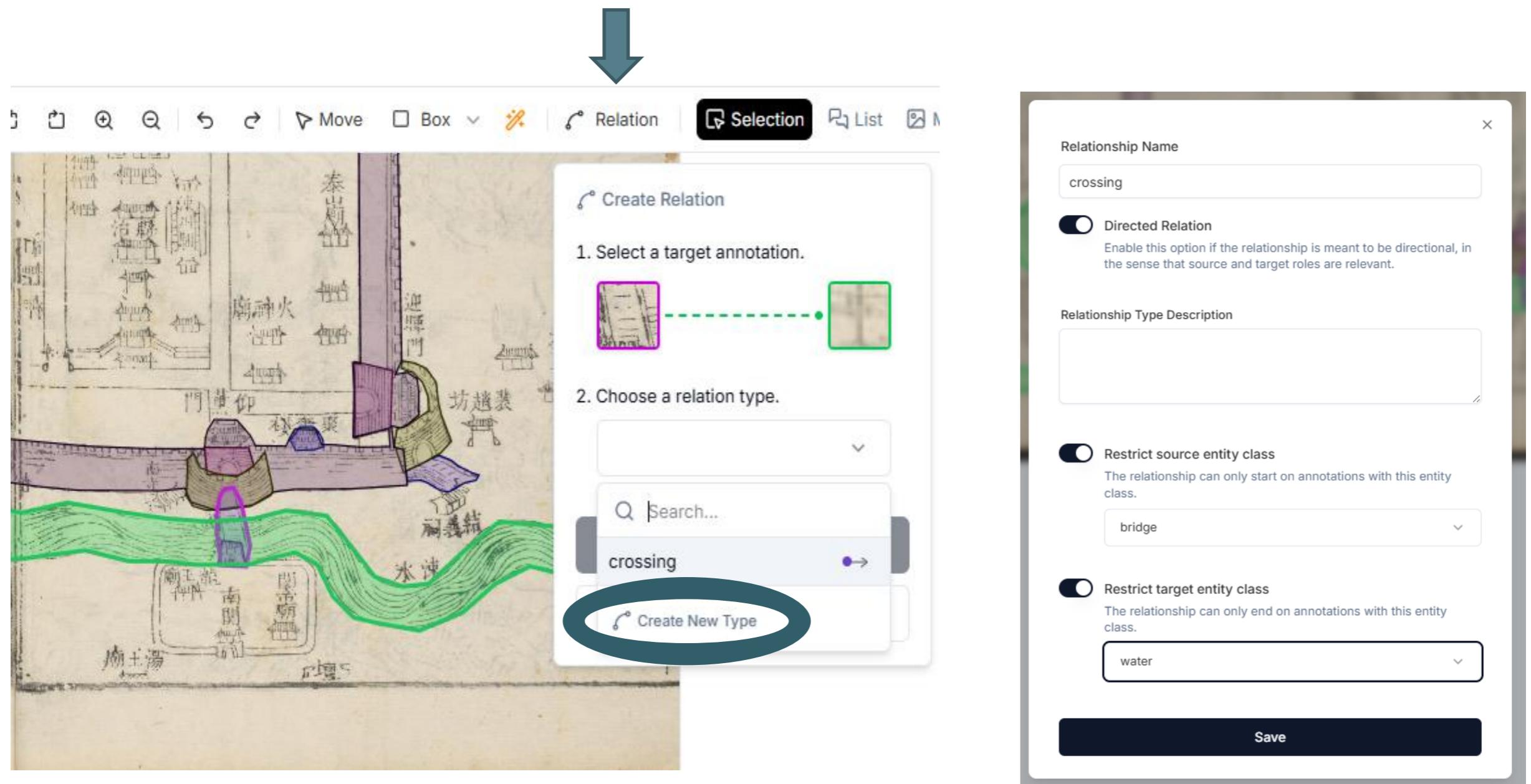
Add Tag AA Clear Note

Save

Delete Annotation

Break (20 minutes)

- **Questions or comments?** Please raise your hand or write in the chat



3. What Is a Data Model?

A data model defines:

- **What things you record (Entity)**

Entity Class
obj_part
bridge_gate
city_wall_barbican
city_wall_gate
object
city_wall
bridge
landform
water

Entity Class *

 Color #5f3274

Display Name

Parent Class

Entity Class Description

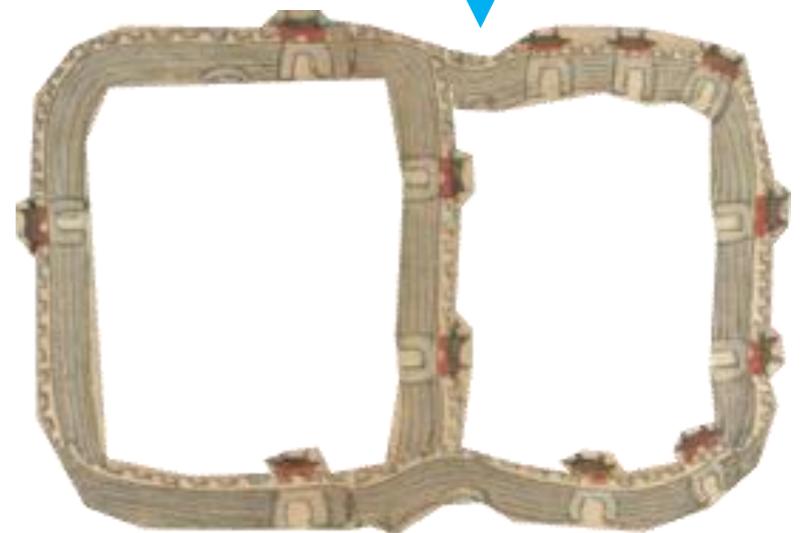
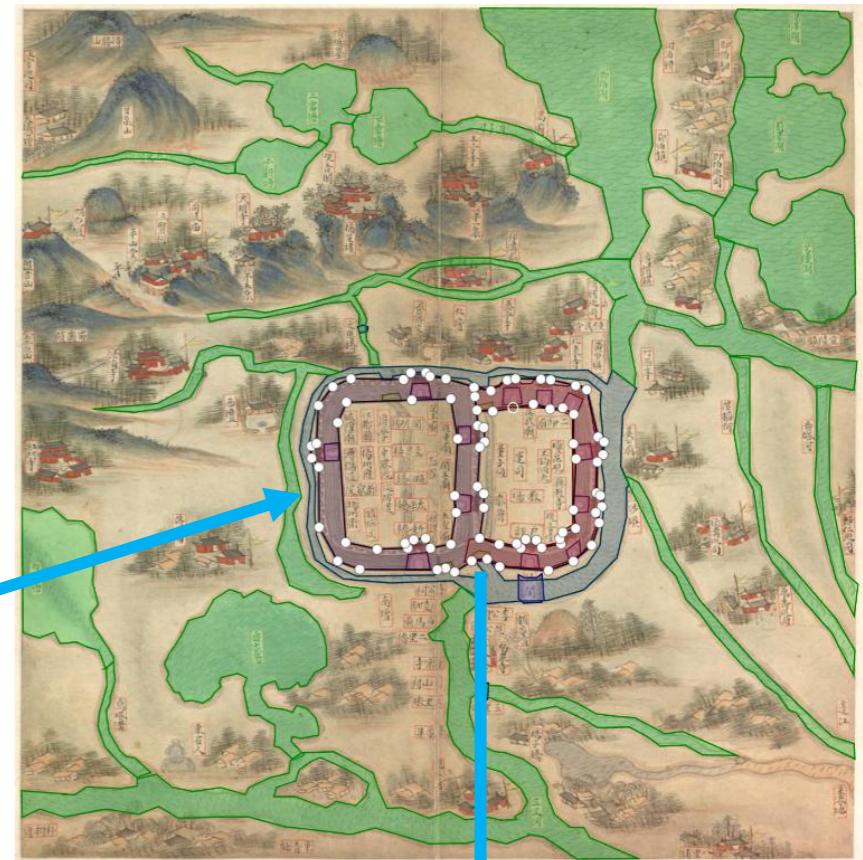
A fortified structure surrounding the center of a civilian administrative unit (府, 州, 縣) to defend its inhabitants and buildings from external threats.

2 Properties

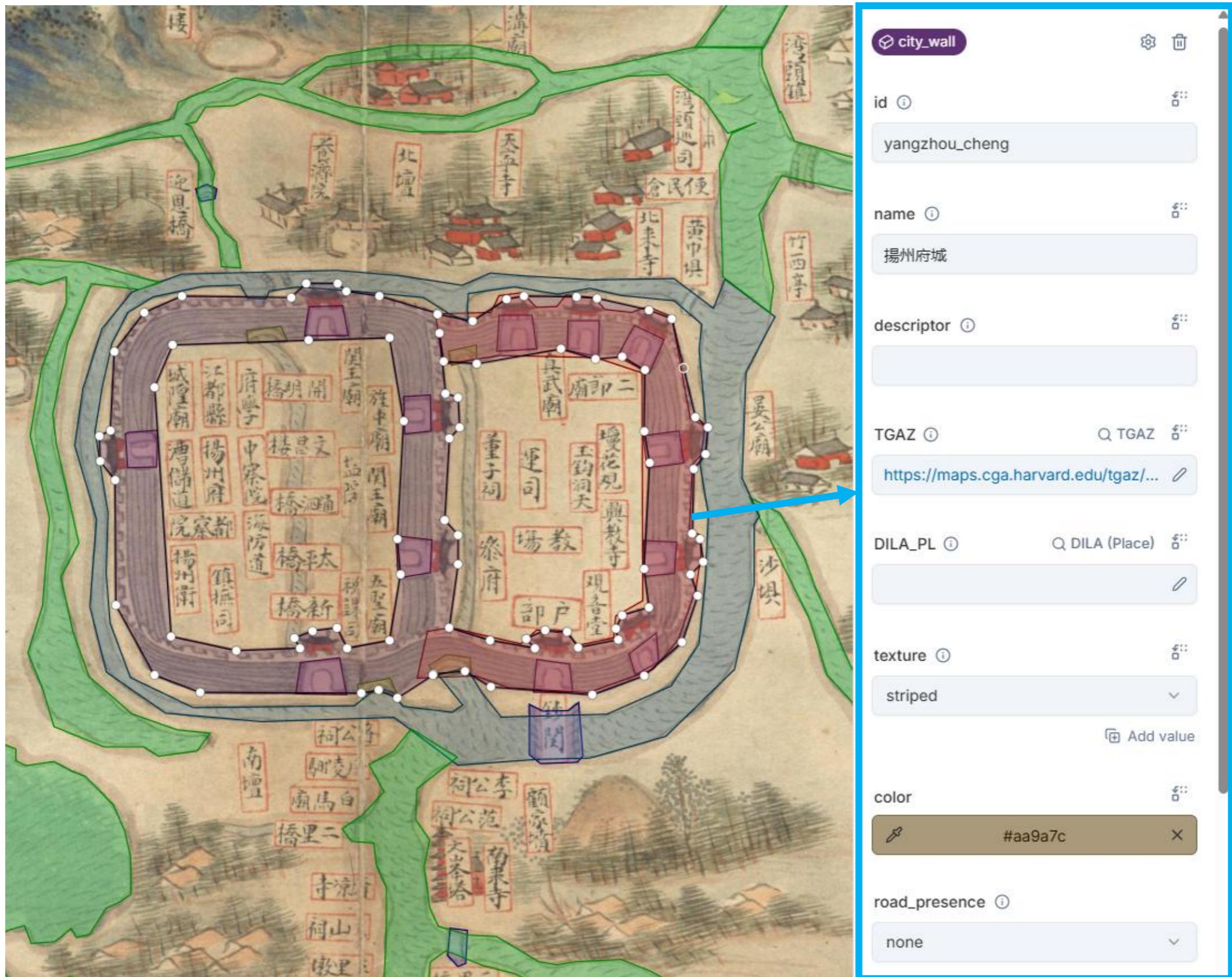
road_presence

wall_phase

Add Property



- What **details** each entity has (**Property**)



The image shows a historical map of Yangzhou, China, with a green polygon overlay representing the city wall. A blue arrow points from the map to a detailed property editor on the right.

city_wall

id

name

descriptor

TGАЗ

DILA_PL

texture

color

road_presence

- How they relate (Relationship)

Relationship Name

Directed Relation

Enable this option if the relationship is meant to be directional, in the sense that source and target roles are relevant.

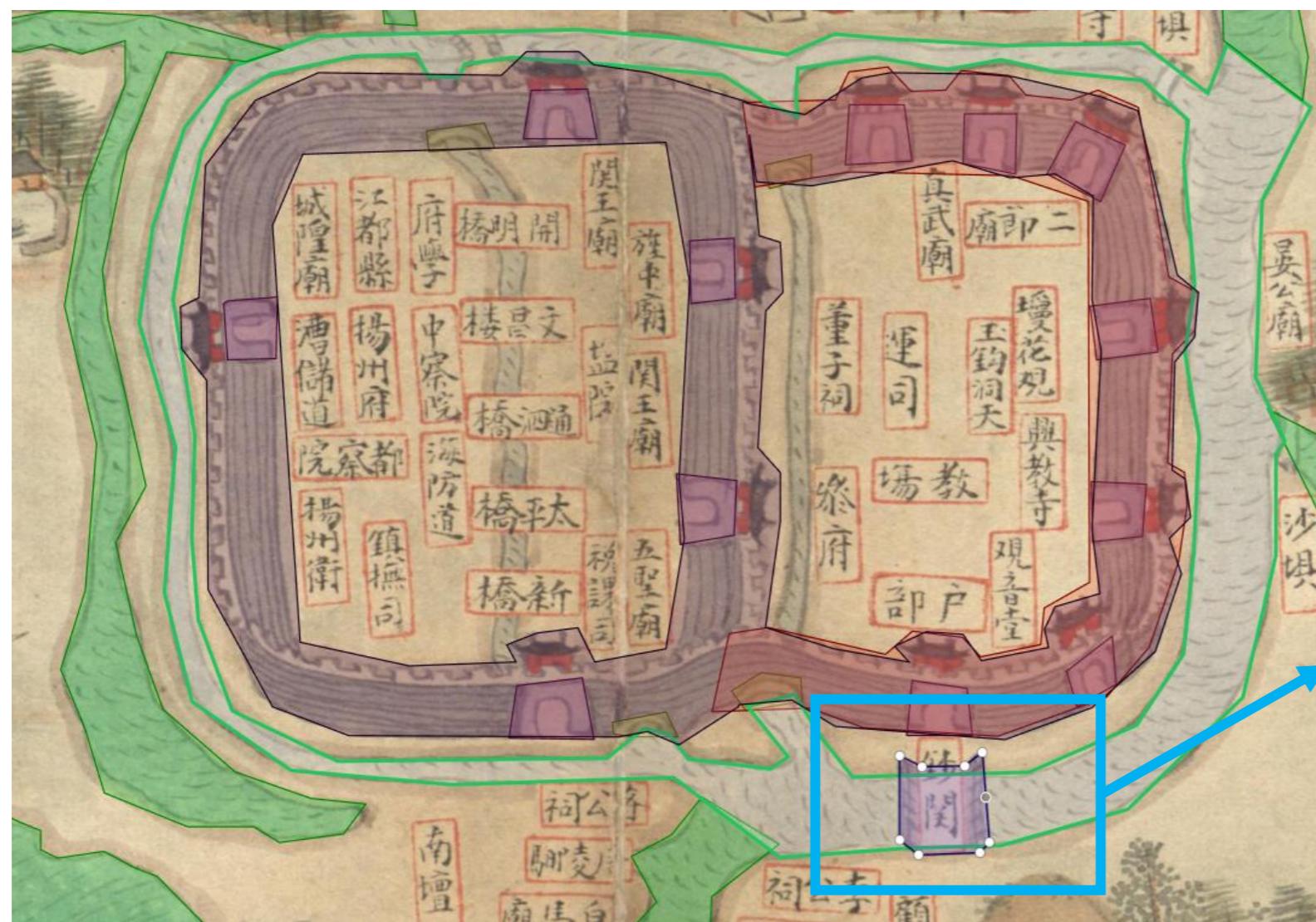
Relationship Type Description

Used to connect a bridge with the feature it crosses such as a river, moat, or road.

Restrict source entity class

The relationship can only start on annotations with this entity class.

bridge



color

bridge_type ⓘ

floating bridge

relation to wall

extramural

bridge_pillar_quant ⓘ

bridge_cover ⓘ

no

Related Annotations

crossing  

Add Tag Add Note

Save

Delete Annotation

A data model defines:

- What **things** you record (**Entity**)
- What **details** each entity has (**Property**)
- How they **relate** (**Relationship**)

Example:

Figure (Mythological or Human)

- ID
- Name
- Garment_type
- Garment_color
- Holding (A **figure** holding an **artifact**)

Infrastructure

- ID
- Name
- Type
- Dimension_height
- Dimension_width
- Crossing (An **infrastructure** crossing another **feature**)

Landform

- ID
- Name
- Type
- Location

Artifact

- ID
- Name
- Type
- Material
- Location_current
- Inscription_YN

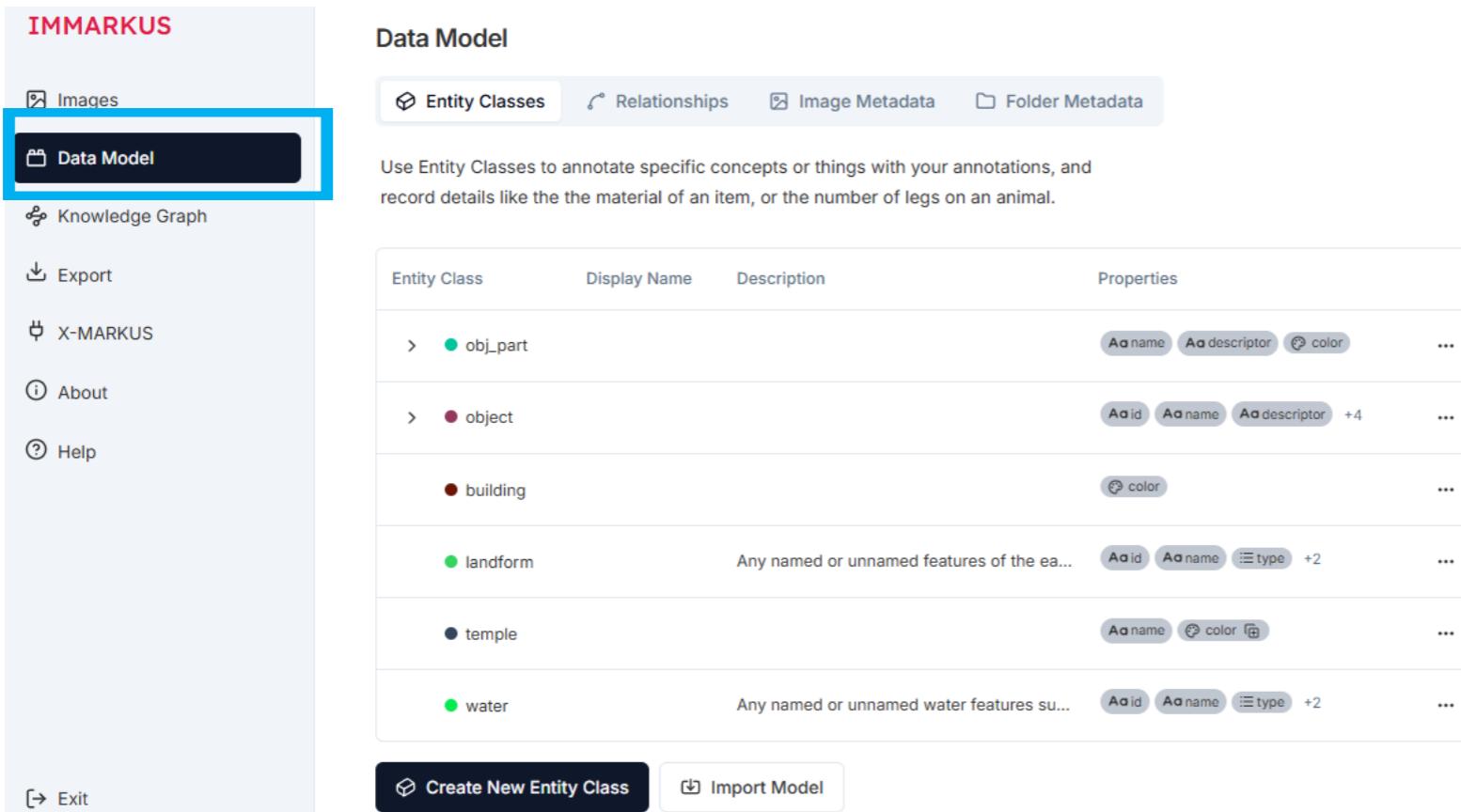
Why Use a Data Model?

- Ensures consistency across annotations
- Makes annotations searchable and comparable
- Enables complex queries and structured exports

When you annotate, you are already shaping a data model.

To view your current data model:

1. Click on **Data Model** on the left-hand menu bar
2. Navigate what you have created during the annotation practices



The screenshot shows the IMARKUS interface with the 'Data Model' section selected. The left sidebar includes 'Images', 'Data Model' (selected and highlighted with a blue box), 'Knowledge Graph', 'Export', 'X-MARKUS', 'About', and 'Help'. The main area is titled 'Data Model' and contains tabs for 'Entity Classes', 'Relationships', 'Image Metadata', and 'Folder Metadata'. A sub-section titled 'Entity Classes' is active, showing a table of annotated entity classes:

Entity Class	Display Name	Description	Properties
obj_part			Aa name Aa descriptor color ...
object			Aa id Aa name Aa descriptor +4 ...
building			color ...
landform		Any named or unnamed features of the ea...	Aa id Aa name type +2 ...
temple			Aa name color ...
water		Any named or unnamed water features su...	Aa id Aa name type +2 ...

At the bottom are buttons for 'Create New Entity Class' and 'Import Model'.

Data Models in IMMARKUS

Define schema (entity classes, properties, relationships and metadata) directly in **Data Model Mode**

IMMARKUS

Images

Data Model

Knowledge Graph

Export

X-MARKUS

About

Help

Data Model

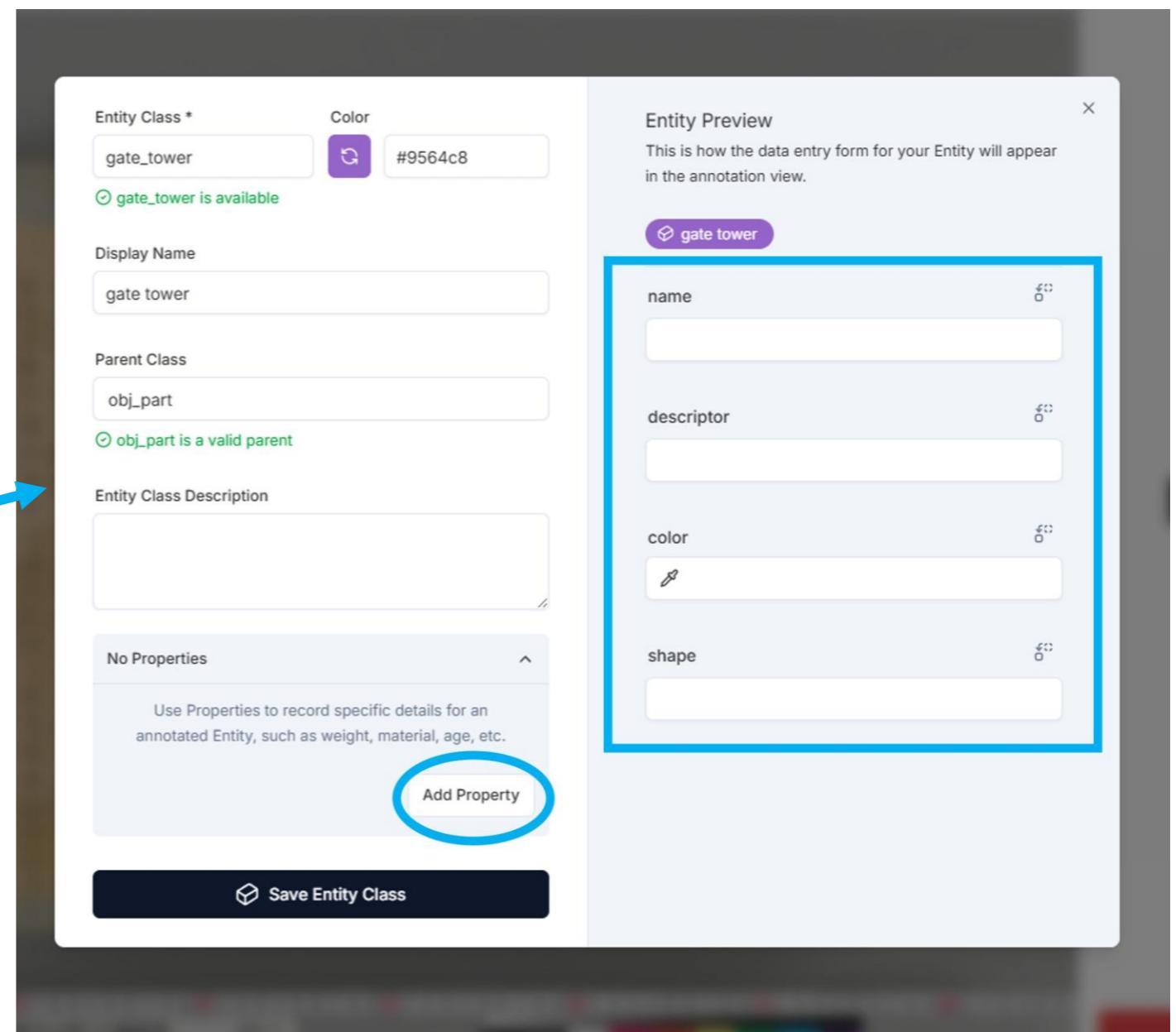
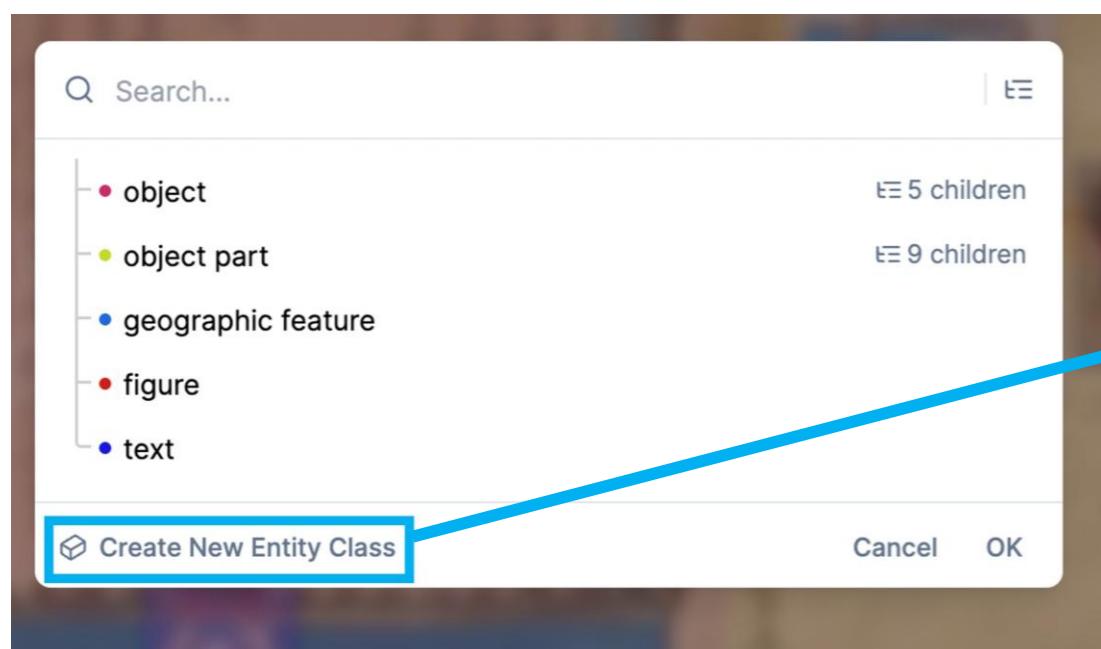
Entity Classes Relationships Image Metadata Folder Metadata

Use Entity Classes to annotate specific concepts or things with your annotations, and record details like the the material of an item, or the number of legs on an animal.

Entity Class	Display Name	Description	Properties
settlement			:connectivity :location to the city ...
suburban house			...
farm_house			...
animal_figure			Aa name Aa type ...
bridge			...
church			Aa name URL ...

Data Models in IMMARKUS

Create or expand schema (new entity classes, properties, and relationships) in **Annotation Mode**



Data Models in IMMARKUS

Import / Reuse data model from other projects in **Data Model Mode**

Data Model

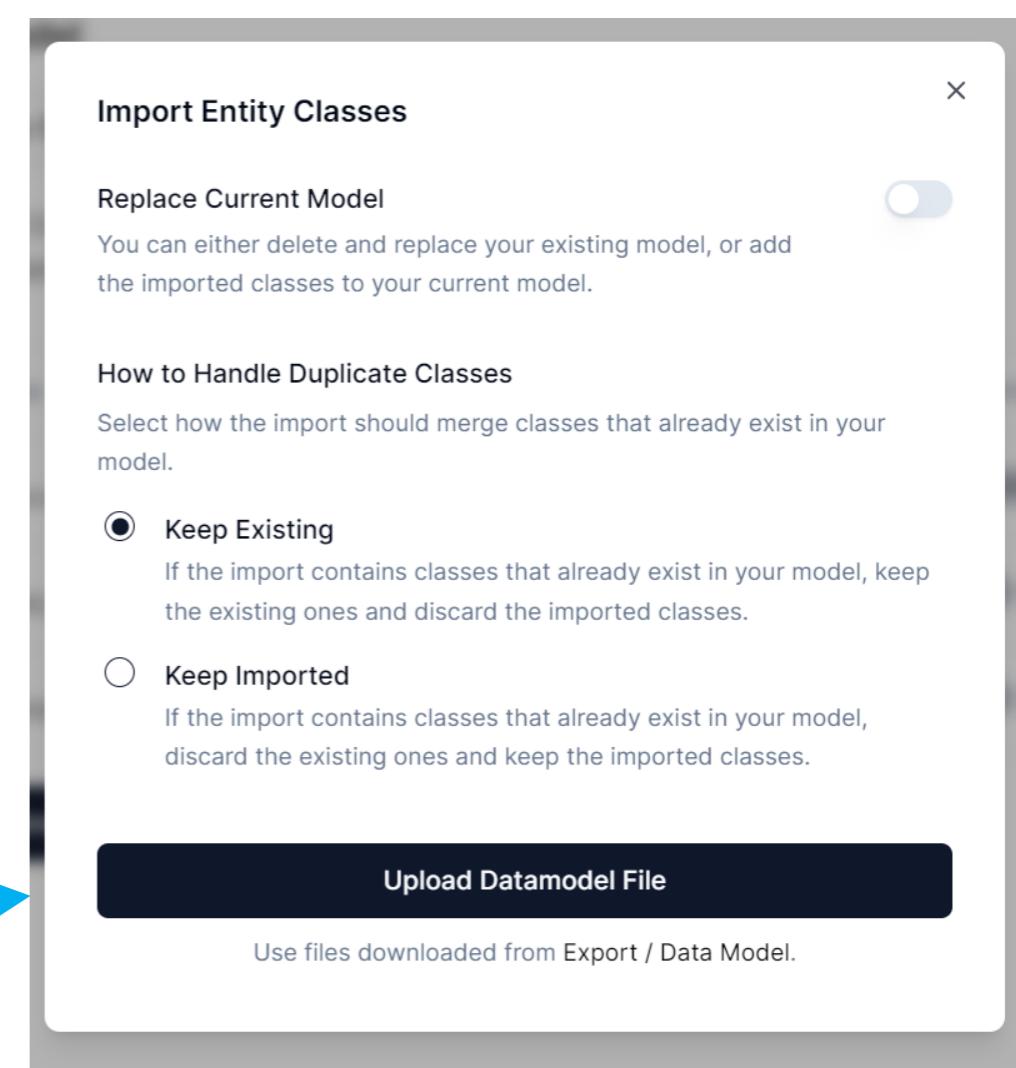
[Entity Classes](#) [Relationships](#) [Image Metadata](#) [Folder Metadata](#)

Use Entity Classes to annotate specific concepts or things with your annotations, and record details like the material of an item, or the number of legs on an animal.

Entity Class	Display Name	Description	Properties	...
> ● figure	figure	Add descriptor		...
> ● geo_feature	geo_feature	Add name Add descriptor		...
> ● obj_part	obj_part	Add name Add descriptor Add color +2		...
> ● object	object	Add id Add name Add location +4		...
> ● text	text	Add descriptor Add number Add relation test		...

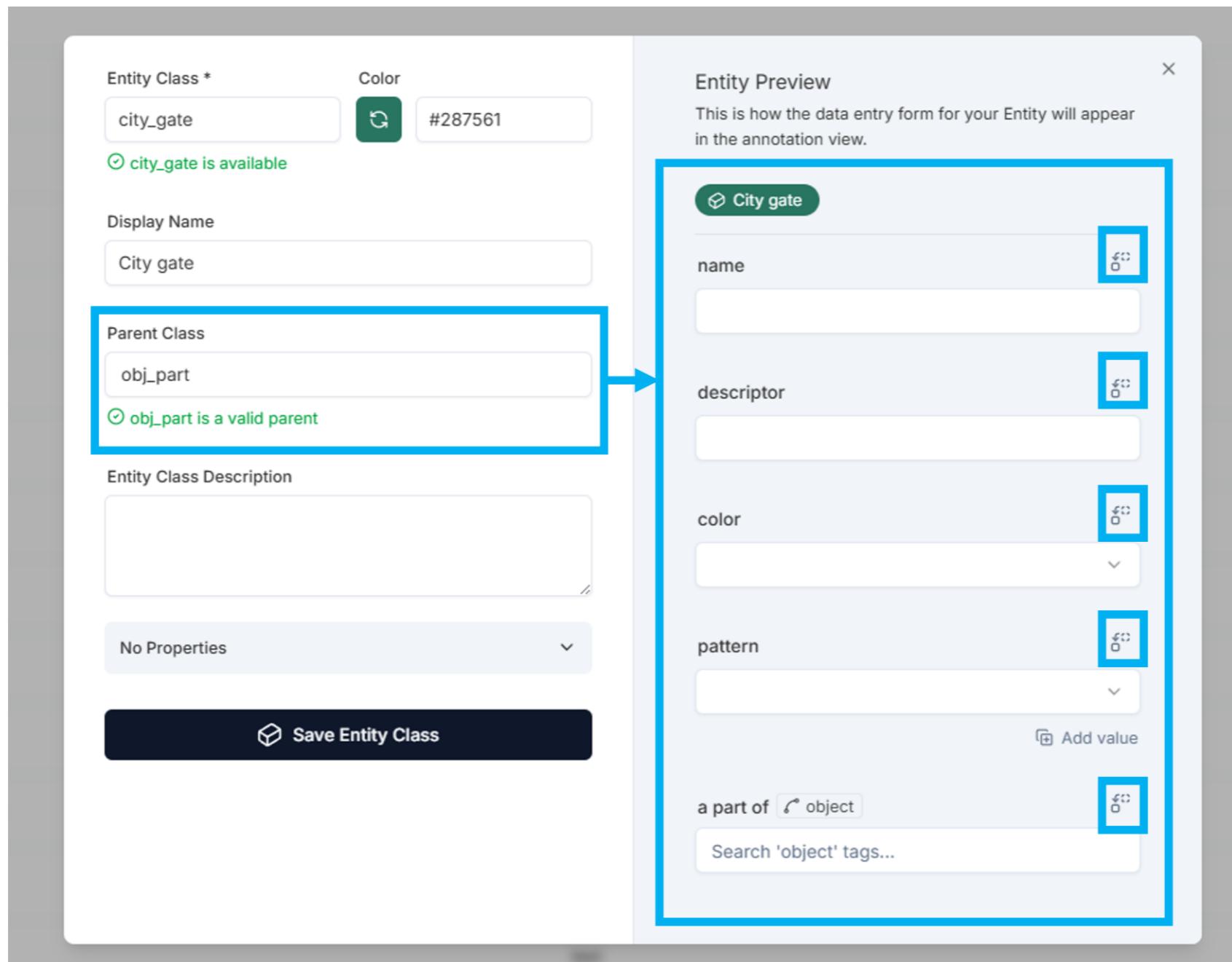
[Create New Entity Class](#)

[Import Model](#)



Tips

Make use of **parent-child class hierarchies** to avoid duplicating properties for entities that share certain characteristics



The image shows a screenshot of a software interface for creating an entity class. On the left, the 'Entity Class' form is displayed with the following fields:

- Entity Class ***: city_gate
- Color**: #287561
- Display Name**: City gate
- Parent Class**: obj_part
- Entity Class Description**: (empty)
- No Properties**: (dropdown menu)
- Save Entity Class** button

A green validation message 'city_gate is available' is shown next to the entity name. A blue box highlights the 'Parent Class' field, and a green message 'obj_part is a valid parent' is shown below it. An arrow points from this field to the 'Entity Preview' window on the right.

The 'Entity Preview' window shows the resulting data entry form for the 'City gate' entity, which includes the following fields:

- City gate** (button)
- name**
- descriptor**
- color**
- pattern**
- a part of** (dropdown menu) with an 'Add value' button and a search bar 'Search 'object' tags...'.

A blue box highlights the entire 'Entity Preview' window, indicating that child classes inherit properties from parent classes.

Child classes inherit properties from parent classes

Tips

Make use of **external authorities** to connect your entities to other knowledge bases

Data Type

External Authority

- TGAZ
China Historical GIS placename database
- Wikipedia
The free encyclopedia (English)
- Baidu
Baidu encyclopedia
- CBDB
China Biographical Database Project
- DILA (Person)
Buddhist Studies Authority Database Project (Person Search)
- DILA (Place)
Buddhist Studies Authority Database Project (Place Search)
- Manchu
Manchu texts and objects
- Digerati
Korean personal names
- Hucker Dictionary
A Dictionary of Official Titles in Imperial China

! Select at least one authority

Allow multiple values

Practice 4. Adding a Child Class to Your Data Model

1. Click **Data Model** on the left-hand menu bar.
2. Click **Create New Entity Class**
3. Type the name of your new entity class
4. Type one of the existing entity class name in the **Parent Class** field

Parent Class

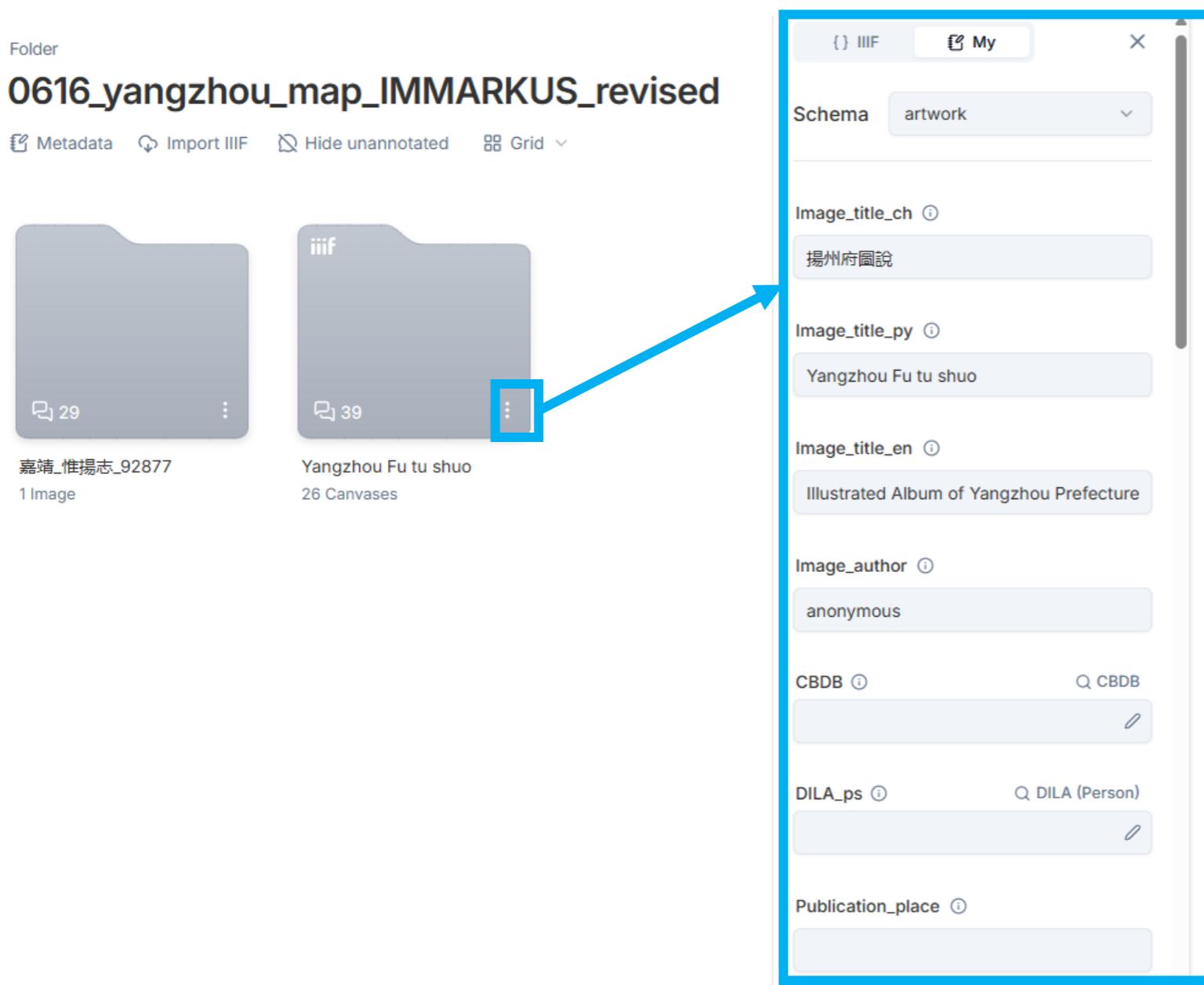
object

object is a valid parent

5. Click **Save Entity Class**

Working with Metadata

- The data about your data: **what** something is, **who** made it, **when** and **where** it comes from
- Supports **citations**, **reuse**, and **data linking**



The image shows a digital library interface with a sidebar and a main content area. The sidebar on the left lists two items: a folder named '29' containing '嘉靖_惟揚志_92877' and '1 Image', and another folder named '39' containing 'iiif' and 'Yangzhou Fu tu shuo' with '26 Canvases'. A blue arrow points from the '39' folder to a detailed metadata editor on the right. The metadata editor has a blue border and contains the following fields:

- Schema: artwork
- Image_title_ch: 揚州府圖說
- Image_title_py: Yangzhou Fu tu shuo
- Image_title_en: Illustrated Album of Yangzhou Prefecture
- Image_author: anonymous
- CBDB: (Searchable field)
- DILA_ps: (Searchable field)
- Publication_place: (Searchable field)

Metadata in IMMARKUS

For IIIF images, the embedded metadata is automatically retrieved and displayed.

The screenshot shows the IMMARKUS interface. On the left, a sidebar with the title 'IMMARKUS' has a 'Images' button highlighted in red. The main area is a 'Folder' titled 'Leuven University Hall'. It contains five IIIF images, each with a small 'iiif' icon and a number (1, 2, 3, 4, 5) below it. A context menu is open over image 1, with 'Metadata' and 'Manifest Metadata' highlighted in blue. A blue arrow points from this menu to a large blue box on the right containing detailed metadata. The right box includes fields for 'Title', 'Location', 'Full description', 'Material type', and 'Genre'. The 'Manifest Metadata' button in the menu is also highlighted in blue.

IMMARKUS

Images

Metadata Model Knowledge Graph Export X-MARKUS About Help

Exit

Folder

Leuven University Hall

Metadata Import IIIF Hide unannotated Grid

1 2 3 4 5

Université de Louvain 2,910 x 4,313

iiif

Open Canvas Other IIIF Viewers Delete

Manifest Metadata

iiif

iiif

Université de Louvain - Les Halles (façade principale). Vue prise par un temps de neige

KU Leuven Libraries Special Collections, TA00503

Limo

Material type Graphic

Genre Topographical pictures

Metadata in IMMARKUS

You can also edit and save metadata for IIIF resources using your own schema.

The screenshot shows the IMMARKUS interface. On the left, a sidebar menu includes 'IMMARKUS' (highlighted in red), 'Images' (selected and highlighted in dark blue), 'Data Model', 'Knowledge Graph', 'Export', 'X-MARKUS', 'About', and 'Help'. At the bottom is an 'Exit' button. The main area is titled 'Folder' and 'Leuven University Hall'. It contains five images: 1. Université de Louvain, 2. University Hall_photo.jpeg, 3. (unlabeled), 4. (unlabeled), and 5. La Halle aux Draps. A context menu is open over image 1, with 'Metadata' selected and highlighted in blue. Other options in the menu include 'Manifest Metadata', 'Open Canvas', 'Other IIIF Viewers', and 'Delete'. A blue arrow points from this menu to a larger, detailed metadata editor on the right. The editor has tabs for 'IIIF' (disabled) and 'My' (selected and highlighted in blue). The 'My' tab contains fields for 'title' (Université de Louvain - Les Halles (façade)), 'date' (1896 - End...), 'topographical details' (lithograph(s) line block), 'additional info' (Biographical or historical data: Gezicht c), 'creator' (Francois Gailliard), and 'creator_wikidata' (a link to https://www.wikidata.org/wiki/...). Each field has an 'Add value' button.

Metadata in IMMARKUS

Or you can import preset schemas (e.g. 'archaeological image', 'artwork', and 'historical printed illustration') in **Data Model Mode**.

The screenshot shows the IMMARKUS interface. On the left is a sidebar with the following menu items:

- IMMARKUS
- Images
- Data Model** (selected)
- Knowledge Graph
- Export
- X-MARKUS
- About
- Help

The main area is titled "Data Model" and contains the following content:

- Header buttons: Entity Classes, Relationships, Image Metadata (selected), and Folder Metadata.
- Text: "Use schemas to record structured information about your images, such as title, author or source. Create multiple schemas to describe different types of images, e.g. 'artwork', 'historical printed illustration', or 'archaeological image'."
- A table with columns: Schema, Description, and Properties. One row is visible: "Topographical pictures" with properties "Aa title", "Aa date", "Aa topographical details", "+6", and "...".
- Buttons at the bottom: "New Image Schema" and "Import Model" (highlighted with a blue box and arrow).

A large blue arrow points from the "Import Model" button to a modal dialog titled "Import Image Schemas". The dialog contains the following sections:

- Replace Current Model** (switch is off): "You can either delete and replace your existing model, or add the imported schemas to your current model."
- How to Handle Duplicate Schemas**: "Select how the import should merge schemas that already exist in your model."
Options:
 - Keep Existing**: "If the import contains schemas that already exist in your model, keep the existing ones and discard the imported schemas."
 - Keep Imported**: "If the import contains schemas that already exist in your model, discard the existing ones and keep the imported schemas."
- Import from Preset**: A dropdown menu showing "archaeological image", "artwork", and "historical printed illustration".

4. Visualising and Querying Annotations

Graph view helps reveal patterns and connections across annotations and their sources.

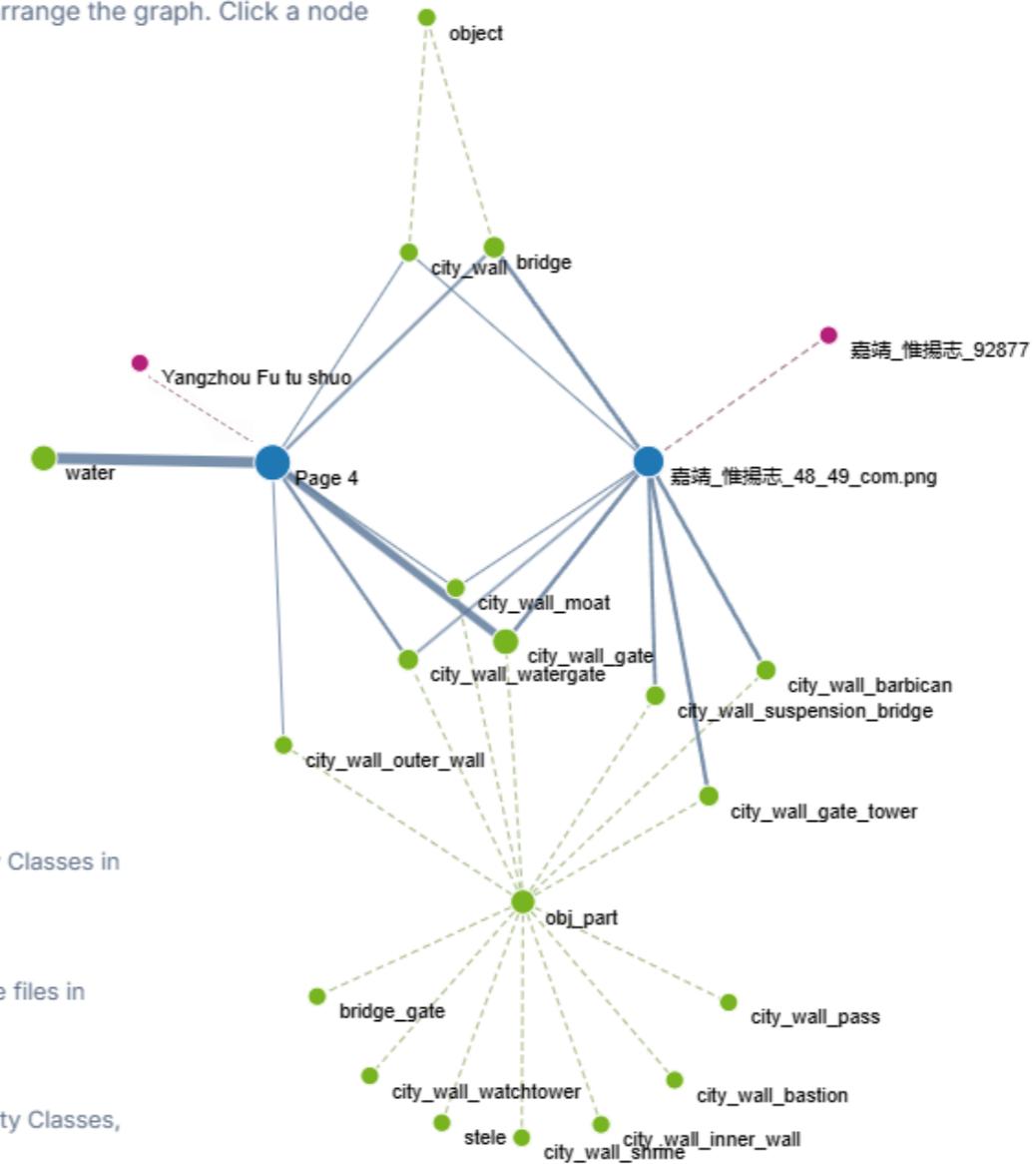
IMMARKUS

- Images
- Data Model
- Knowledge Graph**
- Export
- X-MARKUS
- About
- Help

Exit

Knowledge Graph

Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.



Hovering over and clicking nodes to view the connections and annotations

IMMARKUS

- [Images](#)
- [Data Model](#)
- Knowledge Graph**
- [Export](#)
- [X-MARKUS](#)
- [About](#)
- [Help](#)

[\[→\] Exit](#)

Knowledge Graph

Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.

Nodes

- Entity Class (green circle)
- Image (blue circle)

Edges

- Entity class hierarchy** (dashed line): Links between parent- and child Entity Classes in your data model.
- Entity Annotations** (solid line): Connections between images and Entity Classes, based on the tags in your annotations.

[X](#) [Q](#) [Settings](#)

Clicking sub-folder nodes ● to view the collection details

IMMARKUS

- Images
- Data Model
- Knowledge Graph**
- Export
- X-MARKUS
- About
- Help

Knowledge Graph

Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.

Nodes

- Entity Class
- Sub-Folder
- Image

Edges

- Entity class hierarchy
- Links between parent- and child Entity Classes in your data model.
- Folder structure
- File structure of sub-folders and image files in your project directory.
- Entity Annotations
- Connections between images and Entity Classes, based on the tags in your annotations.

Exit

Université de Louvain - Les Halles (façade principale)

1 Images

Open

My

Université de Louvain - Les Halles (façade principale). Vue prise par un temps de neige

KU Leuven Libraries Special Collections, TA00503

Limo

Graphic

Topographical pictures

Clicking image nodes ● to view the image details

IMMARKUS

- Images
- Data Model

Knowledge Graph

Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.

Export

X-MARKUS

About

Help

Nodes

- Entity Class
- Sub-Folder
- Image

Edges

- Entity class hierarchy
- Folder structure
- Entity Annotations

TA00522

4.037 x 2.927 px

4 0 Metadata

() IIIF My

title

L'ancienne halle des drapiers à Louvain

date

1800 – 1900

topographical details

lithograph(s)

additional info

Biographical or historical data: Gezicht

creator

Leopold Mommens

Add value

Exit

Clicking image nodes ● to view the image details or the annotated shapes within it

IMMARKUS

- Images
- Data Model
- Knowledge Graph**
- Export
- X-MARKUS
- About
- Help

Knowledge Graph

Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.

Nodes

- Entity Class
- Sub-Folder
- Image

Edges

- Entity class hierarchy
- Links between parent- and child Entity Classes in your data model.
- Folder structure
- File structure of sub-folders and image files in your project directory.
- Entity Annotations
- Connections between images and Entity Classes, based on the tags in your annotations.

TA00522

4.037 x 2.927 px

4 Annotations

0

hall building

Ancienne Halle des Drapiers - <https://www.wikidata.org/wiki/Q1...>

facade statue

facade statue

facade statue

facade statue

Exit

Settings

Clicking entity nodes to view its annotated shapes

IMMARKUS

- Images
- Data Model
- Knowledge Graph**
- Export
- X-MARKUS
- About
- Help

Knowledge Graph

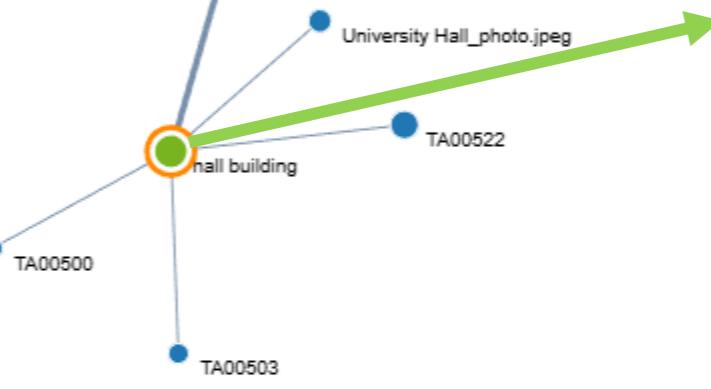
Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.

Nodes

- Entity Class
- Sub-Folder
- Image

Edges

- Entity class hierarchy
- Links between parent- and child Entity Classes in your data model.
- Folder structure
- File structure of sub-folders and image files in your project directory.
- Entity Annotations
- Connections between images and Entity Classes, based on the tags in your annotations.

 A green arrow points from the 'Entity Annotations' section to the 'hall building' node in the graph, which is highlighted with a green circle.

 **hall building** 

No description

 **6 Annotations**  0

Entity	Description	Link	Year	Type
LM00025	La Halle aux Draps -	https://www.wikidata.org/wiki/Q1	- 1850 - 1900	elevation
TA00500	La halle -	https://www.wikidata.org/wiki/Q1	- 1680	elevation
TA00500	Des Halles -	https://www.wikidata.org/wiki/Q1	- 1700 - 1750	elevation
TA00503	Les Halles -	https://www.wikidata.org/wiki/Q1	- 1896	facade
TA00522	Ancienne Halle des Drapiers -	https://www.wikidata.org/wiki/Q1	- 1800 - 1900	elevation
University Hall_photo.jpeg	University Hall -	https://www.wikidata.org/wiki/Q1	- 2025	facade

Practice 5. Navigating Your Annotations in the Knowledge Graph

1. Click **Knowledge Graph** on the left-hand menu bar
2. Hover over an **Entity Node**  to see the entity class hierarchy and its connection with the **Image Node** 
3. Click an **Image Node**  to navigate the annotations associated
4. Click **Settings**, then toggle on **Show sub-folders as nodes**
5. Click a **Sub-Folder Node**  to view the metadata fetched from IIIF manifests

Querying Images and Annotations

IMMARKUS

- Images
- Data Model
- Knowledge Graph**
- Export
- X-MARKUS
- About
- Help

Knowledge Graph

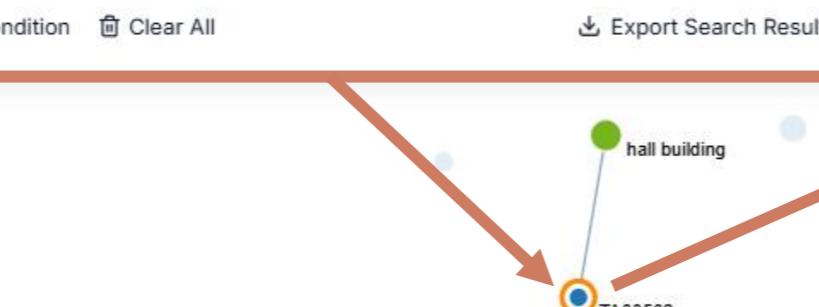
Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.

Graph Search

Find **images**

where image:creator is Francois Gaillard

Add Condition Clear All Export Search Result



Nodes

- Entity Class
- Sub-Folder
- Image

Edges

- Entity class hierarchy
- Folder structure
- Entity Annotations

Connections between images and Entity Classes, based on the tags in your annotations.

Exit

TA00503
2.910 x 4.313 px

1 Annotations

0

hall building

Les Halles - <https://www.wikidata.org/wiki/Q1...>



Searching by Entity Class

Knowledge Graph

Explore connections between images and entities. Zoom and pan the graph with your mouse. Grab and pull a node to re-arrange the graph. Click a node to see more information.

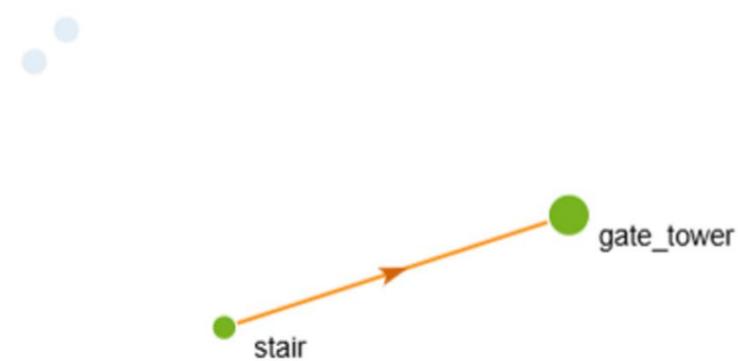


Searching by Relationship

Graph Search

Find entity classes with relationship provides access to ✖

⊕ Add Condition Clear All Export Search Result



Graph Type ✖

Select how you want to visualize your data.

Hierarchy & Annotations
Visualize the data model hierarchy, folder structure and entity annotations.

Relationships
Visualize the Relationships between annotations. Data model hierarchy and entity annotations are shown on hover.

Hide labels toggle
Don't show text labels for graph nodes. A hover tooltip will be used instead.
[> Hide for specific node types](#)

Show sub-folders as nodes toggle
Include sub-folders inside your workfolder as nodes in the graph.

Hide unconnected nodes toggle
Remove nodes without any connections from the graph.



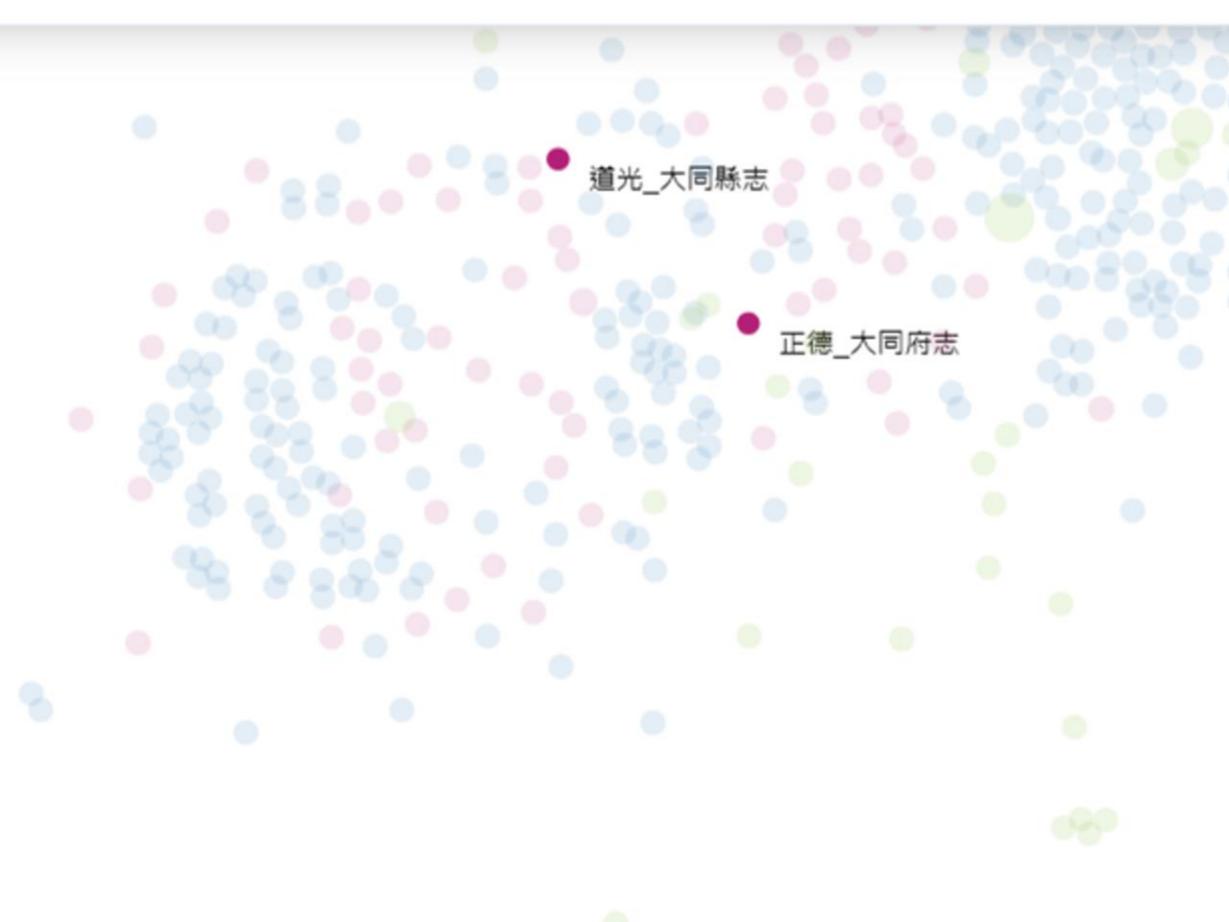
Searching by Metadata

Graph Search

Find **sub-folders**

where **folder:Place_cove...** is **大同**

Add Condition **Clear All** **Export Search Result**



Graph Type

Select how you want to visualize your data.

Hierarchy & Annotations
Visualize the data model hierarchy, folder structure and entity annotations.

Relationships
Visualize the Relationships between annotations. Data model hierarchy and entity annotations are shown on hover.

Hide labels

Don't show text labels for graph nodes. A hover tooltip will be used instead.

[> Hide for specific node types](#)

Show sub-folders as nodes

Include sub-folders inside your workfolder as nodes in the graph.

Hide unconnected nodes

Remove nodes without any connections from the graph.



Adding and Managing Conditions

The screenshot shows the IMMARKUS interface with the 'Knowledge Graph' tab selected. On the left, a sidebar lists 'IMMARKUS' (Images, Data Model), 'X-MARKUS' (About, Help), and 'Export' options. The main area is titled 'Graph Search' and contains a search bar with the query 'images' and a search interface. The search interface includes conditions like 'with entity bridge', 'relation to wall is extramural', 'with entity water', and 'type is river'. Buttons for '+ Add Condition' and 'Clear All' are visible. A large blue arrow points to the '+ Add Condition' button with the text 'Click + Add Condition to add and/or condition to your search'. A yellow box with a yellow arrow points to the 'extramural' condition with the text 'Click + Sub-Condition to filter on properties of an entity class'. A grey box with a grey arrow points to the trash icon in the 'river' condition with the text 'Click Dustbin icon to delete (sub)conditions'. The background features a faint circular dot pattern.

IMMARKUS

- Images
- Data Model
- Knowledge Graph**
- Export
- X-MARKUS
- About
- Help

Graph Search

Find images

with entity bridge relation to wall is extramural

and with entity water type is river

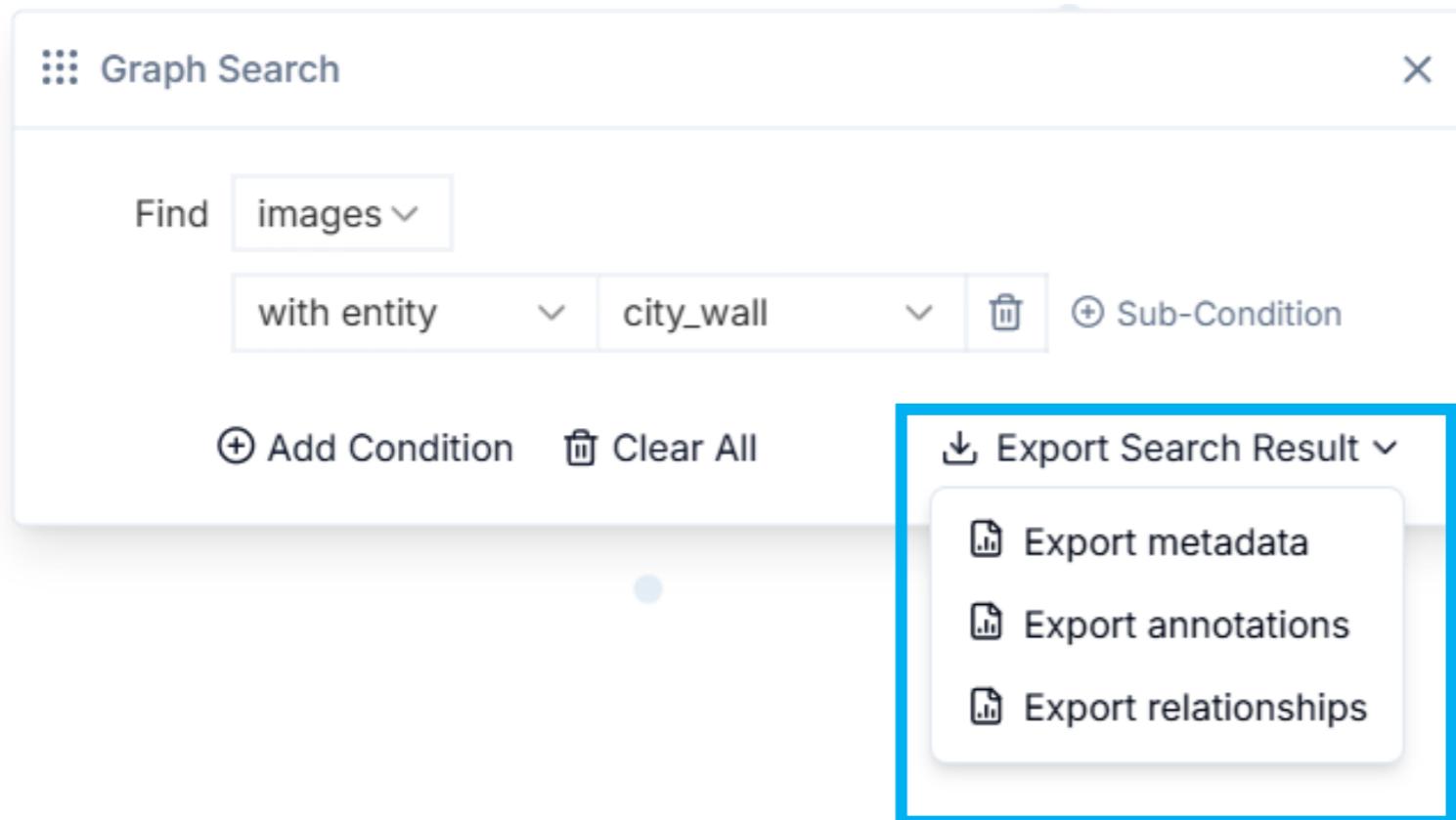
+ Add Condition **Clear All**

Click + Add Condition to add and/or condition to your search

Click + Sub-Condition to filter on properties of an entity class

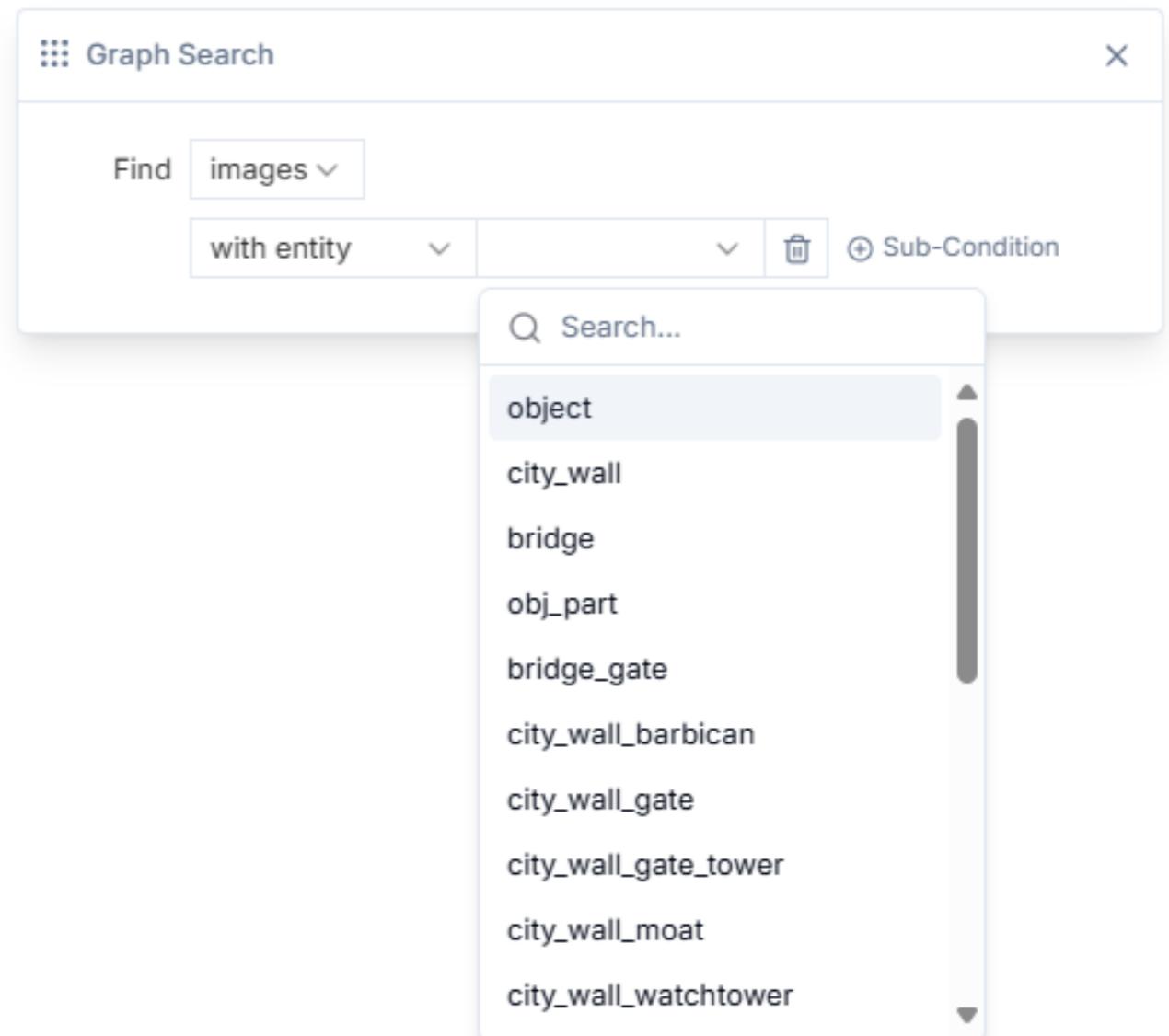
Click Dustbin icon to delete (sub)conditions

Exporting Graph Search Results



Practice 6. Searching for Images by Entity Tags

1. Click the **Magnifier Icon** 
2. Select **Find images** → **with entity** → **select one [entity]** from the dropdown list
3. The image node that meets the condition will be highlighted in the graph
4. Explore adding a **Sub-Condition** to include more search criteria



5. Exporting Annotations and Models

IMMARKUS

Images

Data Model

Knowledge Graph

Export

X-MARKUS

About

Help

Exit

Export

Export your data in different export formats.

Annotations

Relationships

Data Model

Metadata

Annotation Data

All annotations, on all images in your current work folder, as a flat list in [W3C Web Annotation](#) JSON-LD format.

JSON-LD

Annotations and Images

All annotations, on all images in your current work folder, as an Excel file. Each top-level Entity Class will appear on a separate worksheet.

Image snippets are included as a spreadsheet column. Choose your preferred format:

- **Bounding box snippets:** rectangular images showing the full area around each annotation.
- **Exact shape snippets:** images clipped precisely to the annotated shape (applies to polygons and ellipses).

Export bounding box snippets

XLSX

Exporting Annotations for Further Computation

IMMARKUS

- Images
- Data Model
- Knowledge Graph
- Export**
- X-MARKUS
- About
- Help

Export

Export your data in different export formats.

Annotations

Annotation Data
All annotations, on all images in your current work folder, as a flat list in [W3C Web Annotation JSON-LD format](#).

Annotations and Images
All annotations, on all images in your current work folder, as an Excel file. Each top-level Entity Class will appear on a separate worksheet.
Image snippets are included as a spreadsheet column. Choose your preferred format:

- Bounding box snippets:** rectangular images showing the full area around each annotation.
- Exact shape snippets:** images clipped precisely to the annotated shape (applies to polygons and ellipses).

Export bounding box snippets
Export bounding box snippets
Export exact shape snippets

Exporting Annotations for Further Computation

Snippet column



	A	B	C	D	E	F	G	H	I
1	Snippet	Image Filename	Folder Name	Annotation ID	Created	Entity Class	id		name descriptor
2		嘉靖_惟揚志_48_49_c0616_yangzhou_map_IMMARKUS_revised/嘉靖_惟揚 5b9896cd-9b51-4b04-a3c5-5103f8746a8	2025-05-23T10:42:07.021	city_wall	yangzhou_cheng	揚州城			
3		嘉靖_惟揚志_48_49_c0616_yangzhou_map_IMMARKUS_revised/嘉靖_惟揚 c2f5e32e-d7ec-40a0-b962-b64bc0cc00c6	2025-05-23T10:27:14.434	bridge	yangzhou_kaiming_qiao	開明橋			
4		嘉靖_惟揚志_48_49_c0616_yangzhou_map_IMMARKUS_revised/嘉靖_惟揚 7173dbd1-110d-4ae6-8d76-677ce680f0c	2025-05-23T10:27:24.170	bridge	yangzhou_wenjin_qiao	文津橋			
5		嘉靖_惟揚志_48_49_c0616_yangzhou_map_IMMARKUS_revised/嘉靖_惟揚 fd6f5684-0285-4f63-a6a4-50e0b15f8d6	2025-05-23T10:27:38.385	bridge	yangzhou_tongsi_qiao	通泗橋			
6		嘉靖_惟揚志_48_49_c0616_yangzhou_map_IMMARKUS_revised/嘉靖_惟揚 f40efc83-17a7-495c-92ae-682ebc173153	2025-05-23T10:27:46.122	bridge	yangzhou_taiping_qiao	太平橋			

Annotated Properties

Entity Classes

object obj_part water

Exporting W3C Web Annotation Format

- Annotations have unique IDs
- **target.source** references the filename
- Each entity tag stored as one **W3C Annotation Body**
 - Type: **Dataset**
 - Purpose: **classifying**
 - Source: entity ID in the data model
 - Values stored as serialized key/value pairs
- Comments stored as a **TextualBody**
 - Purpose: **commenting**
 - AI annotations retain model information in **generator** field

Further Computation Example

X-MARKUS Searching and Filtering Database: 20251020-Immarkus2D(memory).xml Search: Filter: text_tags Udef_Align_OBJECT Size: 2

2. 惠揚志

OBJECT_MAIN/bridge
OBJ_PART/city_wall_moat
OBJ_PART/city_wall_gate
OBJ_PART/city_wall_watergate
OBJECT_MAIN/city_wall
NULL/water
OBJ_PART/city_wall_outer_wall
NULL/temple
OBJ_PART/city_wall_barbican
OBJ_PART/city_wall_gate_tower
OBJ_PART/city_wall_suspension_bri dge

#Source_title_ch: 惠揚志
#Source_title_py: Weiyang.zhi
#Source_title_en: Gazetteer.of.WeiYang.(Yangzhou)
#Source_author: 朱儀鉉,藍廣
#CDB: 131359
#Publication_place: 揚州
#TGAZ_cr: hvd_33309
#Publication_time: 1542
#Reprint: No
#Place_covered: 揚州
#TGAZ_cv: hvd_33309
#Genre: gazetteer
#Type: print
#Format: woodblock.print
#Data_source: 中國方志三庫二集
#Language: Chinese

Toggle all pieces on/off

piece.0 properties/id: yangzhou_cheng properties/name: 揚州城 properties/TGAZ: hvd_33309 properties/texture: bond_pattern properties/road_presence: intramural

piece.1 properties/name: 揚州城南門壁城 properties/direction: south properties/texture: bond_pattern

piece.2 properties/name: 揚州城南門 properties/direction: south properties/texture: bond_pattern

piece.3 properties/name: 揚州城南門樓

piece.4 properties/name: 揚州城南水門

piece.5 properties/name: 揚州城北門吊橋 properties/texture: striped

piece.6 properties/id: yangzhou_kaiming_qiao properties/name: 開明橋 properties/TGAZ: hvd_33309 properties/texture: striped properties/bridge_type: arch.bridge properties/relation.to.wall: intramural properties/bridge_cover: no

piece.7

All Inverse Apply Filter

IMMARKUS annotations
parsed in X-MARKUS
<https://xmarkus.xmarkus.org/>

X-MARKUS Searching and Filtering Database: 20260127-Converting(memory).xml Search: Filter: event_tree *EVENT Size: 3 SortBy: Document ID 1 跳至第 頁 Go

3. 揚州府志：揚州新城記

EXPLANATION

#piece_title: 揚州新城記
#piece_author: 何城(202783)
#piece_time: 丁巳夏(公元1557年,明世宗)
#place_covered: 揚州(hvd_33309)
#source_title: 揚州府志
#source_author: 阿克當(81032)
#publication_place: 揚州(hvd_33309)
#publication_time: 1810
#Compilation:

嘉慶_揚州府志_卷十五_城池_何城_揚州新城記

揚州府城 *object.yangzhou_cheng

何城 PersonName:cbdb_202783 揚州新城記 *work-

揚州 外城 *obj_part:outer_wall 成言几屹樓堞蔚蔽囊括萬家襟帶漕河以為固甚盛舉也先是倭寇 *action_cause: 弗靖騷動東南 郡守 Office:prefect 吳公自湖 PersonName:cbdb_125187 用不敏議調 捷 LocName: 介 LocName: 兩郡之間四方舟車商賈 *soccat:merchant 之所萃生華繁數倍於昔又運司 Office:tax_transport_bureau 餘鹽銀獨當天下賦稅之半而商人 *soccat:merchan

寶居舊城之外無藩籬之限非捍衛計也 置 action:build 外城 *obj_part:outer_wall 便時 皇人 Office:provincial_graduate 楊守誠 PersonName:cbdb_409577 力贊其說遂請於 撫院 Office:grand_coordinator 芹山陳公 PersonName:cbdb_131016 按院 Office:regional_inspector 芹山吳公 PersonName:cbdb_124375 蘭院 Office:salt_office 春洲崔公 PersonName:cbdb_204032 並下 自湖 PersonName:cbdb_125187 計凡城丈合工與財當費銀二十九兩有奇 *cost:c29兩 道計 銀四萬六千一百五十七兩 *cost:46157兩 括府藏止一萬六千兩有奇 *cost:c16000兩 春洲公 PersonName:cbdb_204032 許借 商鹽 *soccat:salt_merchant 銀三萬 *cost:30000兩 兩足其費議定 芹山 PersonName:cbdb_131016 諸公並奏下工部 Office:ministry_of_work 覆奏詔悉如請是為乙卯之冬 Date:公元1555年,明世宗 適吳公 PersonName:cbdb_125187 有濟源之命廟 Office:court 議以 毅庵石公 PersonName:cbdb_127003 代初議城因 淮河 *action_cause:silted_river 而瀕河之地積為居民 *soccat:resident 之所占吾動浮言以惑有位議者恒以奪民業難其事公始至即召外城之商 *soccat:merchant 民 *soccat:peo ple 而諭之曰瀕河之地積往牒則官地也是豈汝右得而廬舍者耶今為城當悉歸於官永建乃

highlight with event id

EVENT_SOURCE_TEXT
- 揚州府志：揚州新城記

TIME
..BEGIN/1556-03/丙辰之二月
..END/1556-11/十月
..duration/9月/十個月

EVENT
..EXPANSION/build/壘

OBJECT_MAIN
► X-MARKUS Feature: [Udef_Align_OBJECT] OBJECT_MAIN/city_wall

..wall/yangzhou_cheng/揚州府城

LOCATION
..placeName/hvd_33309/揚

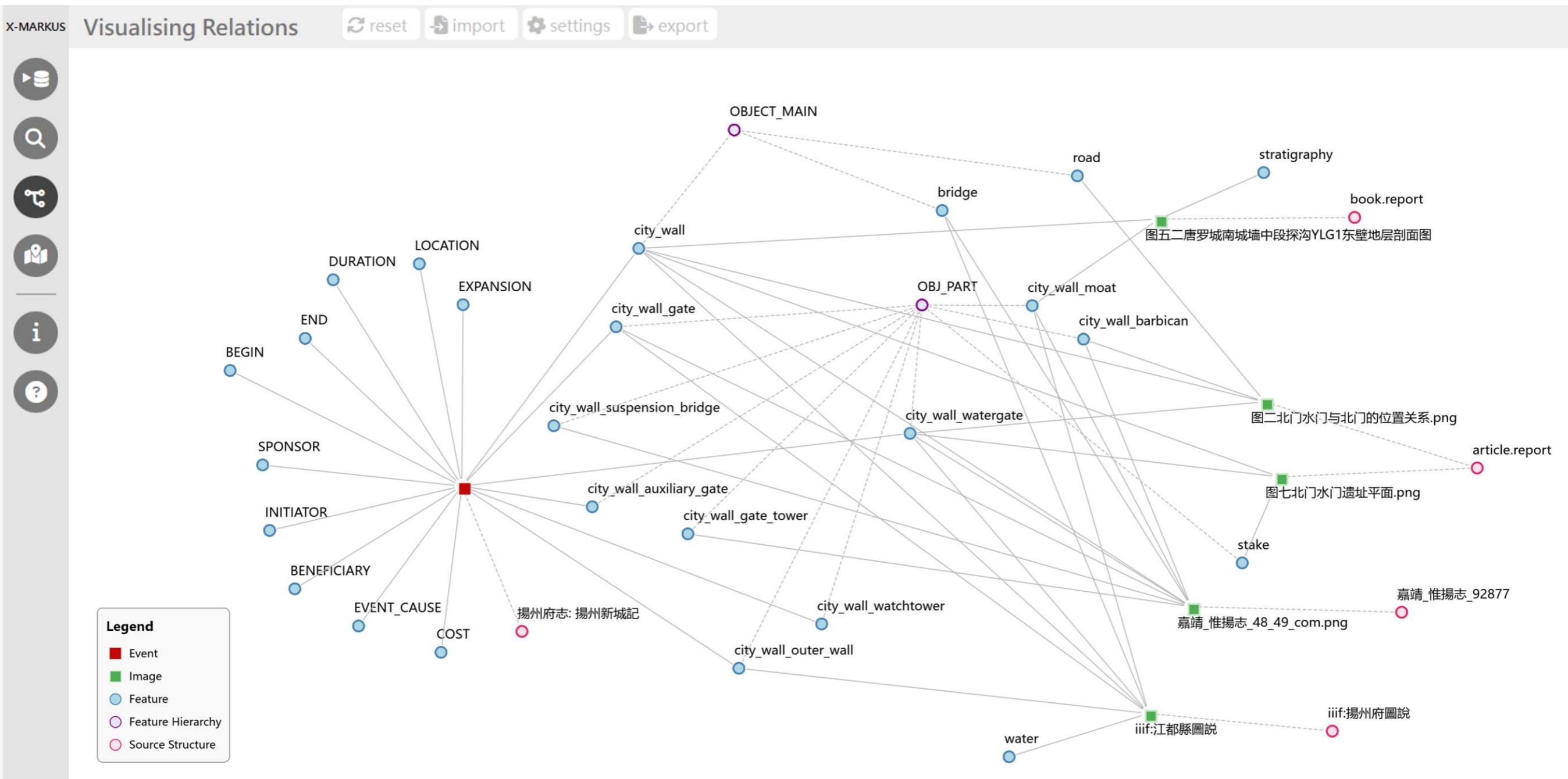
COST
..cost:46157兩/銀四萬六千一百五十七兩

INITIATOR
..officialTitle/provincial_graduate/舉人
..fullName:409577/楊守誠
..officialTitle/prefect/都察
..fullName:125187/吳公自湖

SPONSOR
..officialTitle/grand_coordinator/撫院
..fullName:131016/芹山陳公
..officialTitle/regional_inspector/按院
..fullName:124375/芹山吳公
..officialTitle/salt_office/鹽院
..fullName:204032/春洲崔公
..soccat:salt_merchant/商鹽
..officialTitle/recorder/經歷
..fullName:203204/張曉見
..officialTitle/assistant_magistrate/主簿
..fullName:124375/芹山吳公
..officialTitle/assistant_magistrate/主簿
..officialTitle/assistant_magistrate/主簿
..fullName:335605/董邦教
..officialTitle/clerk/知事

Related event annotations
parsed in X-MARKUS

Knowledge Graph Showing Entity Connections across Text and Image Corpora



Practice 7. Exporting Your Annotations as an Excel File

1. Click **Export** on the left-hand menu bar
2. Select your preferred snippet type, then click **XLSX**
3. Open the downloaded Excel file to view your annotations

Exporting Data Models for Reuse

Export

Export your data in different export formats.

Annotations

Relationships

Data Model

Metadata

Entity Classes

Your Entity Class model, in proprietary IMMARKUS JSON Format.

 JSON

Relationship Types

Your Relationship Type model, in proprietary IMMARKUS JSON Format.

 JSON

Image Metadata Schemas

Your Image Metadata schemas, in proprietary IMMARKUS JSON Format.

 JSON

Folder Metadata Schemas

Your Folder Metadata schemas, in proprietary IMMARKUS JSON Format.

 JSON

Full IMMARKUS Data Model

All of the above - Entity Classes, Relationship Types, Image and Folder metadata schemas. This export is the same file you will find in your work folder as `_immarkus.model.json`. It is republished here for convenience.

 JSON

```
1  [
2  {
3      "color": "#94375c",
4      "id": "object",
5      "properties": [
6          {
7              "name": "id",
8              "type": "text",
9              "description": "use pinyin"
10         },
11         {
12             "name": "name",
13             "type": "text",
14             "description": "use Chinese characters"
15         },
16         {
17             "name": "descriptor",
18             "type": "text",
19             "description": "Transcribe Chinese text annotations related to the object"
20         },
21         {
22             "name": "TGAZ",
23             "type": "external_authority",
24             "authorities": [
25                 "TGAZ"
26             ],
27             "description": "Use the id at the relevant time."
28         },
29         {
30             "name": "DILA_PL",
31             "type": "external_authority",
32             "authorities": [
33                 "DILA (Place)"
34             ],
35             "description": "Use id if TGAZ id is not available. Use the one from DILA if TGAZ is not available"
36         },
37         {
38             "name": "texture",
39             "type": "enum",
40             "multiple": true,
41             "values": [
42                 "angle_bracket",
43                 "bond_pattern",
44                 "flagstone_layout",
45                 "solid_black",
46                 "striped",
47                 "unadorned"
48             ]
49         }
50     ]
51 }
```

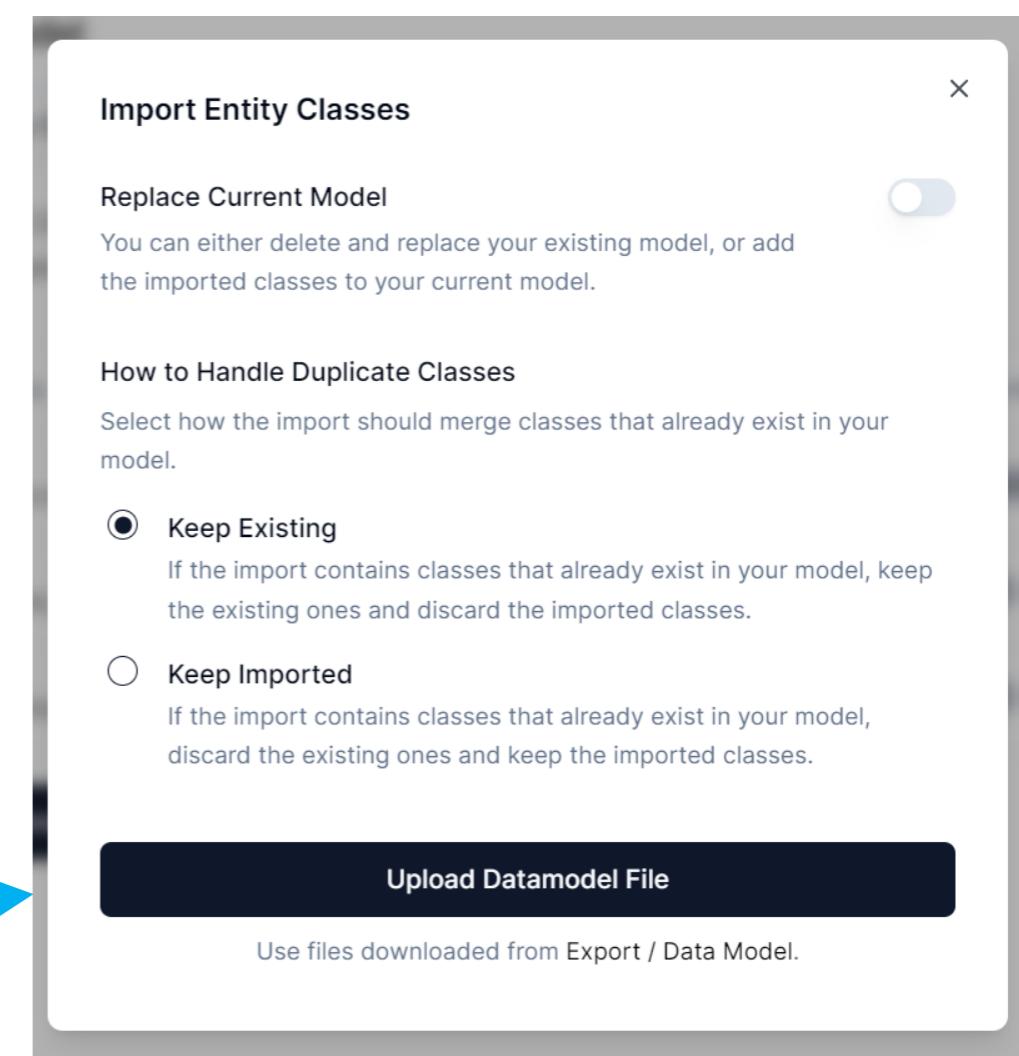
Exporting Data Models for Reuse

Data Model

Entity Classes Relationships Image Metadata Folder Metadata

Use Entity Classes to annotate specific concepts or things with your annotations, and record details like the material of an item, or the number of legs on an animal.

Entity Class	Display Name	Description	Properties	...
> ● figure	figure	<input type="button" value="Add descriptor"/>		...
> ● geo_feature	geo_feature	<input type="button" value="Add name"/> <input type="button" value="Add descriptor"/>		...
> ● obj_part	obj_part	<input type="button" value="Add name"/> <input type="button" value="Add descriptor"/> <input type="button" value="Add color"/> +2		...
> ● object	object	<input type="button" value="Add id"/> <input type="button" value="Add name"/> <input type="button" value="Add location"/> +4		...
> ● text	text	<input type="button" value="Add descriptor"/> <input type="button" value="# number"/> <input type="button" value="relation test"/>		...



With thanks to



- Hilde De Weerdt, Lee Sunkyu, Iva Stojević, Xi Wangzhi, Dawn Zhuang, Meret Meister, Wang Ran, Pascal van der Bij (KU Leuven)
- Brent/Hou leong Ho (Staatsbibliothek zu Berlin)
- Rainer Simon
- Bol, Peter K., Michael Fuller, et al. China Biographical Database Project (CBDB) (2004–). <http://isites.harvard.edu/icb/icb.do?keyword=k16229&pageid=icb.page12970>
- ———, Lex Berman, et al. China Historical GIS (2001–). <http://www.fas.harvard.edu/~chgis/>
- ———, Center for Historical Geography at Fudan University, ACASIAN at Griffith University, et al. Hartwell China History Project GIS (1992–2001). <http://www.fas.harvard.edu/~chgis/>
- Tu Hsieh-Chang, Hsiang Jieh, Lin Nungyao et al. National Taiwan University.

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