Introduction to IIIF (International Image Interoperability Framework)

In this workshop, we will explore the International Image Interoperability Framework (https://iiif.io) and the work of the IIIF community to create universal standards for describing and sharing images online. With common viewing platforms, we can obtain interoperable digital image content to display, edit, annotate, and share images on the web, for example artworks, maps, and musical scores.

Tool-Specific Components

Research libraries and image repositories have been collaborating to produce an interoperable technology and community framework for image delivery called IIIF (International Image Interoperability Framework). IIIF images can be artworks, photographs, maps, music scores, books, newspapers, manuscripts, scrolls, single sheet collections, and archival materials. IIIF also handles audiovisual materials, with annotations for sections of the time dimension.

IIIF develops an open Application Programming Interface (API), an intermediary software that allows two applications to communicate to each other, while implementing them in software that exposes interoperable content. Through image servers and web clients, anyone can view, compare, manipulate, and annotate images. Therefore, there are hundreds of different implementations that are called APIs. Those APIs are open source and anyone can implement.

When we explore IIIF, we need the following tool-specific components:

- Image API (Application Programming Interface), to deliver the pixels of an image in a simple and intuitive way that easily specifies the region, size, rotation, quality characteristics, and format of the image
- Presentation API, to allow for viewing
- Content Search API, with the option to search within the transcription (OCR, Optical Character Recognition) associated with a document
- Authentication API, to allow lightweight handling of authentication workflows
- IIIF Discovery API to allow users to easily find and engage with content available via existing IIIF APIs.

What is IIIF?

IIIF is an acronym for International Image Interoperability Framework. There are two meanings associated to IIIF:

- a set of open standards that expands uses of images from digitized collections, and implements viewing, comparing, manipulating, deep zooming, editing, and annotation capabilities

- the community of users and developers who collaborate on IIIF, such as libraries, museums, archives, software companies, and other organizations that create the IIIF specifications and advocate for the use of IIIF.

Goals

The goals of IIIF are the following:

- to have high-quality access to images hosted around the world

- to define a set of common application programming interfaces that support interoperability between image repositories

- to develop and document shared technologies for an unprecedented user experience, including the possibility to share, cite, and embed digital images that are IIIF compliant.

Finding IIIF Resources

Now that we have a definition for IIIF and an understanding of its potential uses, let's find images that are IIIF compliant. Here are some websites to browse:

- Bayerische StaatsBibliothek: https://app.digitale-sammlungen.de/bookshelf
- Stanford Special Collection OCLC IIIF Explorer (experimental): https://researchworks.oclc.org/iiif-explorer
- Biblissima, a source that aggregates many European libraries: https://iiif.biblissima.fr/collections
- Europeana, Europe's platform for digital cultural heritage: https://www.europeana.eu/en/search?query=sv_dcterms_conformsTo%3A%2aiiif%2a&view=grid
- The Vatican Library: https://digi.vatlib.it
- Harvard: https://library.harvard.edu/digital-collections
- Many, many more: https://bit.ly/iiif_collections

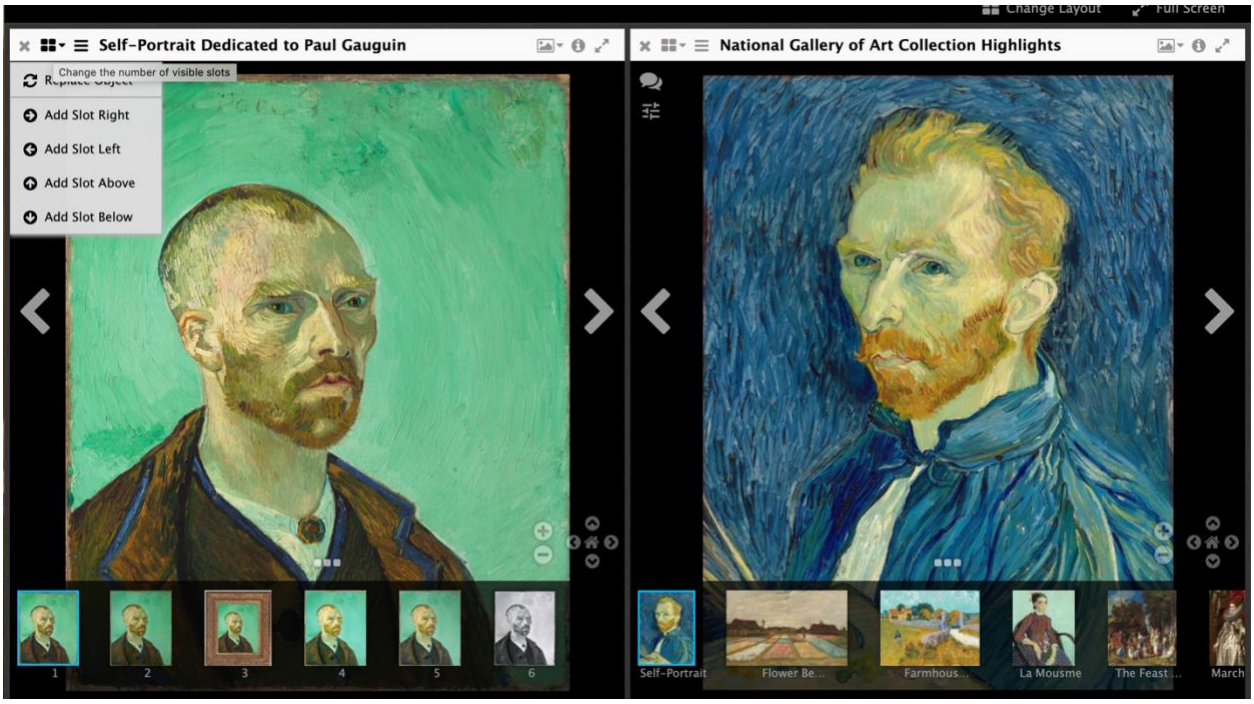
IIIF Viewers: Mirador

Open an instance of Mirador 2 at this link: https://projectmirador.org/demo
or Mirador 3, https://projectmirador.org
Mirador 3, however, is running experimentally now. Certain features are not yet implemented, for example the ability to create annotations on images. So, if you want to annotate images right now, Mirador 2 is preferred.

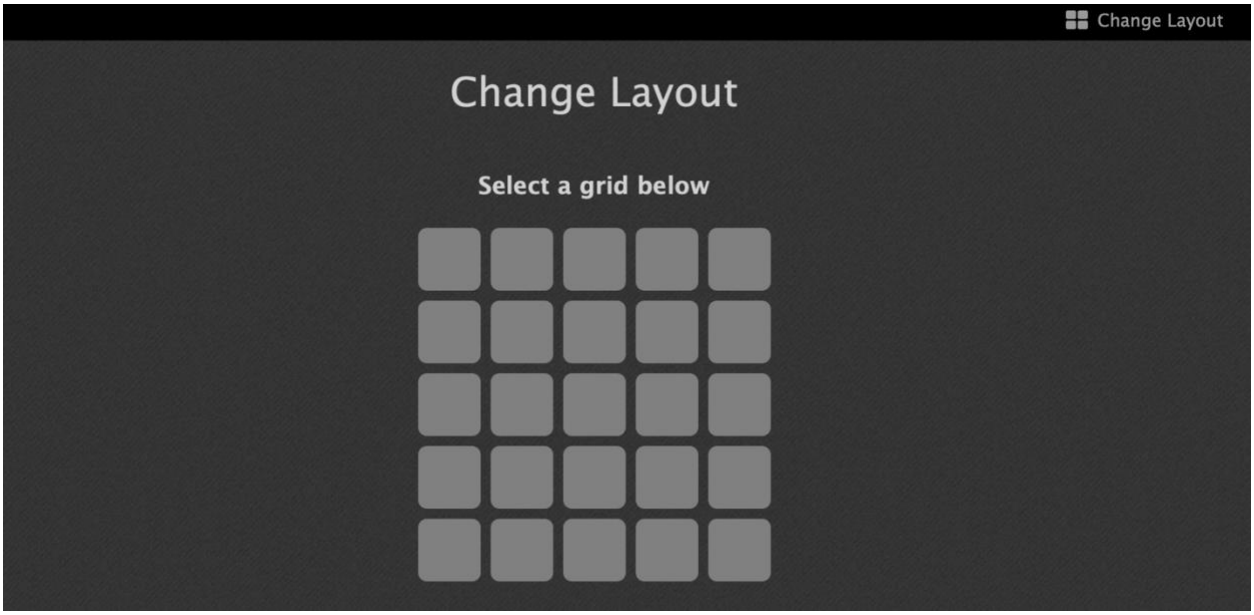
Zooming and Comparing

One common use is to zoom in for specific details, as well as a side-by-side comparison.
Using the Mirador site listed above (https://projectmirador.org/demo or https://projectmirador.org), build a workspace view that compares two or more manuscripts.

Click one image showing in the Mirador Viewer here (for example, artworks by Van Gogh), or click Replace Object – there is a four-square button to click. The image below shows where we need to click, at the top left of the image. Use this area also to close one of the windows. Next, click the 4 rectangles to drop down a menu where you can select Replace Object. Click this to view other manifests and display more images.



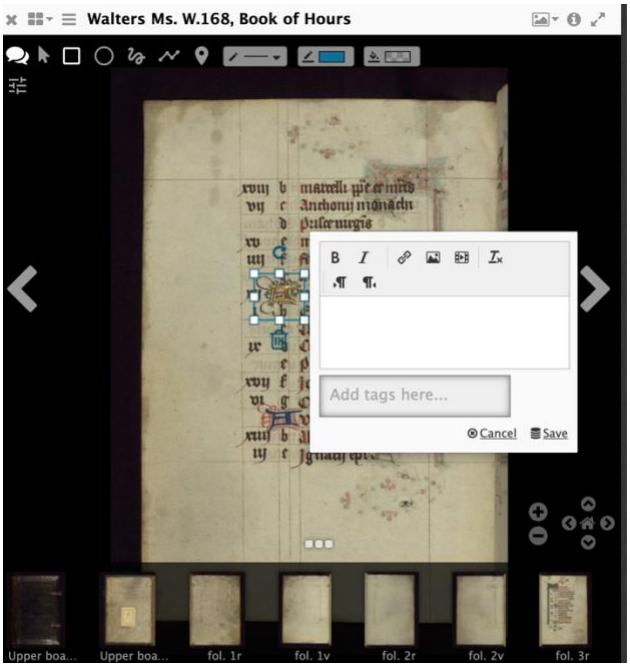
You can change the layout for your images in Mirador Viewer. Your images layout depends likely on how many images you would like to display at once. Click Change Layout (upper right corner) and select a grid.



Find an item, or more items from the collections listed above that you want to explore.
Find the IIIF badge or the IIIF manifest URL, and drag it into Mirador Viewer. There are ways to find a manifest URL, which is easier to find in some websites. For example, here we can practice with the Yale Center for British Art (https://collections.britishart.yale.edu). An intuitive approach is to look for the IIIF logo.

Annotations

Select a Manifest by clicking on one of the rows or add your own manifest (Add new object from URL). Click on Toggle Annotations, which looks like a speech bubble. Choose the way you want your annotations to look. Go to the image, select an area, and draw your annotation space there. Type a description and, if you want, tags too. Click Save.



Click the speech bubble on the top left:

- Speech bubble, or hide annotation buttons
- Pointer, to select existing annotations and change the size or edit the content
- Rectangle, to draw a rectangle annotation
- Oval, to draw an oval annotation
- Freeform, to have more creativity with the shape of the annotation
- Polygon, to create a shape with straight sides
- Pin, to drop a pin as the target of the annotation
- Thickness, to change the thickness of the shape's line
- Line color, to change the color of the shape's line
- Fill, to fill the shape with a color.

After selecting and drawing a shape on the image, you can see a box where you can add content for the annotation. Now you can see more buttons to format the content of the annotation: bold, italics, inserting a link, inserting an image, inserting a video or audio file, and also the option to clear formatting and change the orientation of the text (left to right or right to left). Save and add tags if you want.

Annotating through Storiiies by CogApp

Another way to combine annotations and images for research or teaching purposes is with tools developed to guide viewers through a curated experience. We can do this through Storiiies (with three i's for iiif), developed by CogApp.

For example: https://storiiies.cogapp.com/viewer/aeqi/The-Stoning-of-Saint-Stephen

Storiies can use IIIF to add annotations to images. For now, let's upload a JPEG file and annotate that image next. You could also start using Storiiies Editor by pasting in a manifest, however, there is currently a technical issue that CogApp has been trying to fix.

Storiiies is free to use. All services including image uploads and access to created stories are provided 'as is'. They make no warranty as to future availability of images and stories and also reserve the right to restrict access and change the conditions of service at any time.

Here is an example from a collection at Drew University that was presented through Storiiies for teaching purposes:
https://storiiies.cogapp.com/viewer/391d3/Drew-University-Shahnama-Paper-Conservation

IIIF Image API through the Internet Archive

You can upload your pictures and have a IIIF Image API service through the Internet Archive.
* You can delete your images after 30 days if you just want to practice now.

1. Register for a user account at https://archive.org.
2. Upload your image.
3. Upload 1 image per item.
4. Select Community Image collection.
5. On the details page, get the identifier for the image (for example, img-1111_222222).
6. Some of the IIIF images might appear very small even if you uploaded a large image. In that case, add the filename to the URL to get the original image available as IIIF compliant.

Some images are appearing small, so you will need to add the filename to the URL.
https://archive.org/details/img-8664_202009
You would normally create the following URL:
https://iiif.archivelab.org/iiif/img-8664_202009/info.json
but to make the image larger, you need to add the filename ($IMG_8664.jpg):
https://iiif.archivelab.org/iiif/img-8664_202009$IMG_8664.jpg/info.json
To find the image, navigate to the details page:
https://archive.org/details/img-8664_202009
Click on the main image. This will show the image full screen and if you look in the address bar, you will be able to see the filename.

7. Use the Internet Archive image service with this identifier:
   https://iiif.archivelab.org/iiif/img-8664_202009/info.json
8. You should then be able to use this image and create an image link:
9. https://iiif.archivelab.org/iiif/img-8664_202009/full/512,/0/default.jpg
10. Check that it works with a zooming viewer (here, let's use OpenSeaDragon):

https://iiif.gdmrdigital.com/openseadragon/index.html?image=https://iiif.archivelab.org/iiif/img-8664_202009/info.json

Create one IIIF Manifest with the Bodleian Manifest Editor

The prime element in IIIF is called a Manifest. This IIIF Manifest itself is accessible via a URL that points to a document online (JSON, or JavaScript Object Notation). The IIIF Manifest is shown in viewers such as Mirador or OpenSeaDragon, or the Universal Viewer and more tools.

The Bodleian has a manifest generator tool where you can plugin that info.json file from the image API and it will generate the manifest for you. A further step is to host those as gists on GitHub.

IIIF viewers need the Image and Presentation APIs be implemented. These client viewers can then be embedded on other sites. Mirador additionally allows for viewing and creating annotations on top of images in a manifest

1. Find images.
2. Have a list of IIIF info.json URLs for your content.
3. Use the Bodleian Manifest Editor to create a manifest
4. Add at least two Canvases to your Manifest. The option to add a Canvas is below the main image preview, to the left.
5. Click the Canvas Metadata expander in the right-hand column.
6. Click Add an Image. Choose the option to supply the info.json URL and enter the URL for your first image.
7. Edit the Canvas Label and provide an appropriate label for your image
8. Click the Manifest Metadata header in the right-hand column. Edit the Label. Supply a label for your manifest.
9. Click Save Manifest at the top of the right-hand column.
10. Click Download Manifest in the dialog box.

You can now open the Manifest in the Universal Viewer.

More Information about IIIF

Do you want to find out more on IIIF? Visit the website: https://iiif.io
See an updated list of implementations:
https://github.com/IIIF/awesome-iiif/blob/master/implementations.md

Feedback form

Please complete this post-workshop survey. Your responses will help us to evaluate the effectiveness of the formats and themes: https://forms.gle/25JzZ5FogLLrzDKw9

Contact Information

You can contact and follow up with questions:

Caterina Agostini, Rutgers Italian Department, caterina.agostini@rutgers.edu

Danielle Reay, Drew University Library, dreay@drew.edu