International Image Interoperability Framework

Japan - October 2017

@iiif_io

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Where did it come from?

E/PC/T/C.II/~~PRO~~/PV/5

UNITED NATIONS

ECONOMIC AND SOCIAL COUNCIL

PREPARATORY COMMITTEE

of the

INTERNATIONAL CONFERENCE ON TRADE AND EMPLOYMENT

Verbatim Report

of the

FIFTH MEETING

of

PROCEDURES SUB-COMMITTEE

of

COMMITTEE II

held at

Church House, Westminster, S.W.1.

on

Monday, 4th November, 1946

THE CHAIRMAN: I have been asked to make this announcement: In case delegates have not seen a notice which appeared in the Journal on Thursday, performances of the films "Henry V" and "Brief Encounter" are being given this afternoon and on Wednesday afternoon by the courtesy of the J.R. Rank Organization Limited for members of Delegations and their staffs. Tickets can be obtained from Miss Cunynghame-Robertson, Room 511.

Now, I think that we were still discussing Article 8, paragraph 2, when we finished our last meeting, and I think we had reached the stage where it had been agreed that we could work on the existing draft of paragraph 2 of Article 8 in the United States Charter, and that it could be accepted subject to the deletion of reference to the dates there and the insertion of a phrase something to the following effect: "Elimination of any preference in the ordinary import customs duty which does not exceed a preference in force in any Member country on a date to be agreed between participating countries" - or words to that effect. I think it was suggested that the precise wording should be left for formal approval of the Committee after our newly-appointed Rapporteur had had an opportunity to examine the draft.

MR ALAMILLA (Cuba): It was arranged that both Mr Hawkins and myself would try, in the absence of the Rapporteur, to reach agreement on the wording,

Manuscript 53 | View manuscript long description

Title: The Peterborough Psalter and Bestiary **Foliation:** ff. a-d + i-ii + 1-2 + 4 + 3 + 5-210 + e

View:

f. 190 V | zoom view

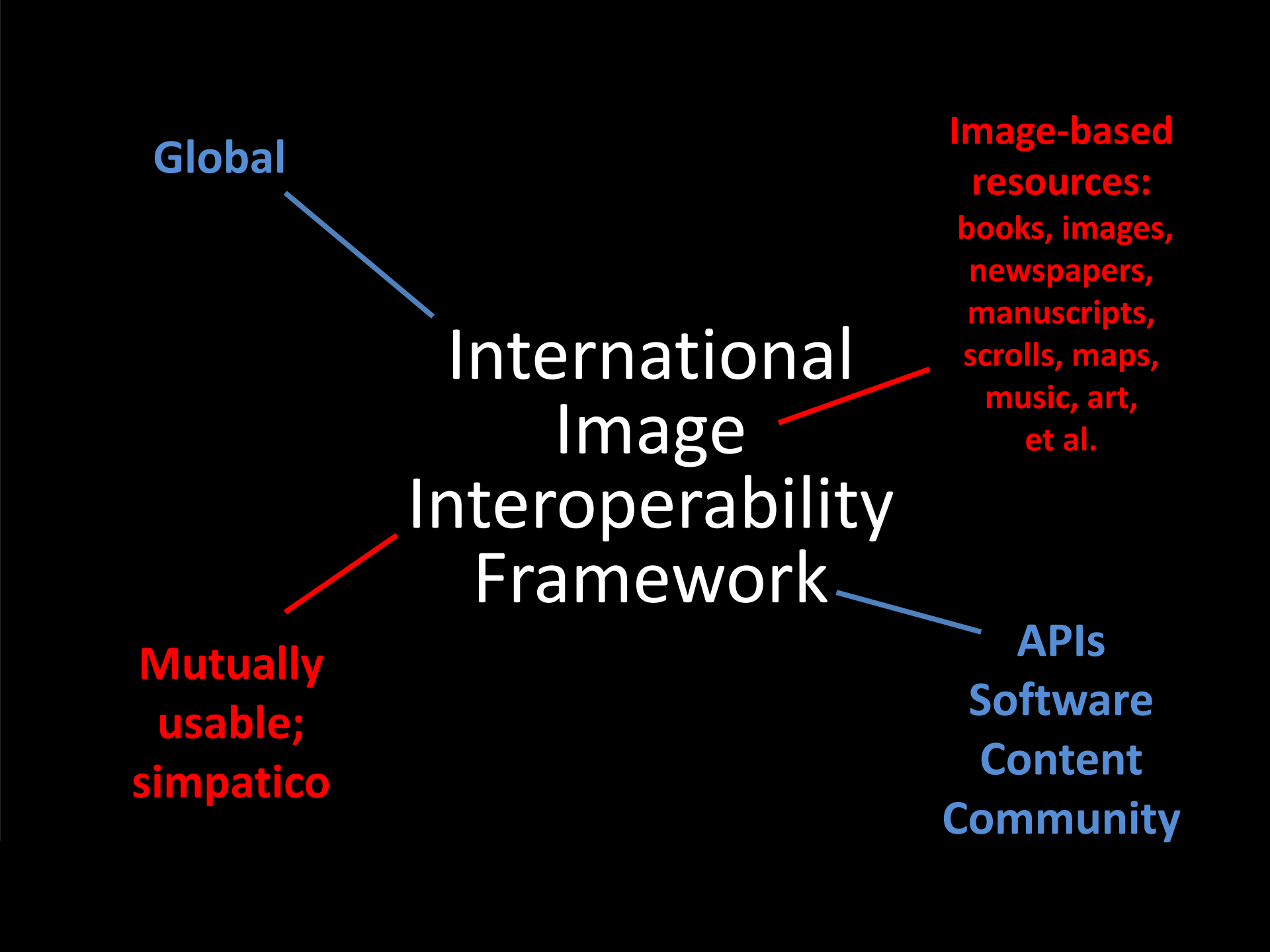
f. 191 R | zoom view

f. 190 V | f. 191 R

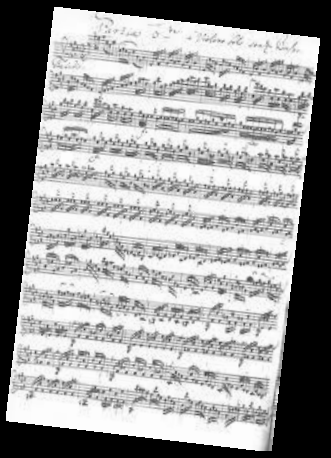
Animation: On Off

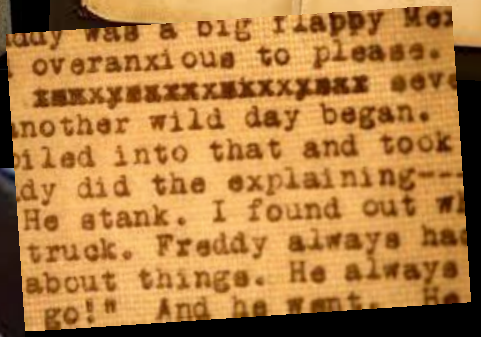
Go to Verso Recto Page Submit

Note:


Global
Image-based resources:
books, images, newspapers, manuscripts, scrolls, maps, music, art, et al.
International Image Interoperability Framework
Mutually usable; simpatico
APIs
Software
Content
Community

Images are fundamental information carriers for cultural heritage





But image delivery is…

…too hard

…too slow

…too idiosyncratic

…too disjointed

…too ugly

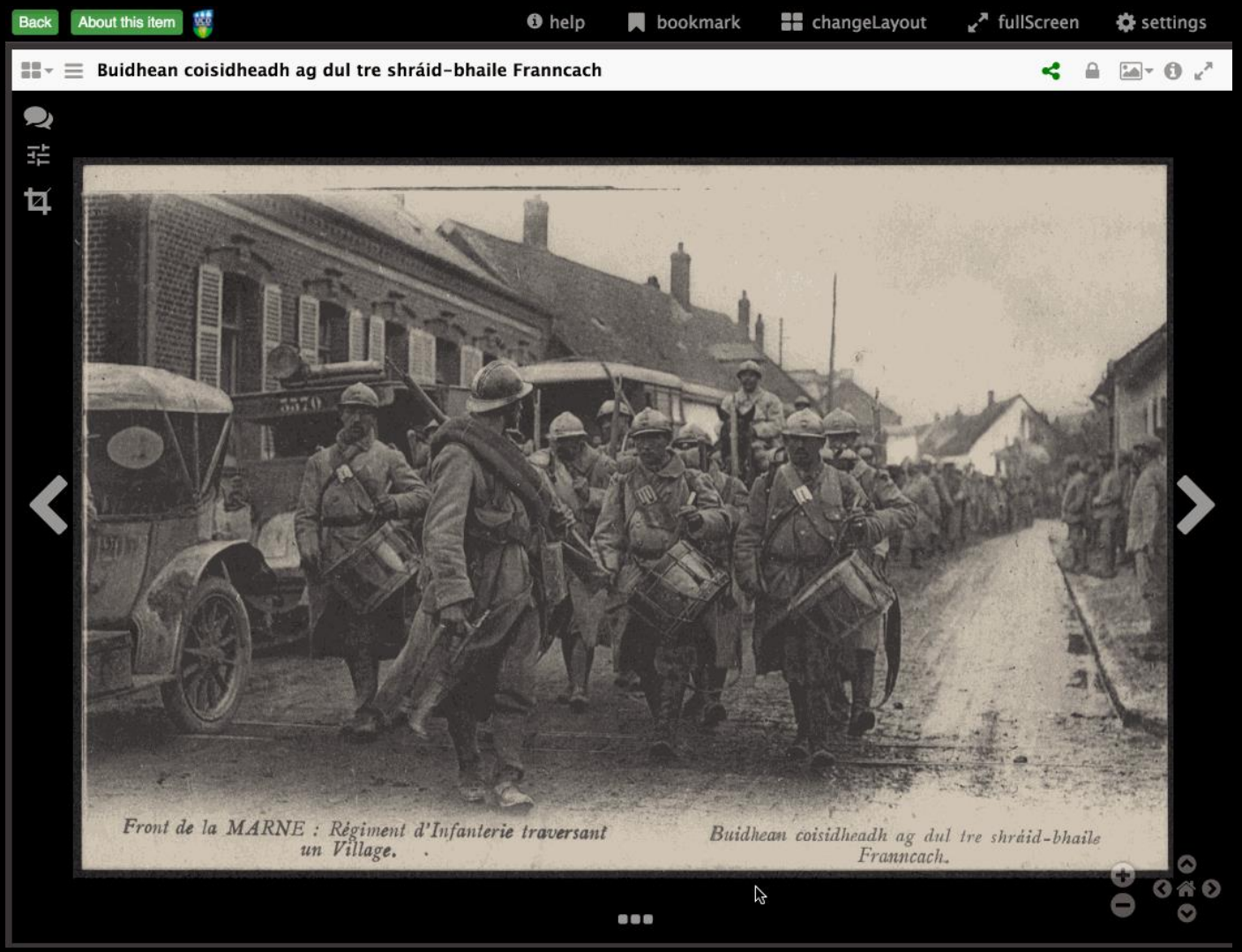
…and we all suffer because of it.

What if?

Deep zoom with large images

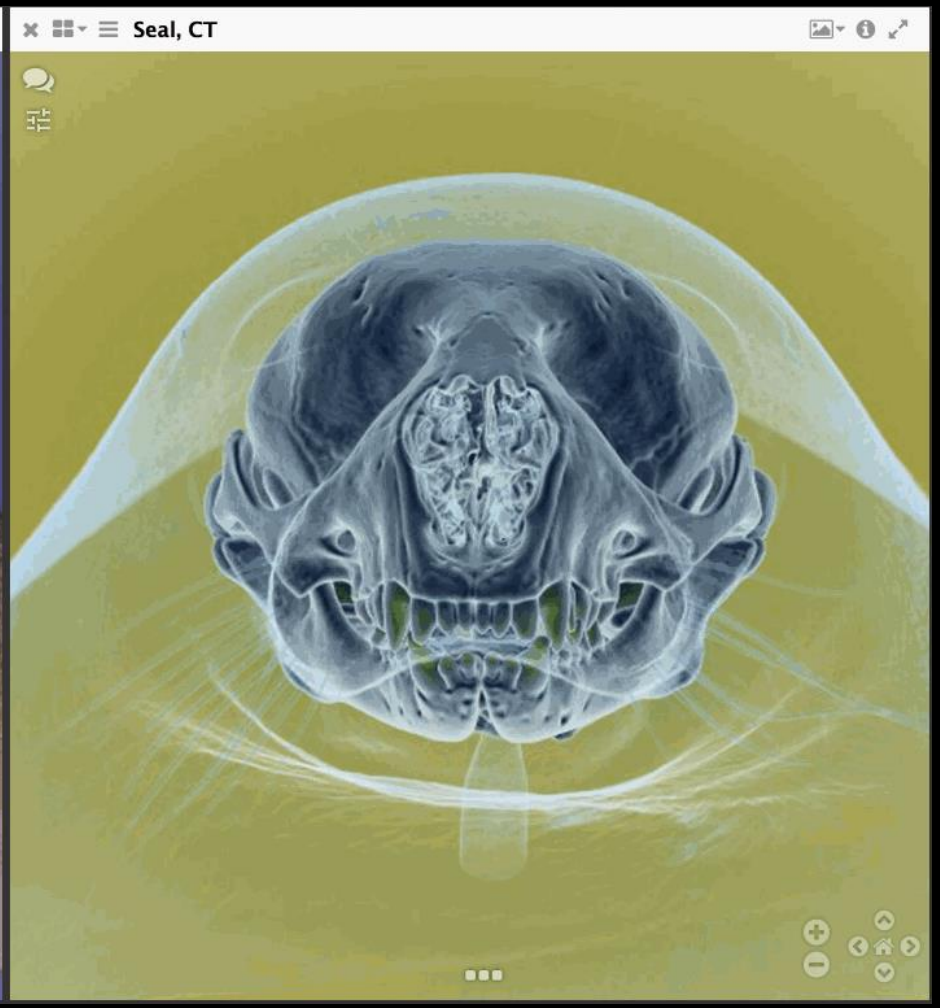
Stanford University | https://purl.stanford.edu/hs631zg4177

Cite and share (even regions of interest)



University College Dublin | https://doi.org/10.7925/drs1.ucdlib_53396

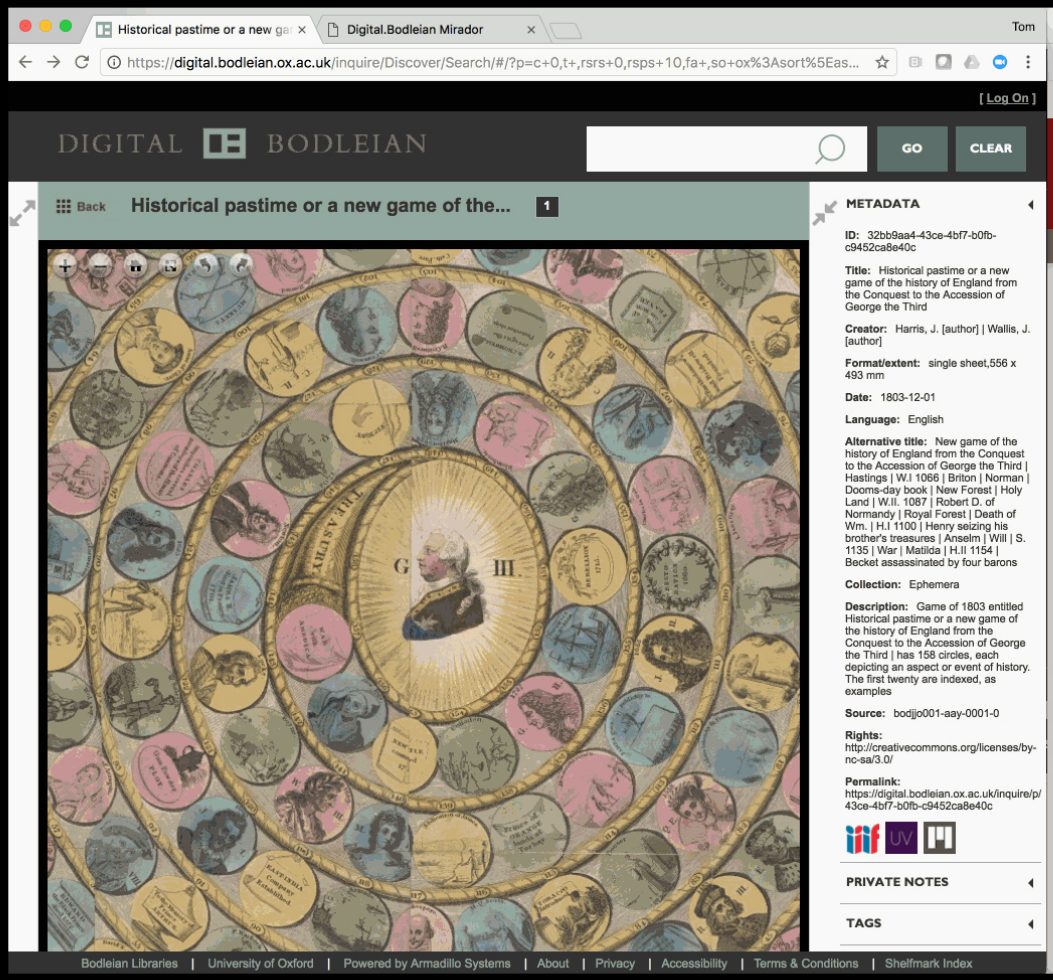
Compare images

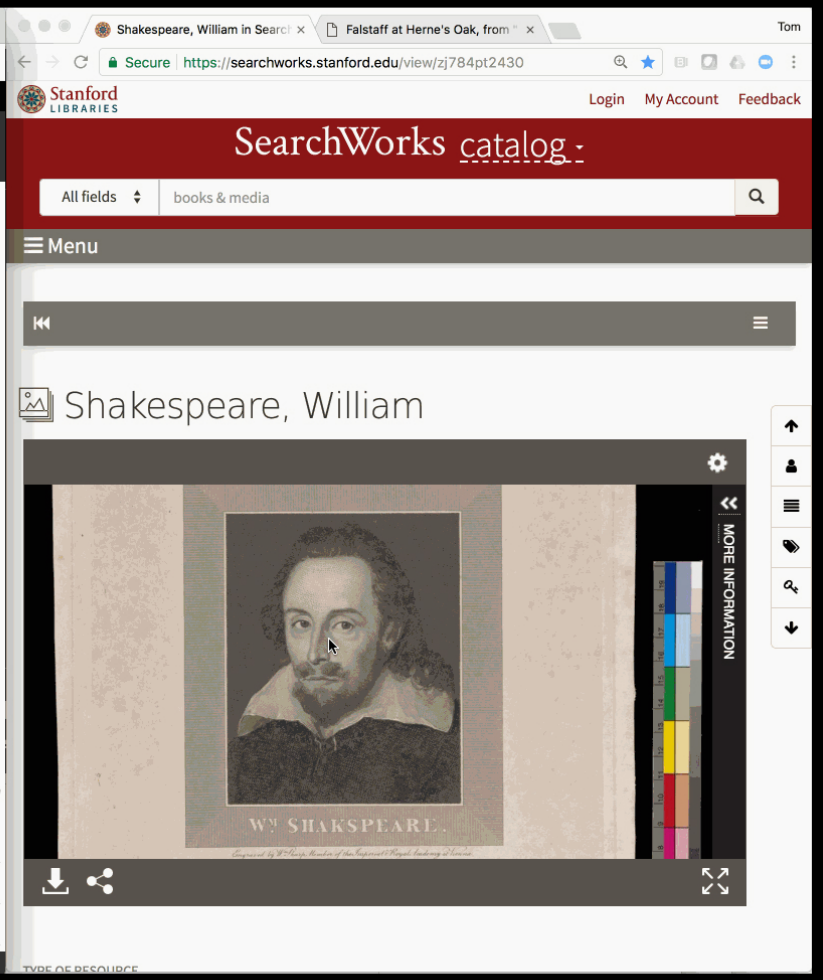


Computed Tomography (CT) scans of the head of a seal from the Wellcome Library

https://wellcomelibrary.org/item/b20433141 | https://wellcomelibrary.org/item/b2043313x

Across sites





Shakespeare-related resources from Oxford, Stanford & Yale

https://digital.bodleian.ox.ac.uk/inquire/p/32bb9aa4-43ce-4bf7-b0fb-c9452ca8e40c

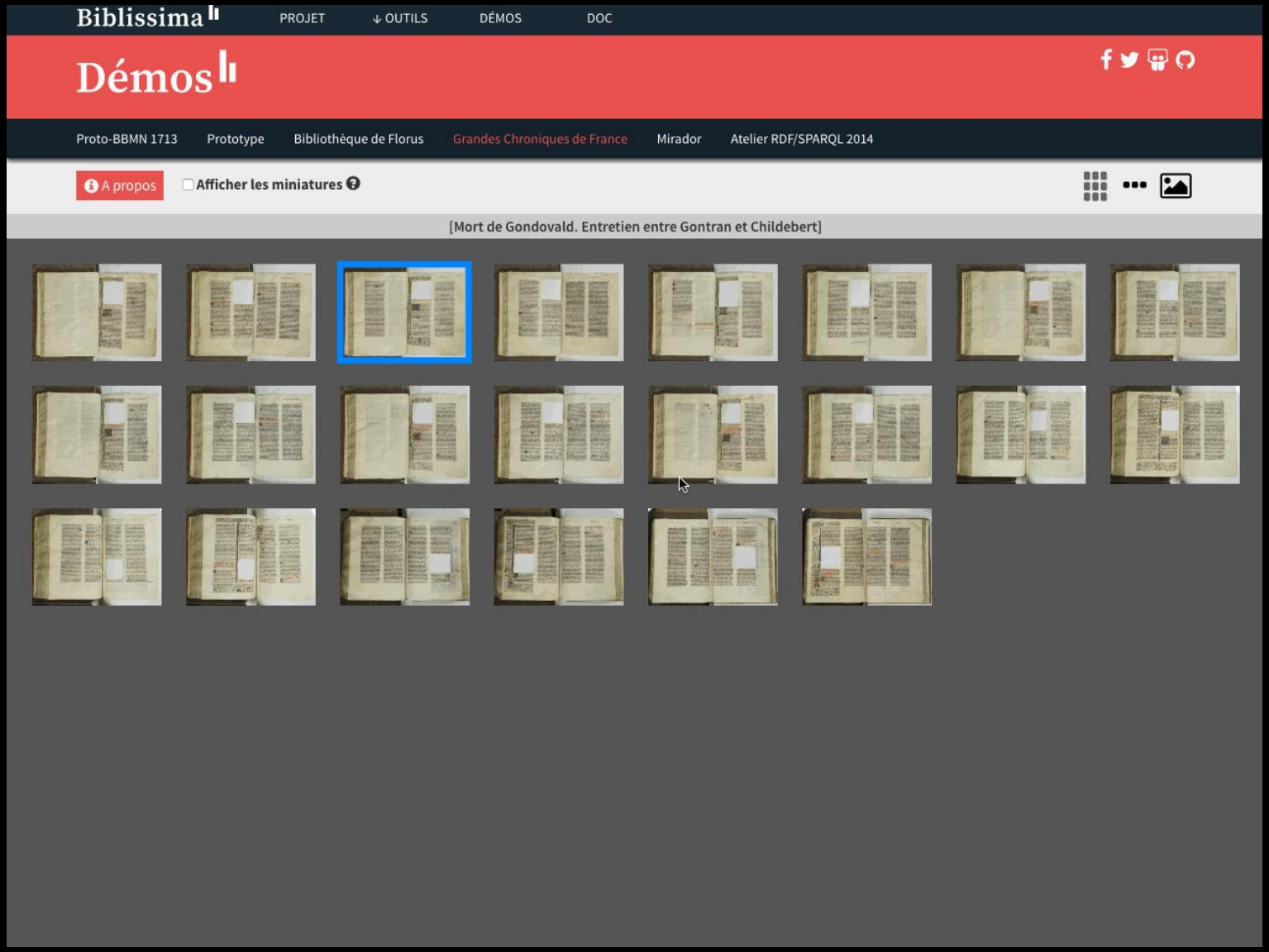
https://searchworks.stanford.edu/view/zj784pt2430 | http://collections.britishart.yale.edu/vufind/Record/1667254

Collect items that belong together

Le manuscrit 5 de la Bibliothèque municipale de Châteauroux, c. 1460

Folio in BVMM
Miniature in the BNF

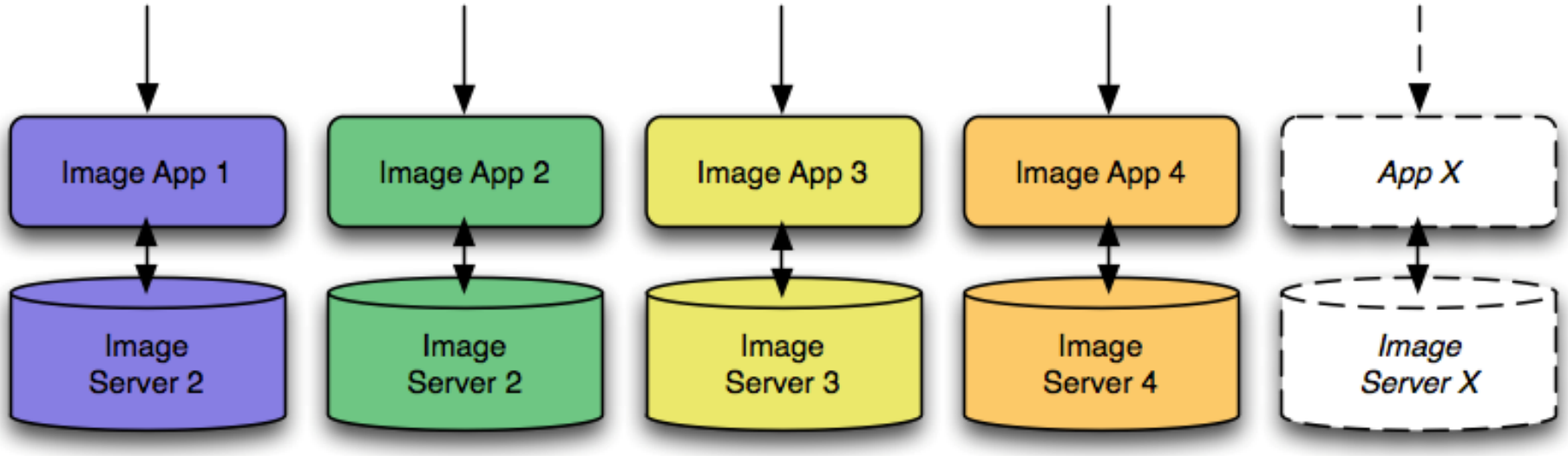
Reunify



http://demos.biblissima-condorcet.fr/chateauroux/demo/

Whatif?

A world of silos & duplication

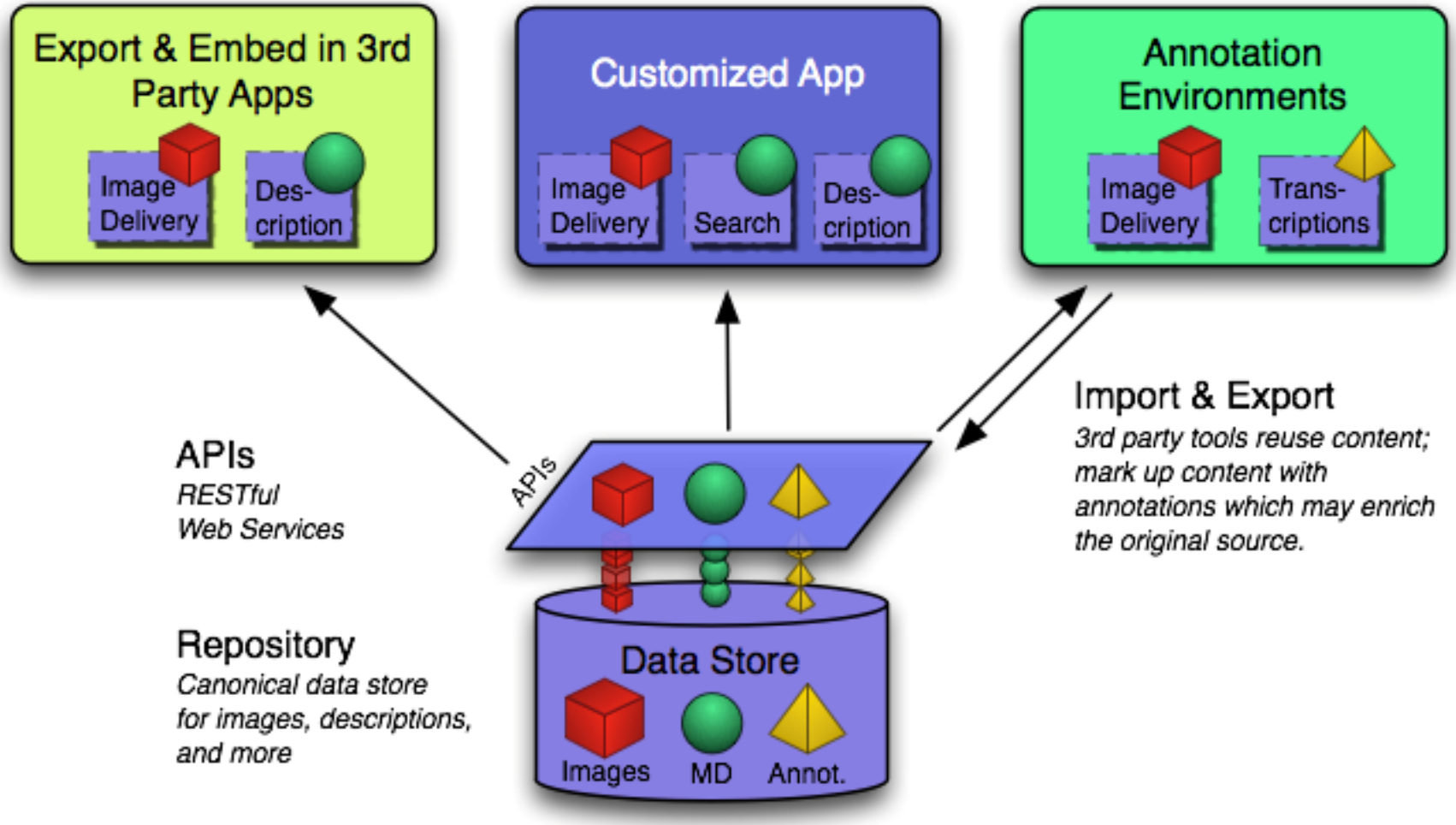


- Every site a silo (→ no interoperability)
- Every app a one-off (→overhead to code and keep)
- Every user forced to cope (→ many UIs, little integration)

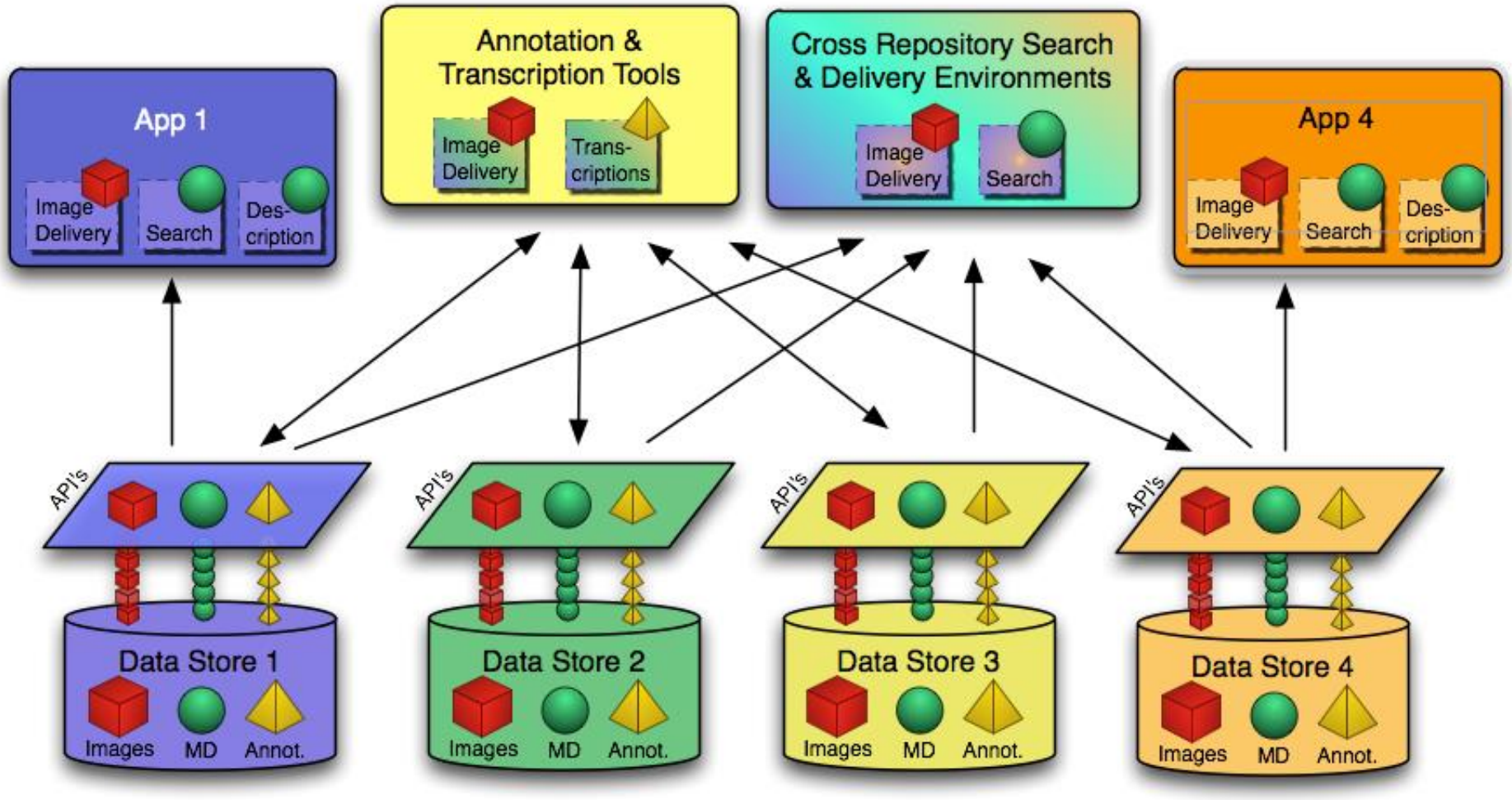
Grain elevators, Caldwell, Idaho. by Lee Russell, 1941.

http://www.loc.gov/pictures/resource/fsac.1a34206/

APIs enable reuse



APIs -> Framework -> Ecosystem



IIIF Vision

Create a global framework by which image-based resources (images, books, maps, scrolls, manuscripts, musical scores, etc.)

…from **any** participating institution can be delivered in a standard way

…via **any** compatible image server

…for display, manipulation and annotation in **any** application,

…to **any** user on the Web.

IIIF Vision, continued

- with **tens of millions** of image-based resources
- backed by a consortium of **world-leading cultural heritage and research institutions**
- supported by a rich and growing suite of **software tools**
- incorporating the **best of current image delivery technology**, and **leveraging Web standards**

IIIF dramatically reduces the friction of delivering image-based resources on the Web

- Bigger, better, faster, deeper, cheaper, more modular and more flexible
- Plug-and-play server and client software
- Publish once, reuse often
- Support for attribution and access control

IIIF creates radical new capabilities to do more than **view** resources

- Zoom, pan, interact, manipulate
- Compare, reunite, remix & mash up
- Cite and share
- Annotate
- Apply machine learning and AI

So What Is IIIF?

A **Community**
that develops **Shared APIs,**
implements them in **Software,**
and exposes interoperable **Content**

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that develops **Shared APIs,**

implements them in **Software,**

and exposes interoperable **Content**

IIIF is a

community-driven

framework

Institutions AND Individuals

IIIF Working Group Meeting, New York, May 2016

IIIF is a Global Community

A **Community**

that develops **Shared APIs,**

implements them in **Software,**

and exposes interoperable **Content**

IIIF: Two Core APIs

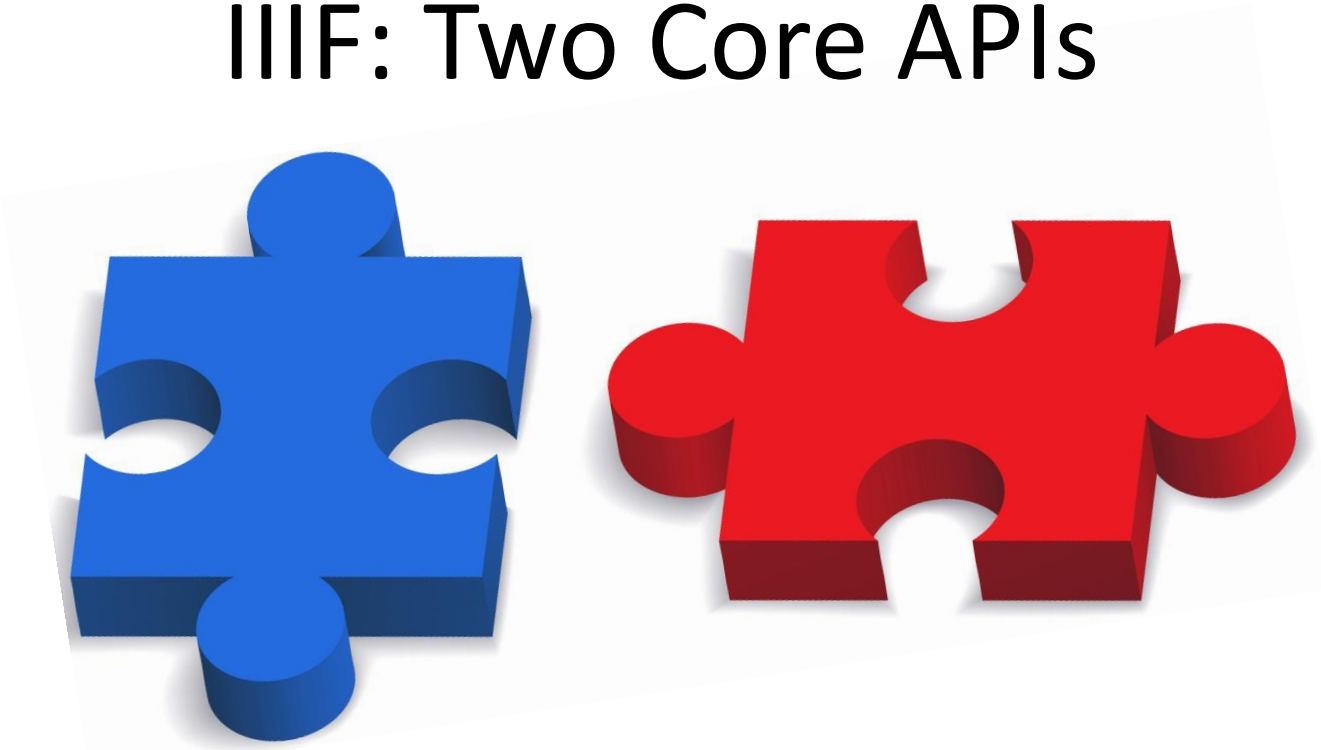


Image API

"get pixels" via a simple, RESTful, web service

Presentation API

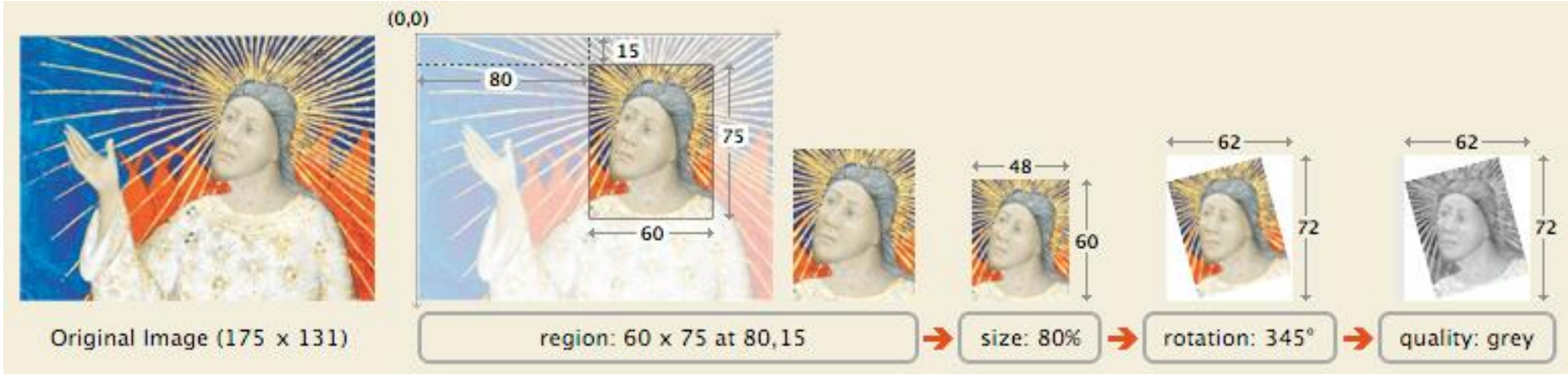
Just enough metadata to drive a remote viewing experience

Image Delivery API

Order of Implementation

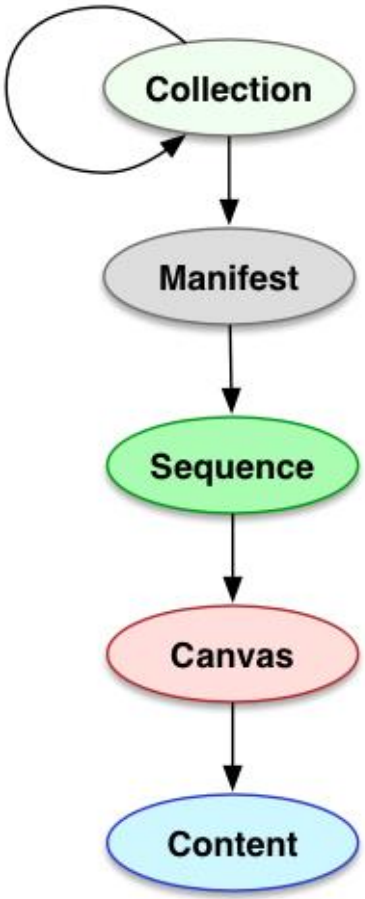
http://www.example.org/image-service/abcd1234/80,15,60,75/pct:80/345/grey.jpg

region size rotation quality format



http://iiif.io/api/image/2.1/

Presentation API



- Structure
  - Collection, Item, Sequence, Parts
- Properties
  - Labels, description, license, attribution, links

http://iiif.io/api/presentation/2.1/

Image + Presentation = Object

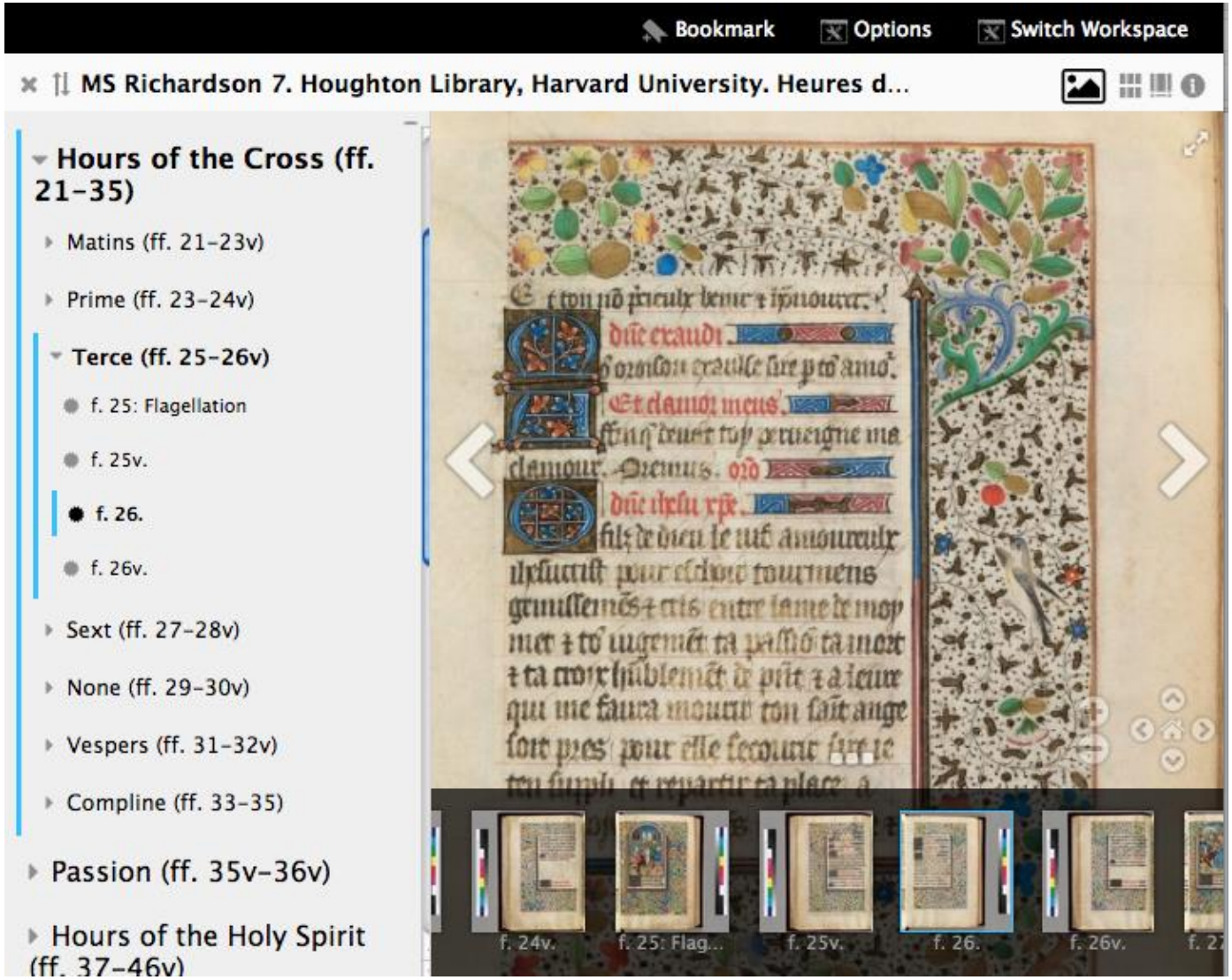
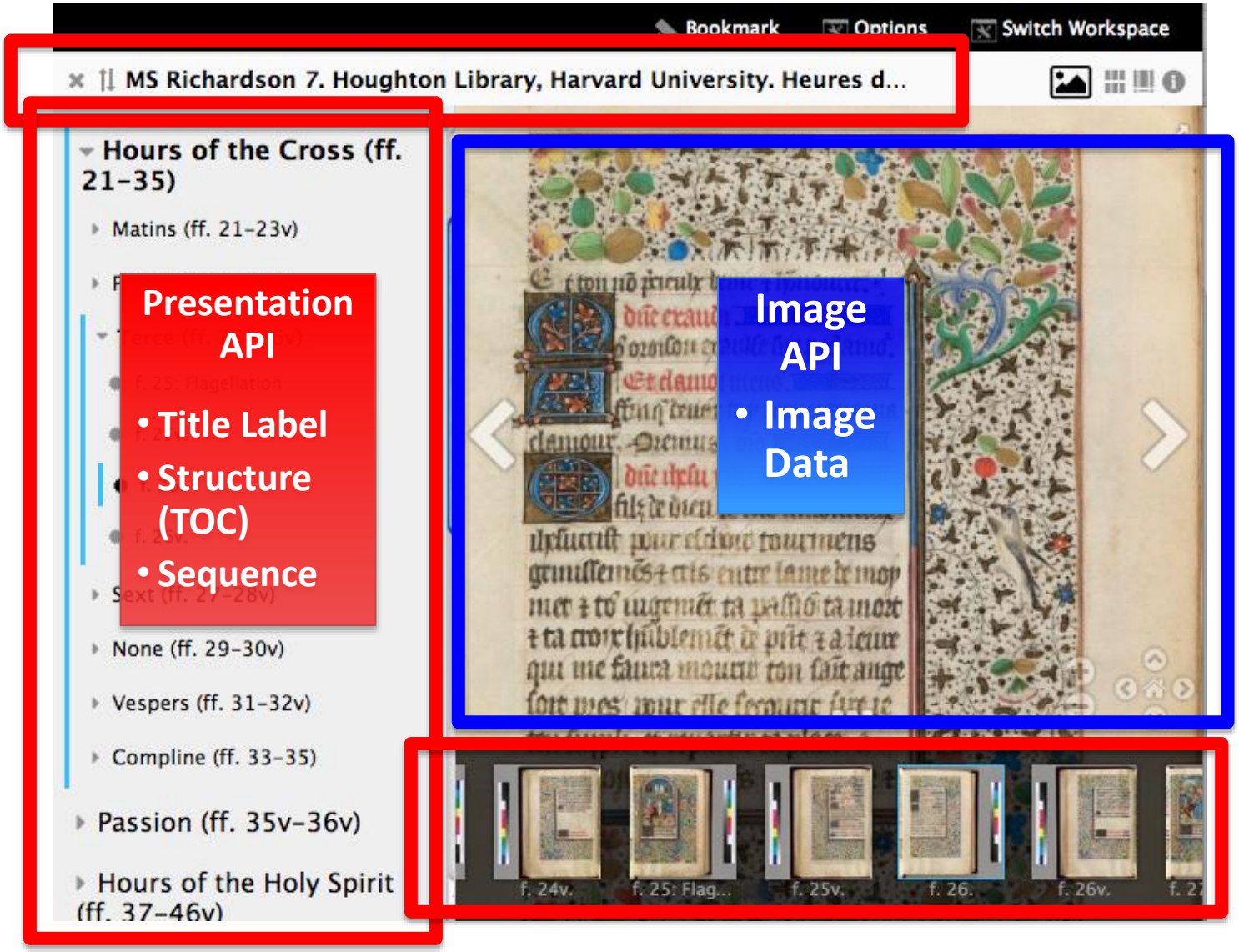


Image + Presentation = Object



IIIF: Three More APIs

Search API

Search within an object, such as the full text of a book or newspaper

Authentication API

To support login, and differential access to resources.

A/V API

Deliver time-based media (audio, video)

A **Community**
that develops **Shared APIs,**
implements them in **Software,**
and exposes interoperable **Content**

IIIF Compatible Software

A **Community**
that develops **Shared APIs,**
implements them in **Software,**
and exposes interoperable **Content**

IIIF Content – Digital Images

- Example: Nichi-Man-Shi kanko sugoroku (Japan-Manchuria-China sight-seeing board game), from Princeton University

IIIF Content - Texts

- Example: Illustrierter Sonntag (Der gerade Weg), 22.09.1929, from the Bavarian State Library

IIIF Content – Scientific Images

- Example: *Acacia* - *Fabaceae,* from the Natural Sciences Institute of the National University of Columbia

IIIF Content – Cultural Heritage

- Paintings
- Maps
- Manuscripts
- Photographs
- Scrolls
- Sculpture
- Sheet Music
- Any kind of image content

Compatible Content

400,000,000+ Images from 100+ Institutions

Scores of adopters

Dozens of applications

Millions of digital objects

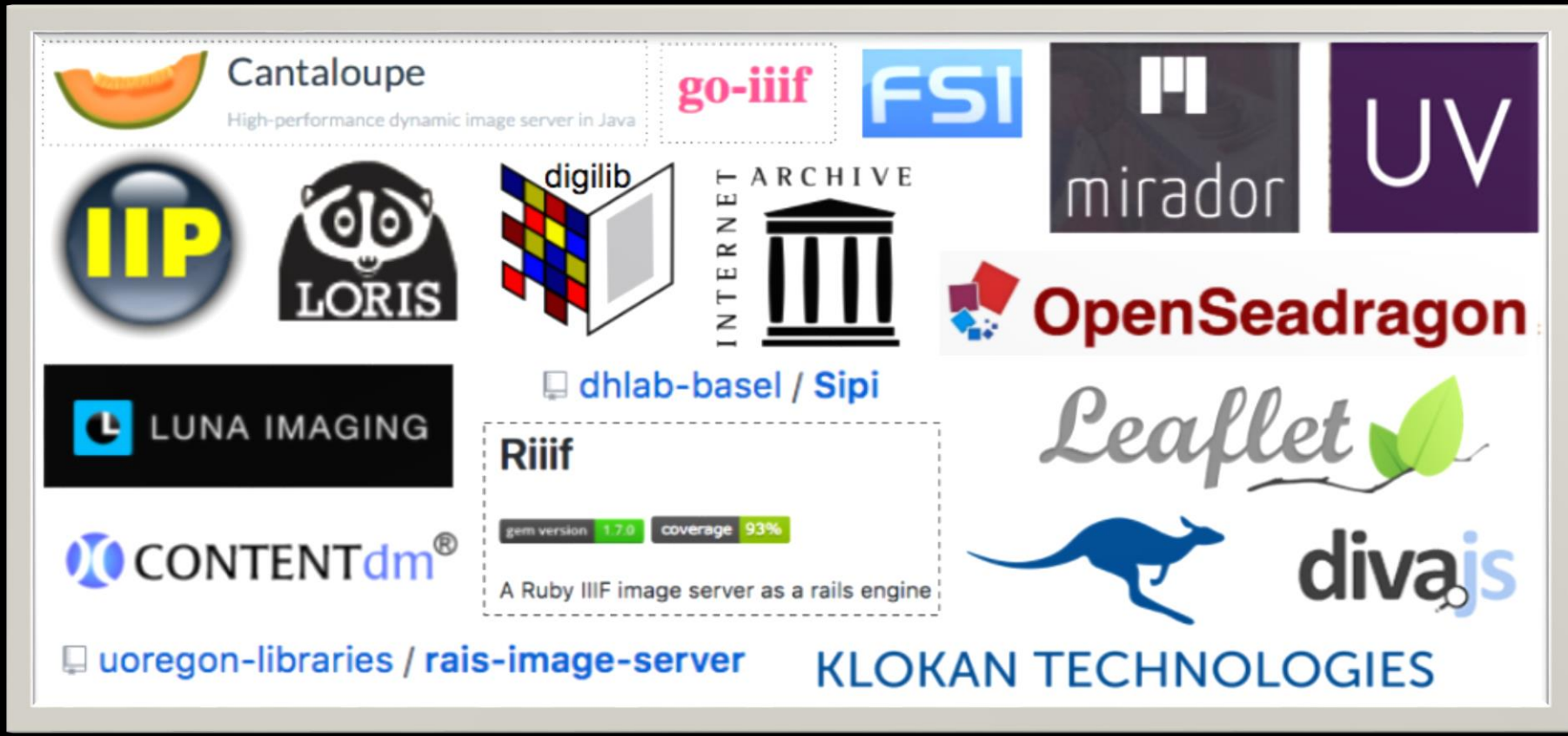
Revolutionary promise

That’s great.

How do I use it?

IIIF Viewers

Featuring the Universal Viewer
& Mirador


Cantaloupe
High-performance dynamic image server in Java
go-iiif
FSI
mirador
UV
IIP
LORIS
digilib
INTERNET ARCHIVE
OpenSeadragon
LUNA IMAGING
dhlab-basel / Sipi
Leaflet
Riiif
gem version 1.7.0
coverage 93%
A Ruby IIIF image server as a rails engine
CONTENTdm®
divajs
uoregon-libraries / rais-image-server
KLOKAN TECHNOLOGIES

UV
Universal Viewer

mirador

UV

Image 3 of 3 Go

CONTENTS

MORE INFORMATION

IIIF Image API Test Objects

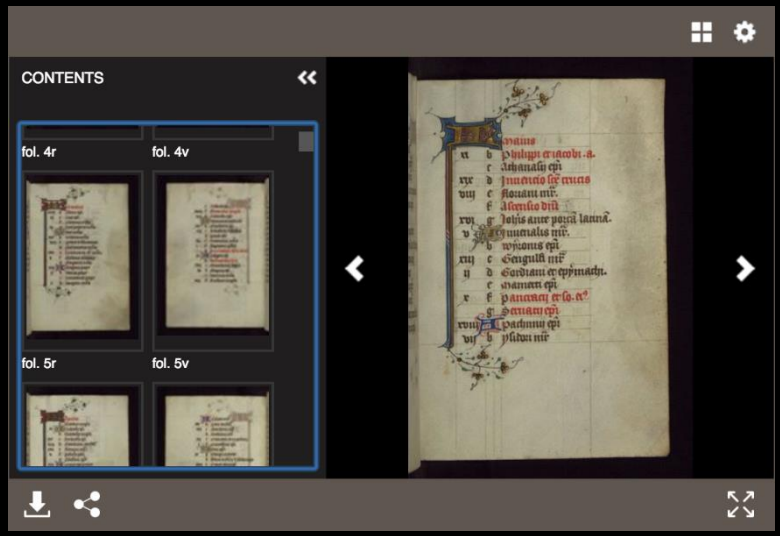
ATTRIBUTION ×

Provided by the Stanford University Libraries

東
北
西
若狭國
丹波國

Universal Viewer = many formats

Simple Image Viewer



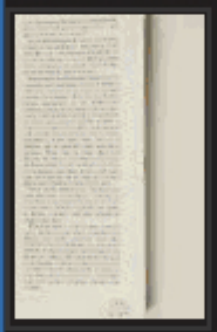
Book / Manuscript Viewer

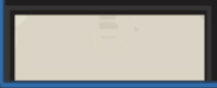
PDF Viewer

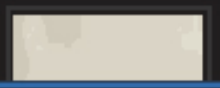
Audio/Video Player

CONTENTS

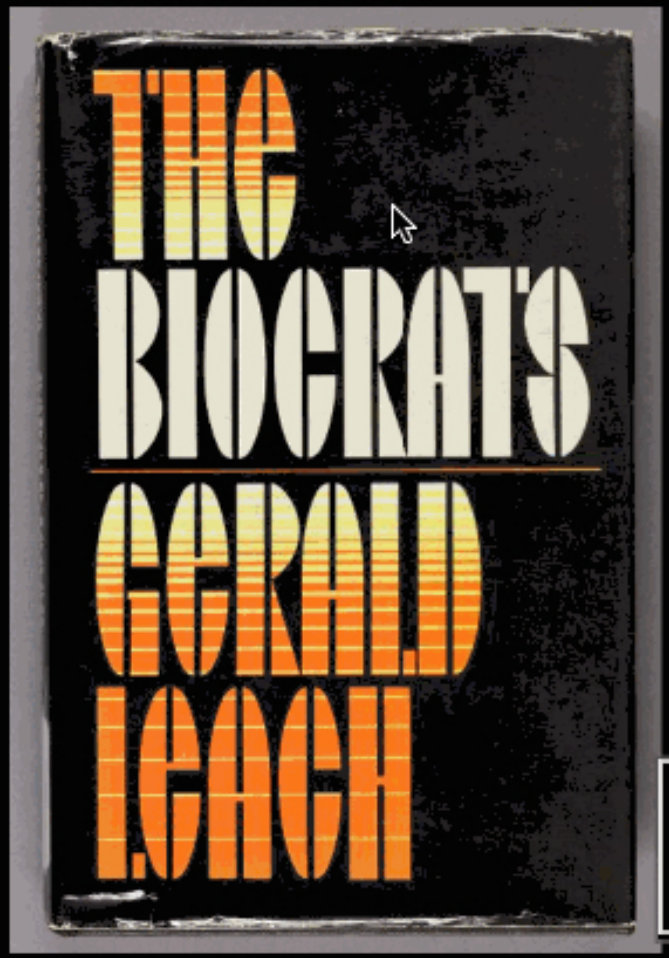
Index Thumbnails







The biocrats



MORE INFORMATION

Search within this item:

hc941fm6529

ATTRIBUTION

Stanford University

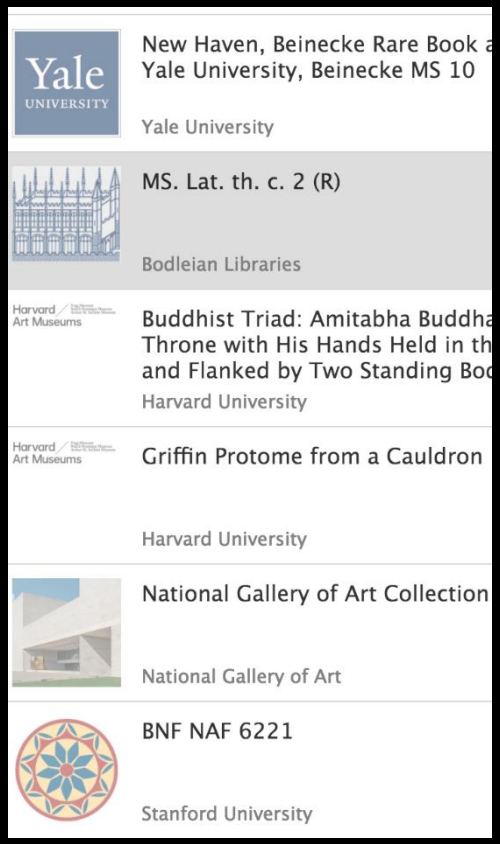
MORE INFORMATION

Universal Viewer Roadmap

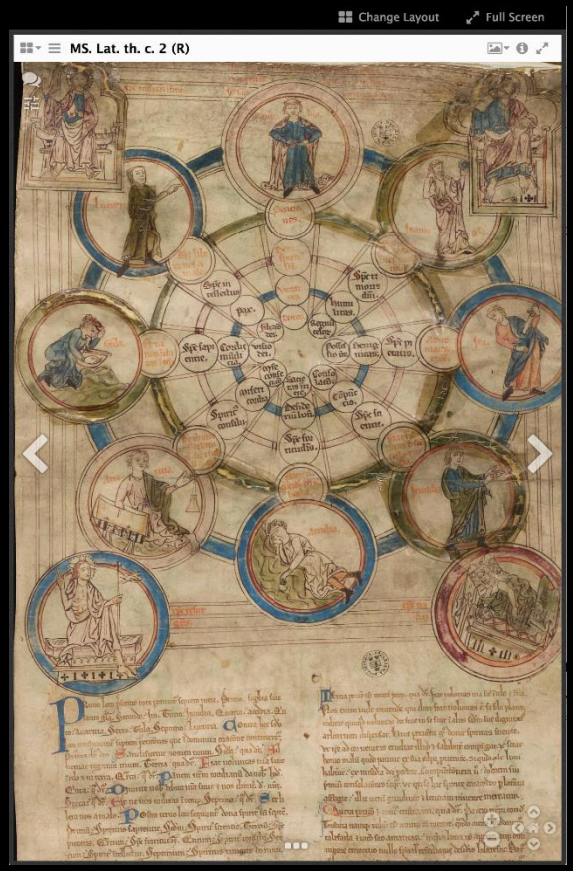
- Adoption and support by
  - Digirati & Holoscene
  - Wellcome Library
  - National Library of Wales
  - British Library
  - Stanford University
  - Princeton University
  - Villanova University
  - National Library of Norway
- Future directions
  - Adoption of IIIF Presentation API v 3.0
  - Enhanced support for PDF, 3D objects, Office documents.
  - Improvements to UI, accessibility.

mirador

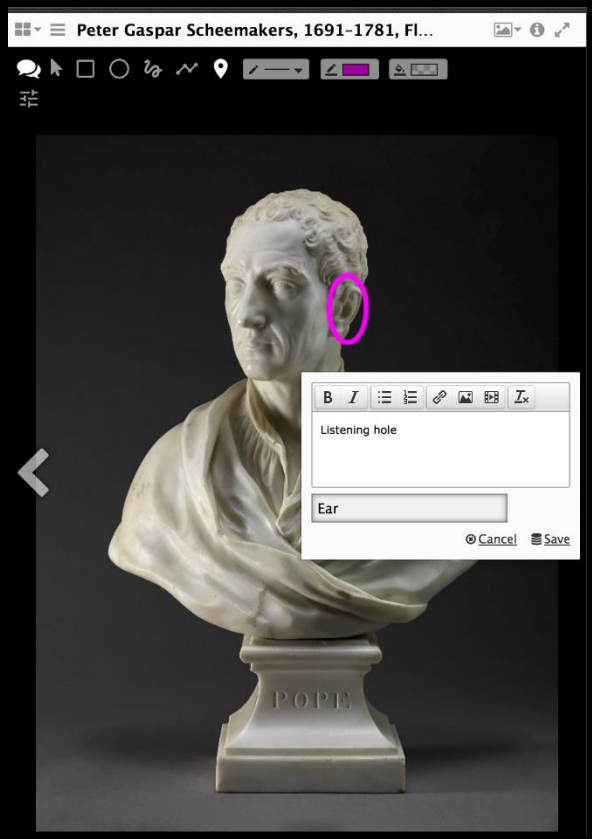
Mirador: 3 Primary Functions



Load



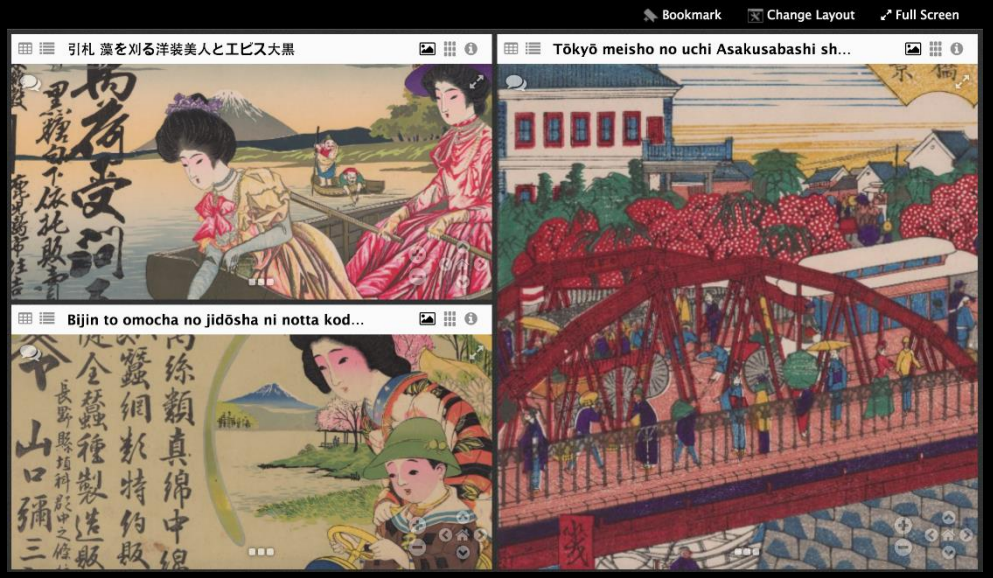
View



Annotate

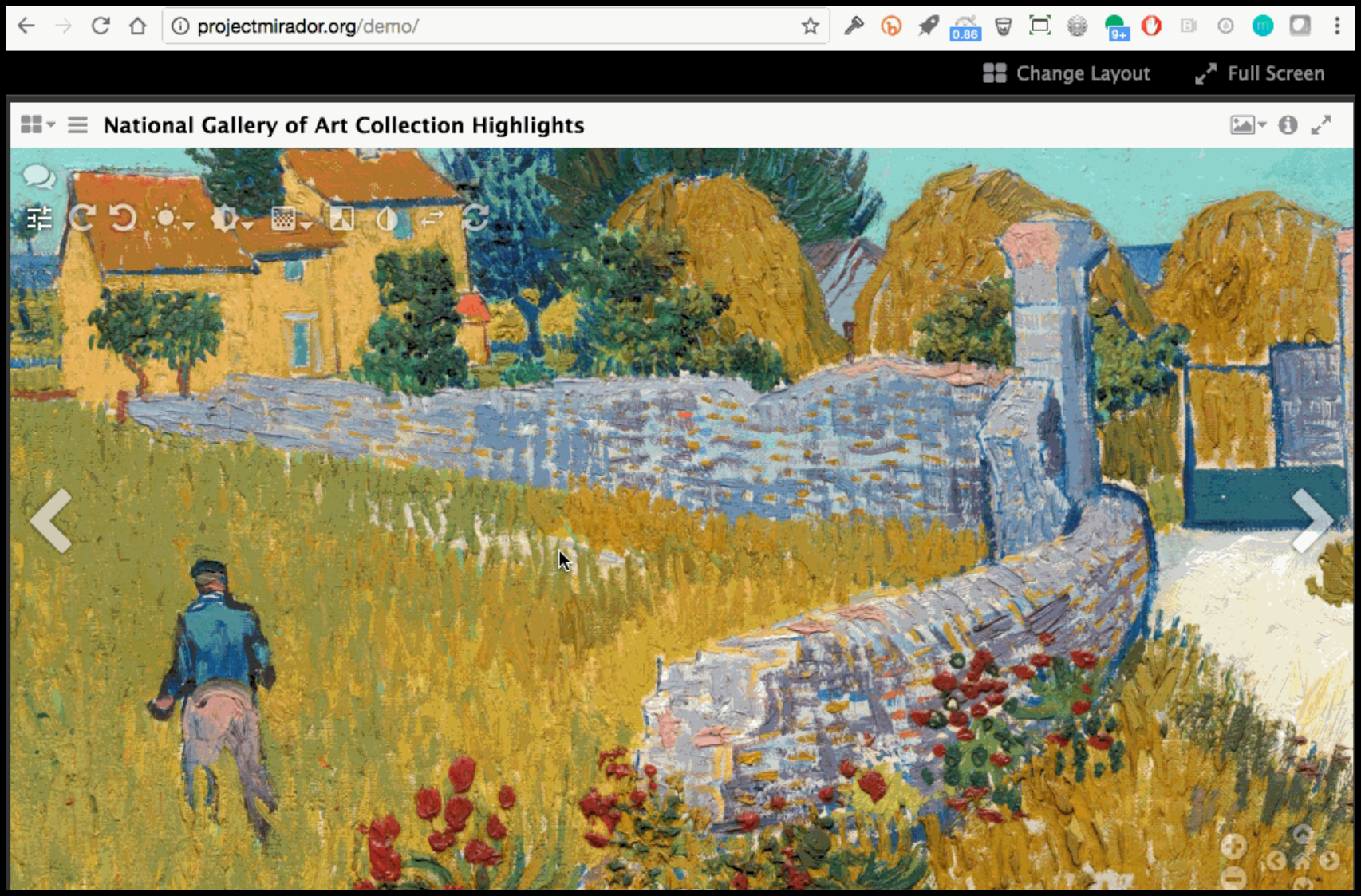
How people are using Mirador…

- Viewing
- Comparison
- Annotation
- Transcription
- Unification
- Computational imaging
- Teaching
- Research
- Exhibits

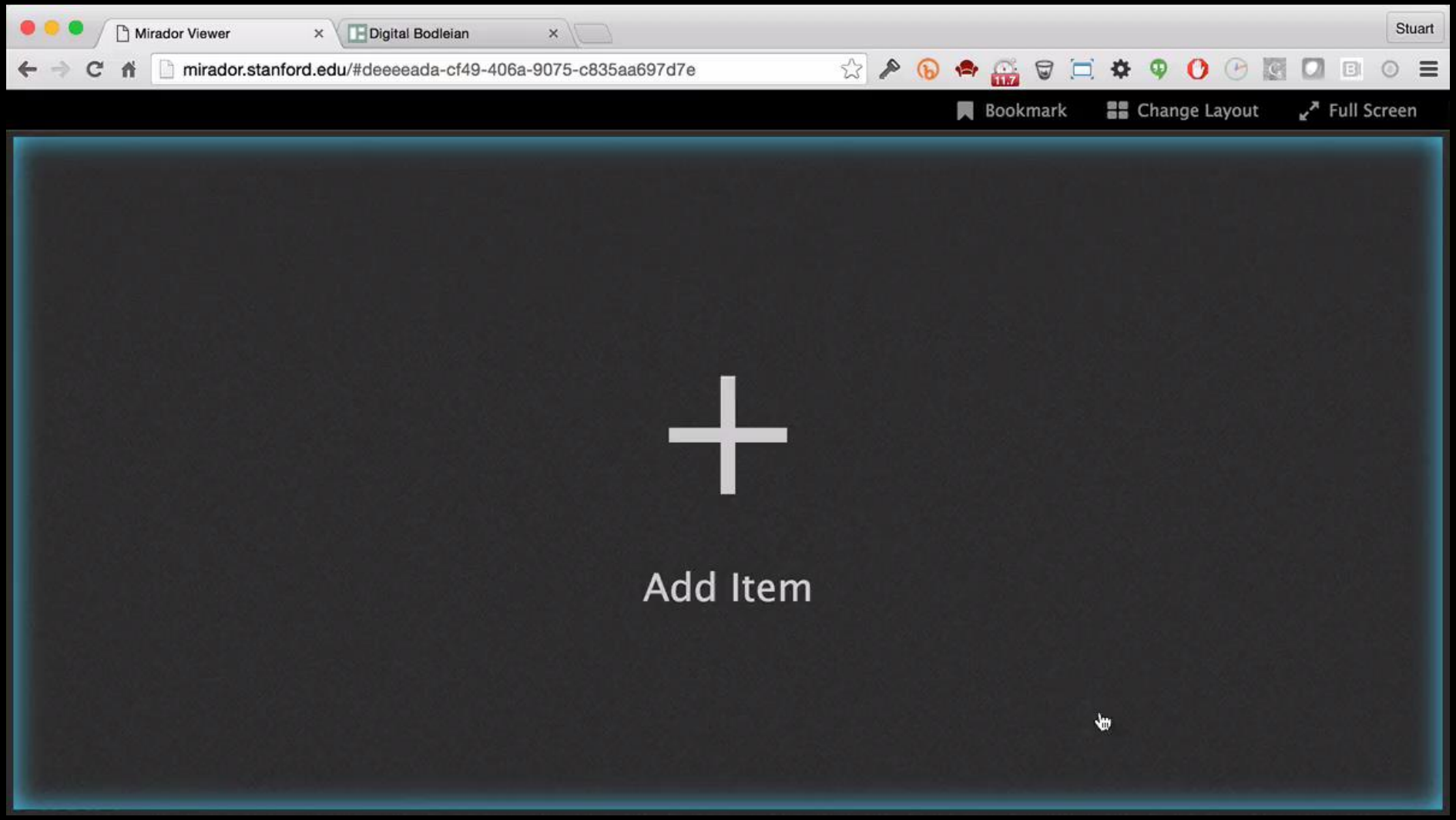


- *Embedded*
- *Stand Alone*
- *Scholars Workbench*

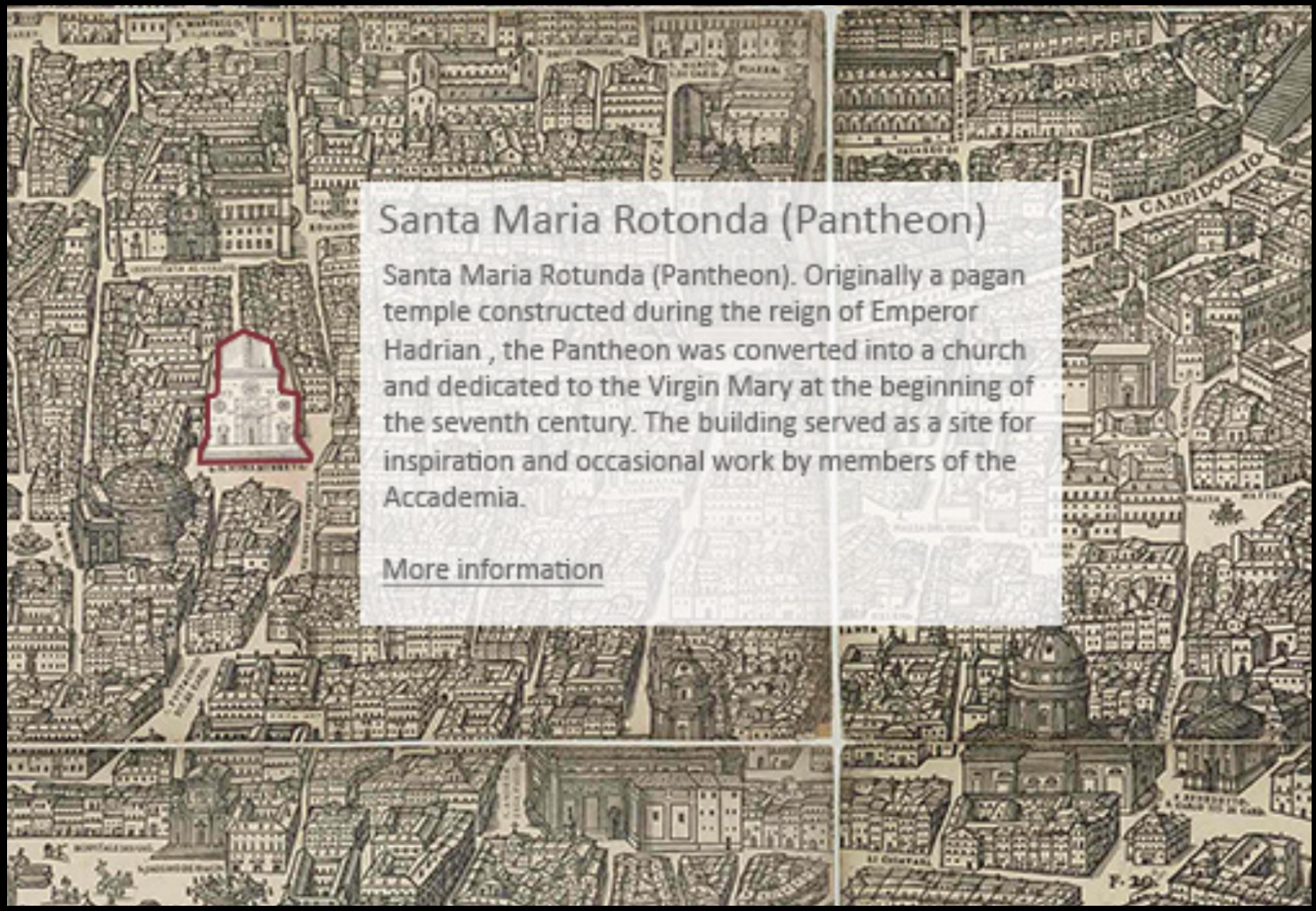
Zoom and analyze images



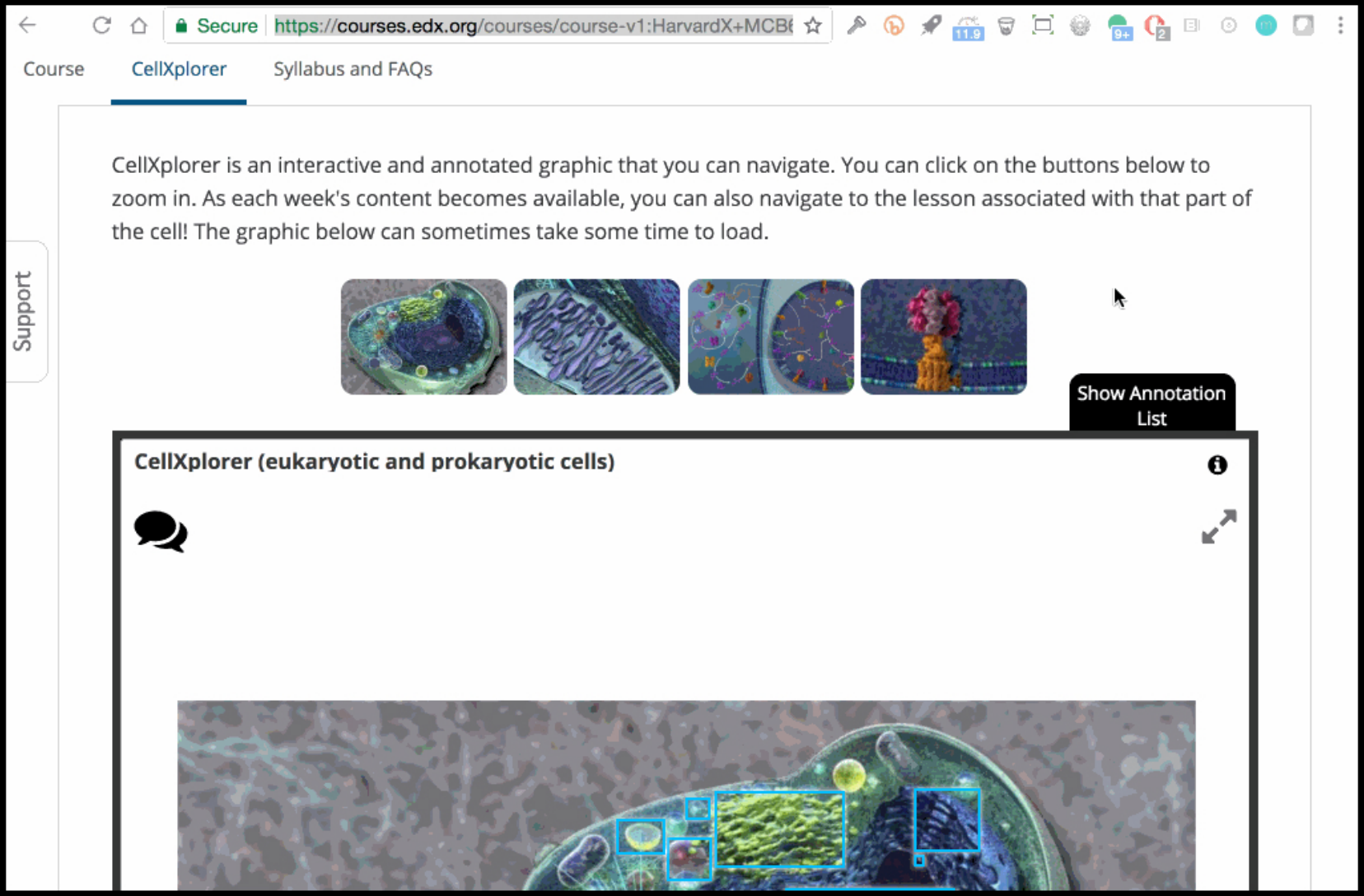
Compare & Contrast



Annotate

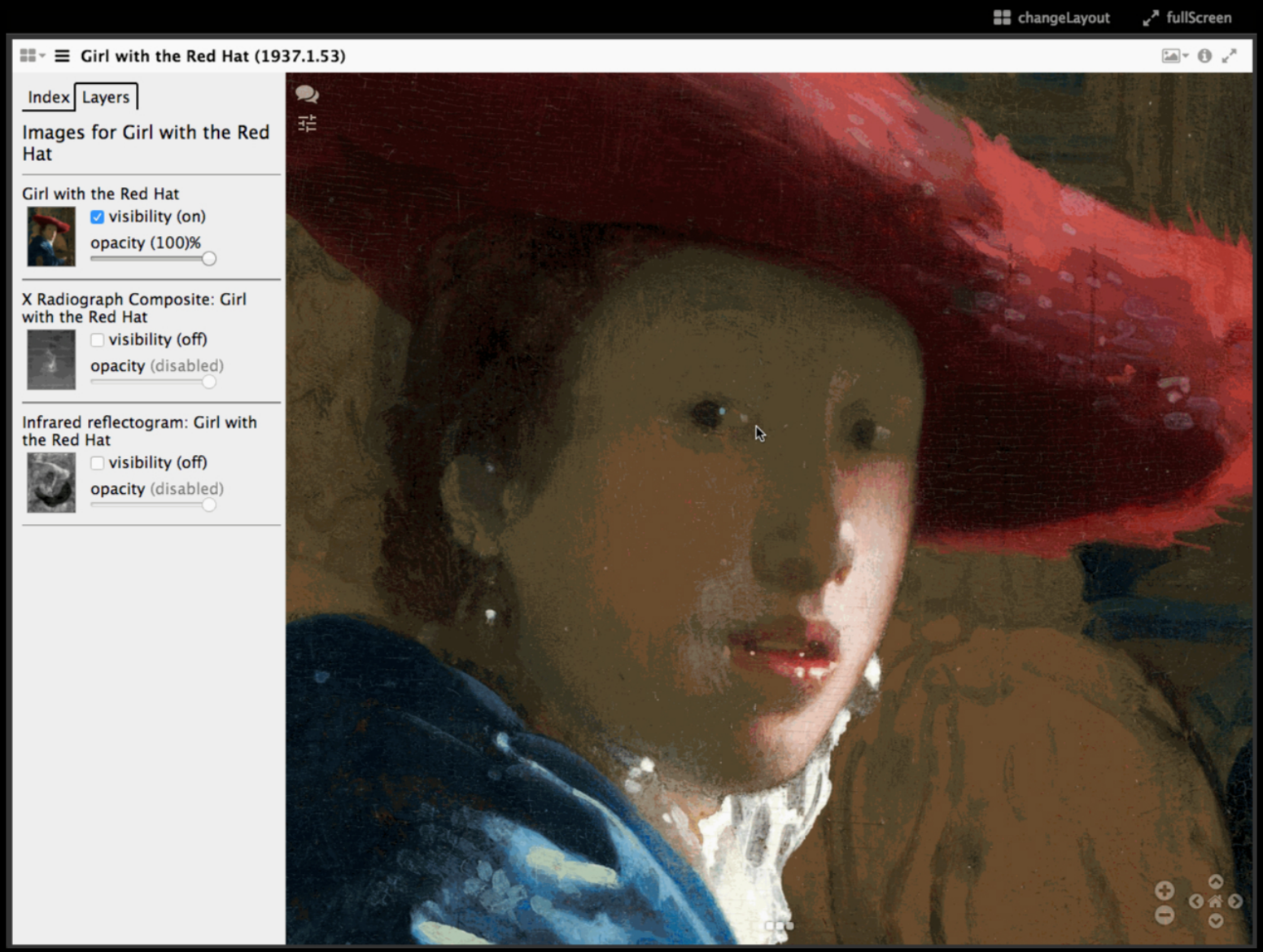

Santa Maria Rotonda (Pantheon)
Santa Maria Rotunda (Pantheon). Originally a pagan temple constructed during the reign of Emperor Hadrian , the Pantheon was converted into a church and dedicated to the Virgin Mary at the beginning of the seventh century. The building served as a site for inspiration and occasional work by members of the Accademia.
More information

Annotate



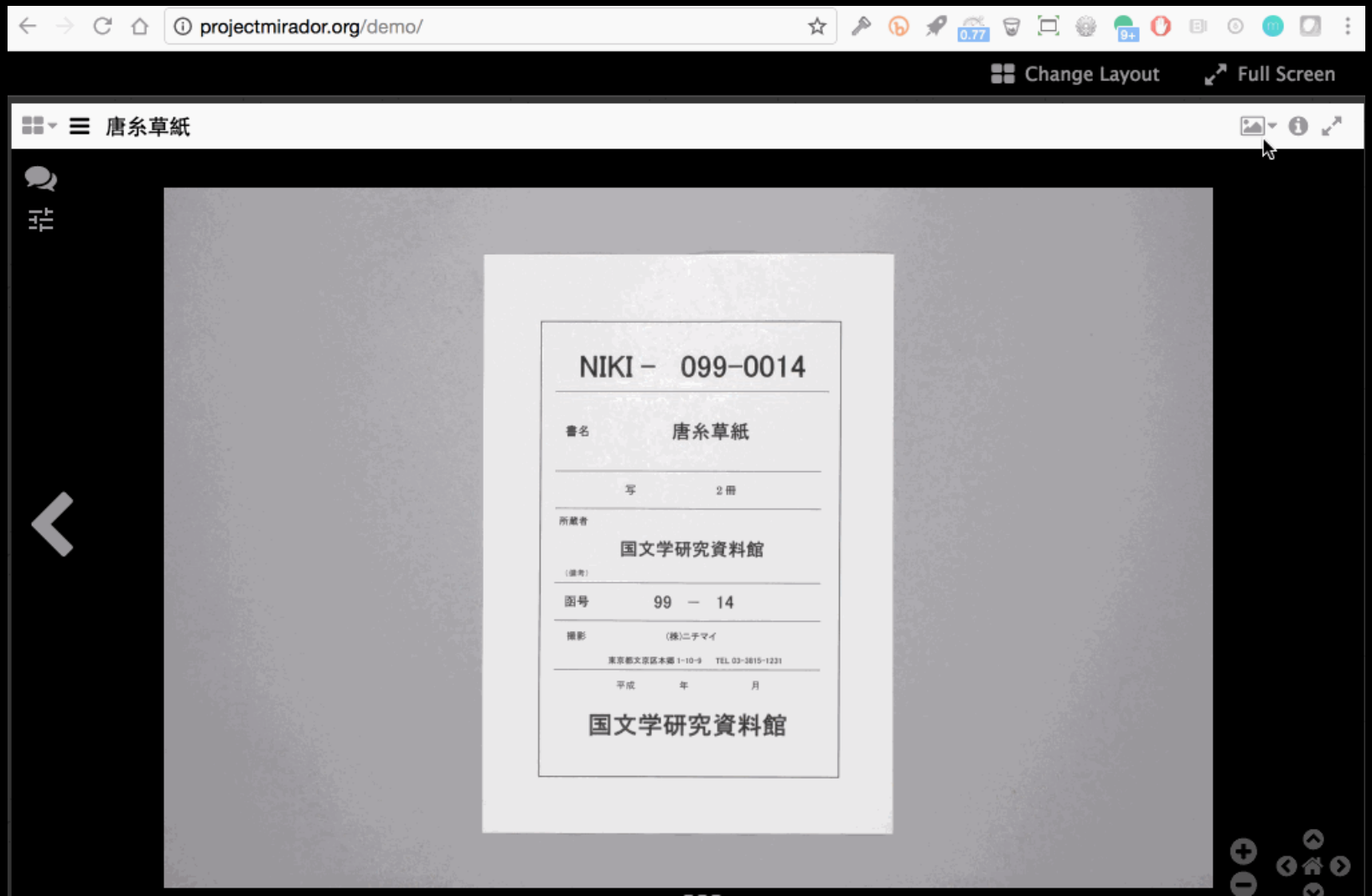
https://courses.edx.org/courses/course-v1:HarvardX+MCB64.1x+2T2016/d16e07a5cec442eeb7cd9dfcb695dce0/

Analyze layers

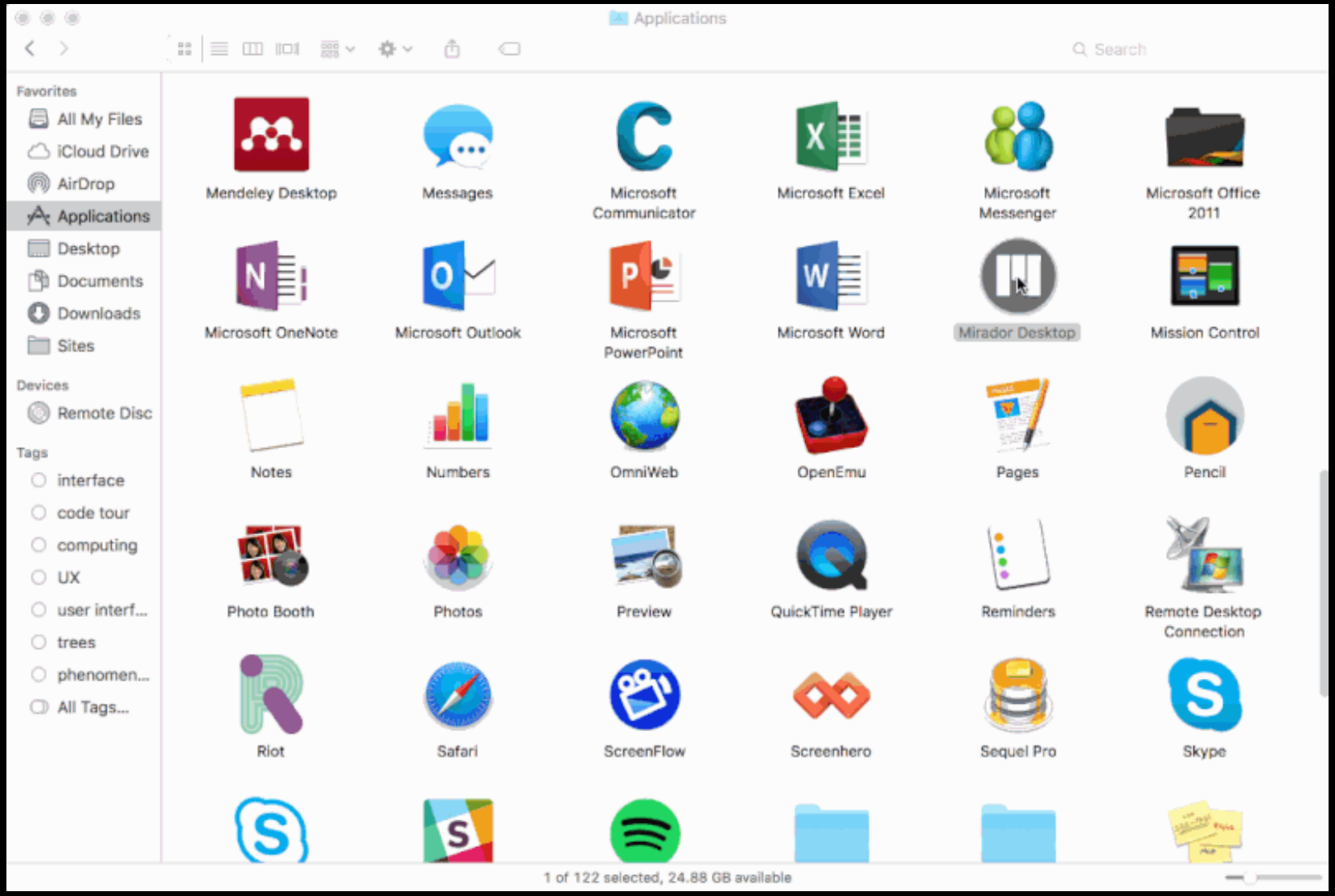


Vermeer's Girl with the Red Hat, from the National Gallery of Art (US)

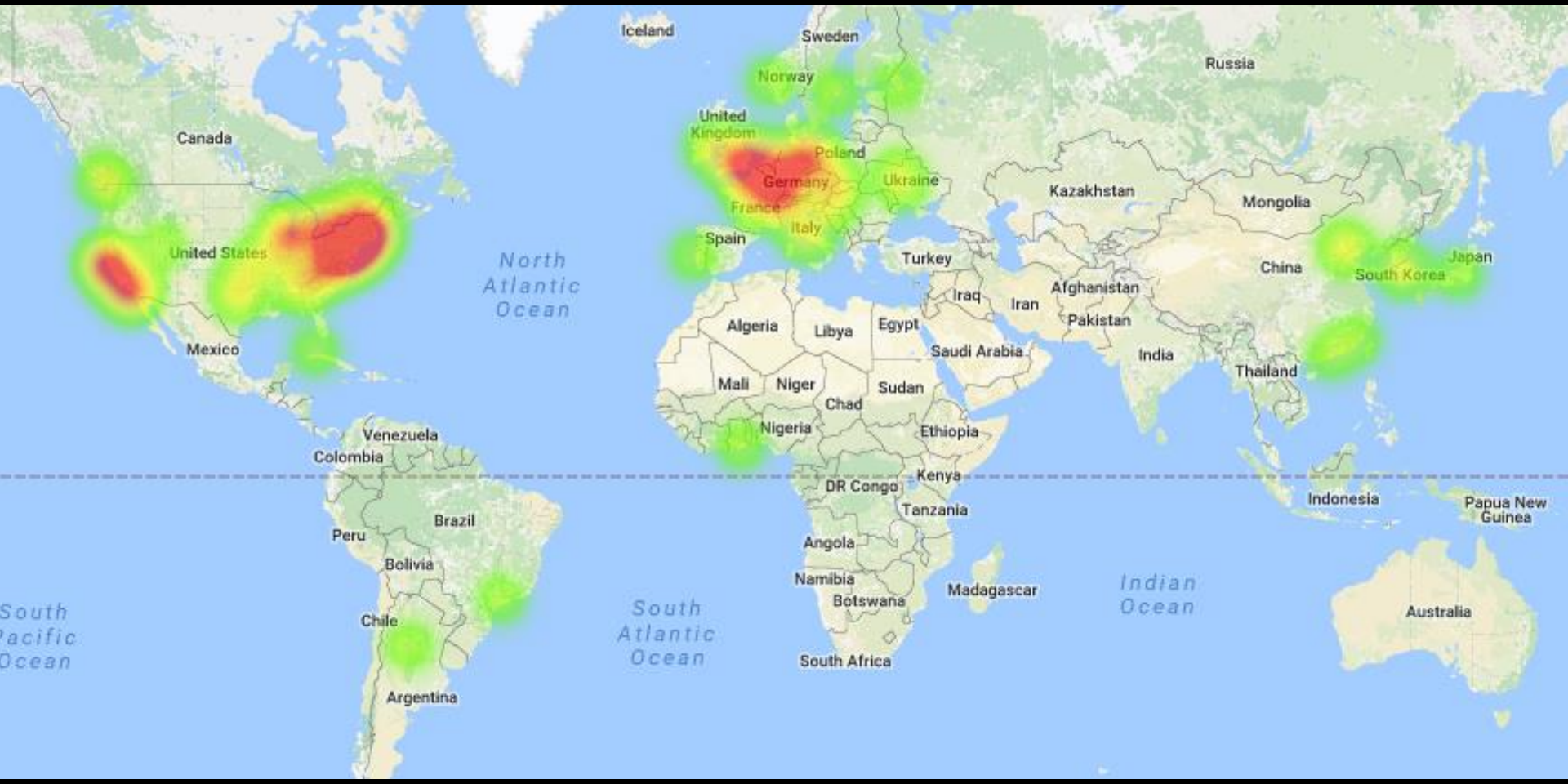
Right-to-left reading (thanks to Kiyonori Nagasaki!)



Mirador Desktop



Mirador Github Activity Worldwide



http://jrvis.com/red-dwarf/?user=projectmirador&repo=mirador

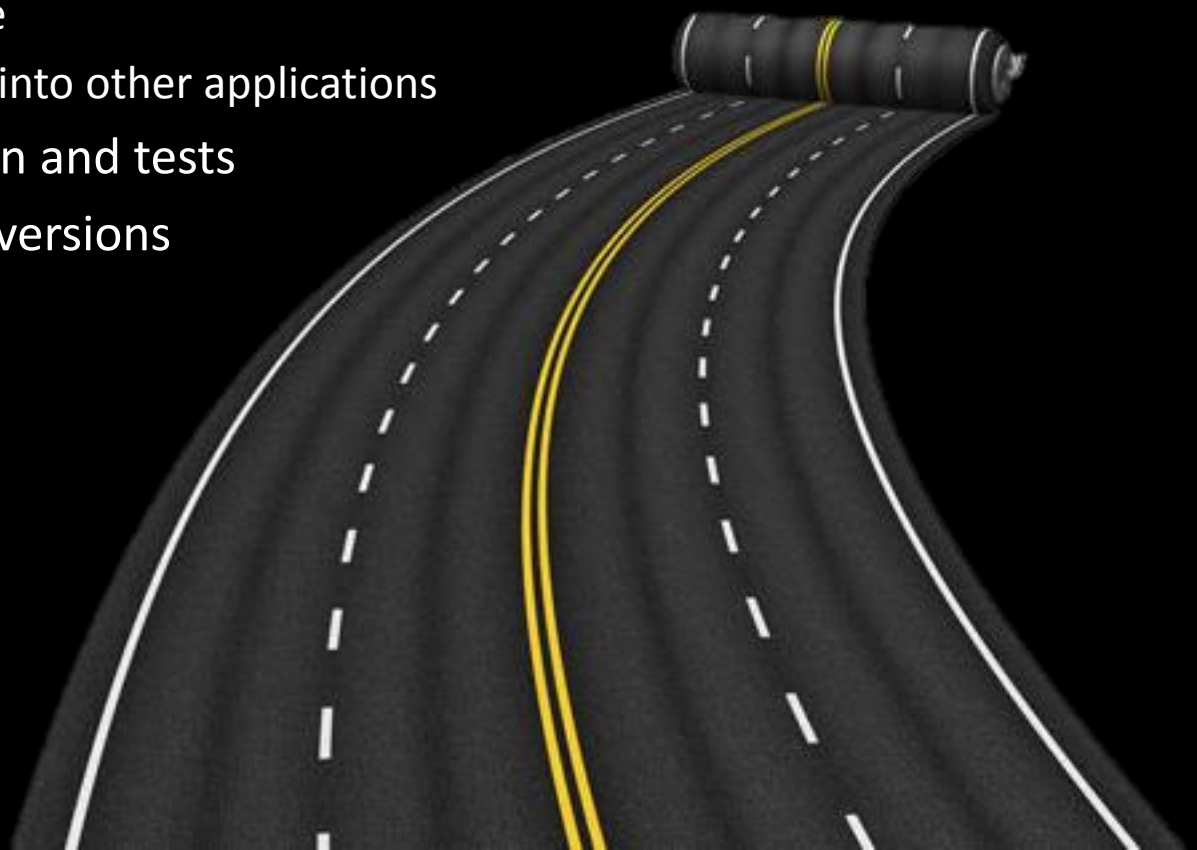
Mirador Contributions

https://www.openhub.net/p/mirador

- Stanford
- Harvard
- National Gallery of Art
- Yale University
- UCLA
- BnF/Biblissima
- BSB
- University of Tokyo
- University of Toronto
- St. Louis University
- The Frick
- Johns Hopkins
- Hill Museum & MS Lib
- Sirma
- *Et al.*

Mirador Roadmap

- Mirador 3 planning
  - Major UX and visual redesign
  - Major upgrade to technical underpinnings
    - Easier to customize
    - Easier to integrate into other applications
  - Better documentation and tests
  - Desktop and mobile versions



Try It and Get Involved

http://projectmirador.org/

http://github.com/projectmirador

https://github.com/ProjectMirador/mirador-desktop

mirador-tech@googlegroups.com

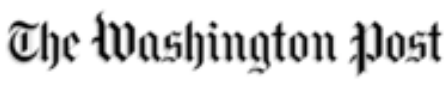
Leaflet-IIIF
and integration
in other applications

Jack Reed | @mejackreed

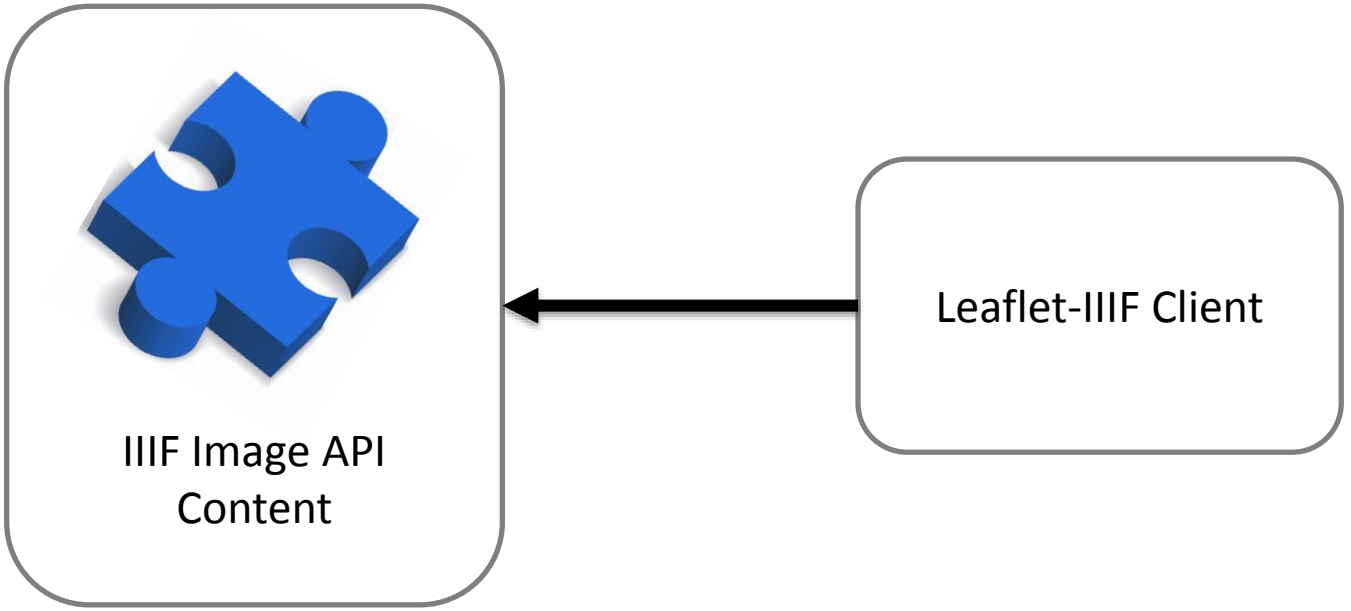
https://github.com/mejackreed/Leaflet-IIIF

What is Leaflet-IIIF?

- Leaflet-IIIF is JavaScript plugin for the interactive map library Leaflet
- It allows you to create performant interactive images using IIIF Image API endpoint



- leafletjs.com


IIIF Image API
Content
Leaflet-IIIF Client

Leaflet-IIIF - Basic example

https://bl.ocks.org/mejackreed/b0aba2ff6f5a54f197767313fbc5a26e
bit.ly/leaflet-iiif-basic

So what is so special about Leaflet?

"Leaflet is designed with simplicity, performance and usability in mind."

- leafletjs.com

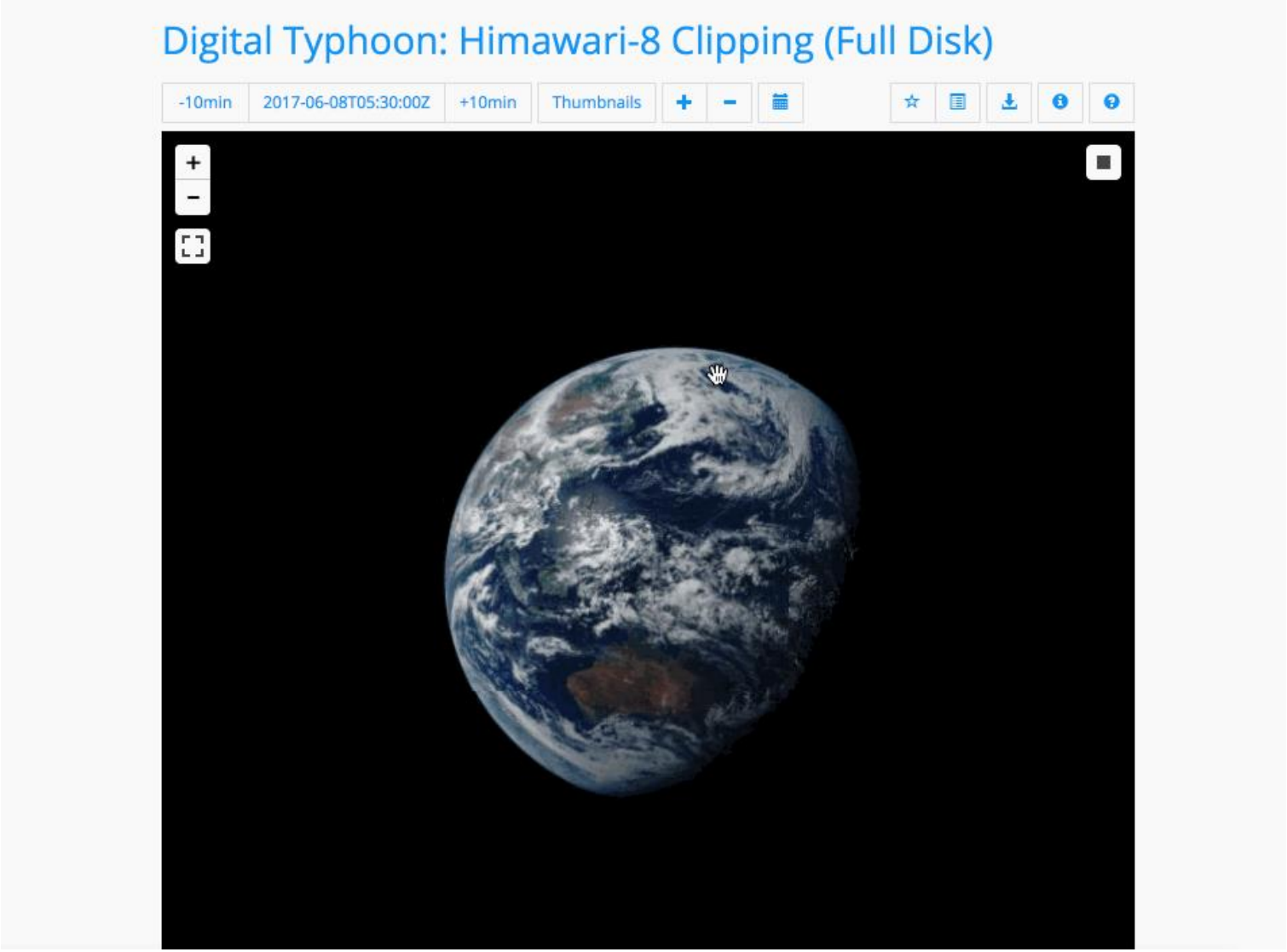
- > 530 contributors
- Very lightweight < 40Kb
- Chrome, Firefox, Safari +5, Opera +12, IE 7-11 Support
- Excellent mobile support
- Accessibility
- Object-oriented programming principles
- No external dependencies

But the big advantage…

Plugin architecture with over

400 plugins

Digital Typhoon: Himawari-8



http://codh.rois.ac.jp/software/iiif-curation-viewer/
http://agora.ex.nii.ac.jp/digital-typhoon/himawari-3g/clipping/index.html.en

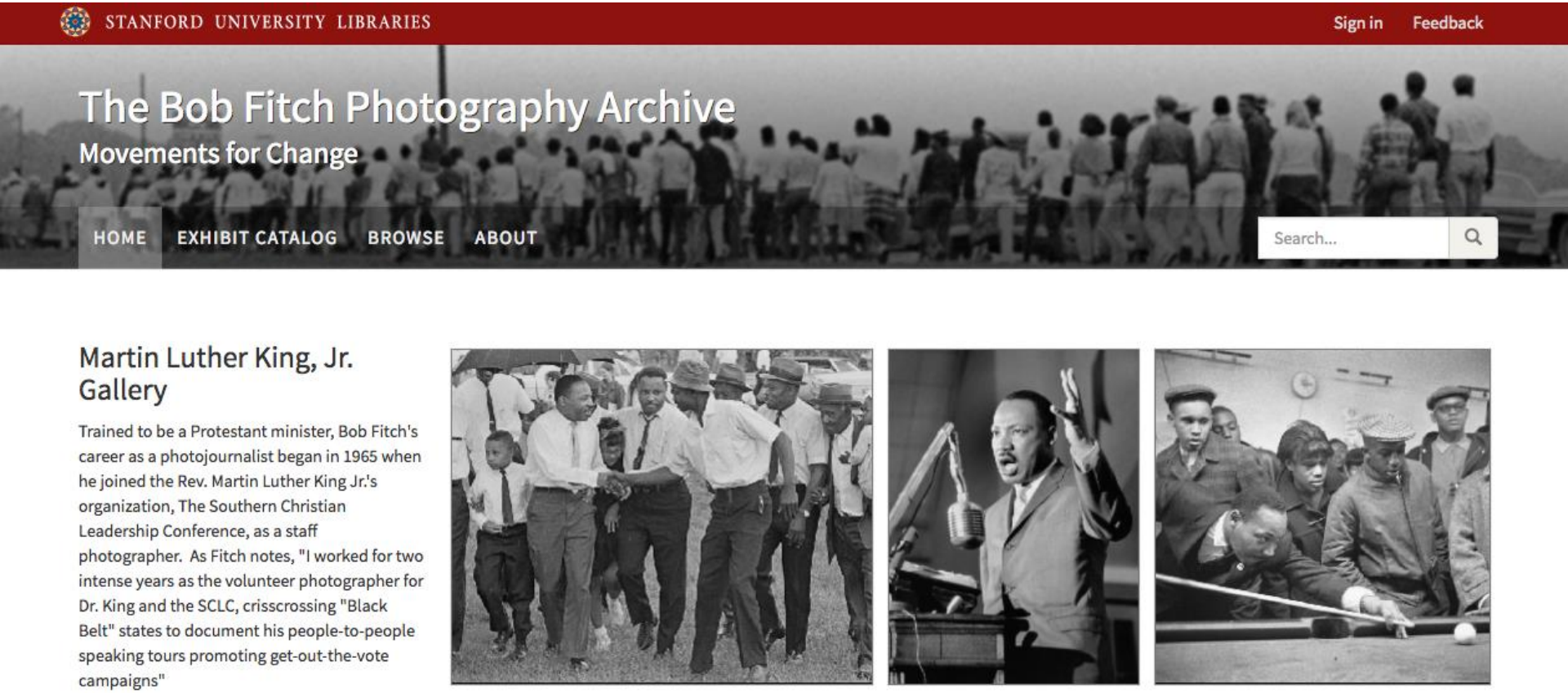
Leaflet-IIIF – Layering

https://bl.ocks.org/mejackreed/a0caf223c4f0d5111b2c4973d0402e69

Cropping images using Leaflet-IIIF

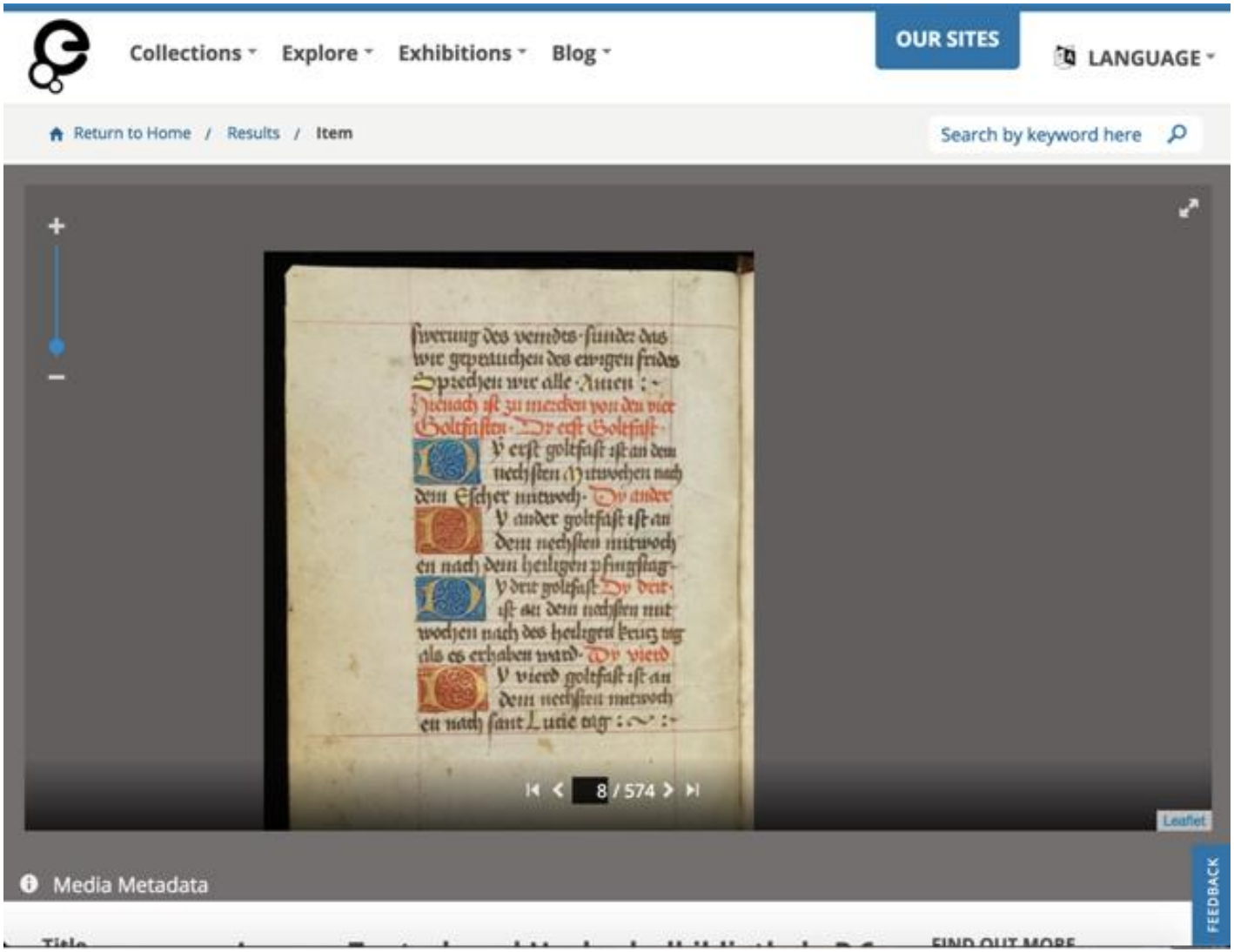
https://bl.ocks.org/mejackreed/6936585f435b60aa9451ae2bc1c199f2

Cropped images being used in other applications



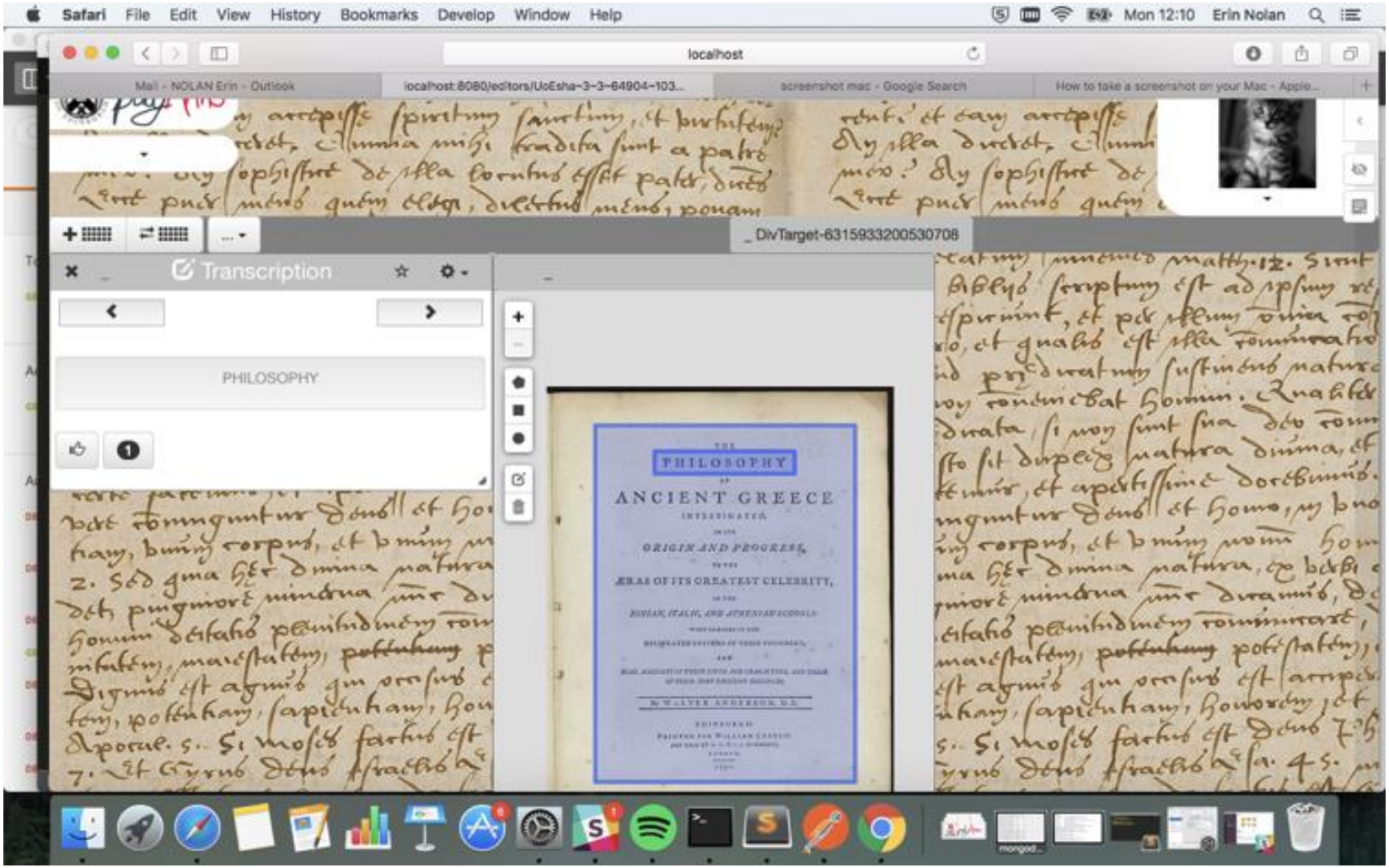
https://exhibits.stanford.edu/fitch
https://github.com/projectblacklight/spotlight

Europeana



http://www.europeana.eu/portal/en/record/07931/diglit_wordsworth1841.html

PolyAnno

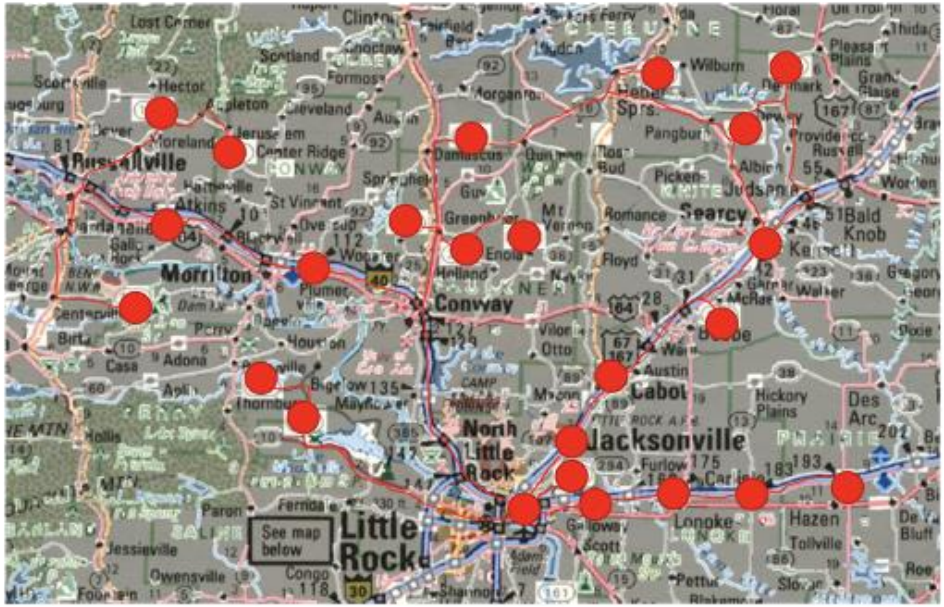


https://pigeonsblue.com/2016/08/22/polyanno-adventures-in-annotation/

Machine learning, computer vision, and IIIF

- IIIF image content is ripe to develop machine learning and computer vision applications
  - Web native API's provide a consistent way to access images (and parts of images)
  - IIIF speaks annotations out of the box, useful for classification and shape detection
  - Provides an interoperability opportunity for image processing collaboration

Histonets – Computer vision and machine learning with IIIF



https://github.com/sul-cidr/histonets

https://github.com/sul-cidr/histonets

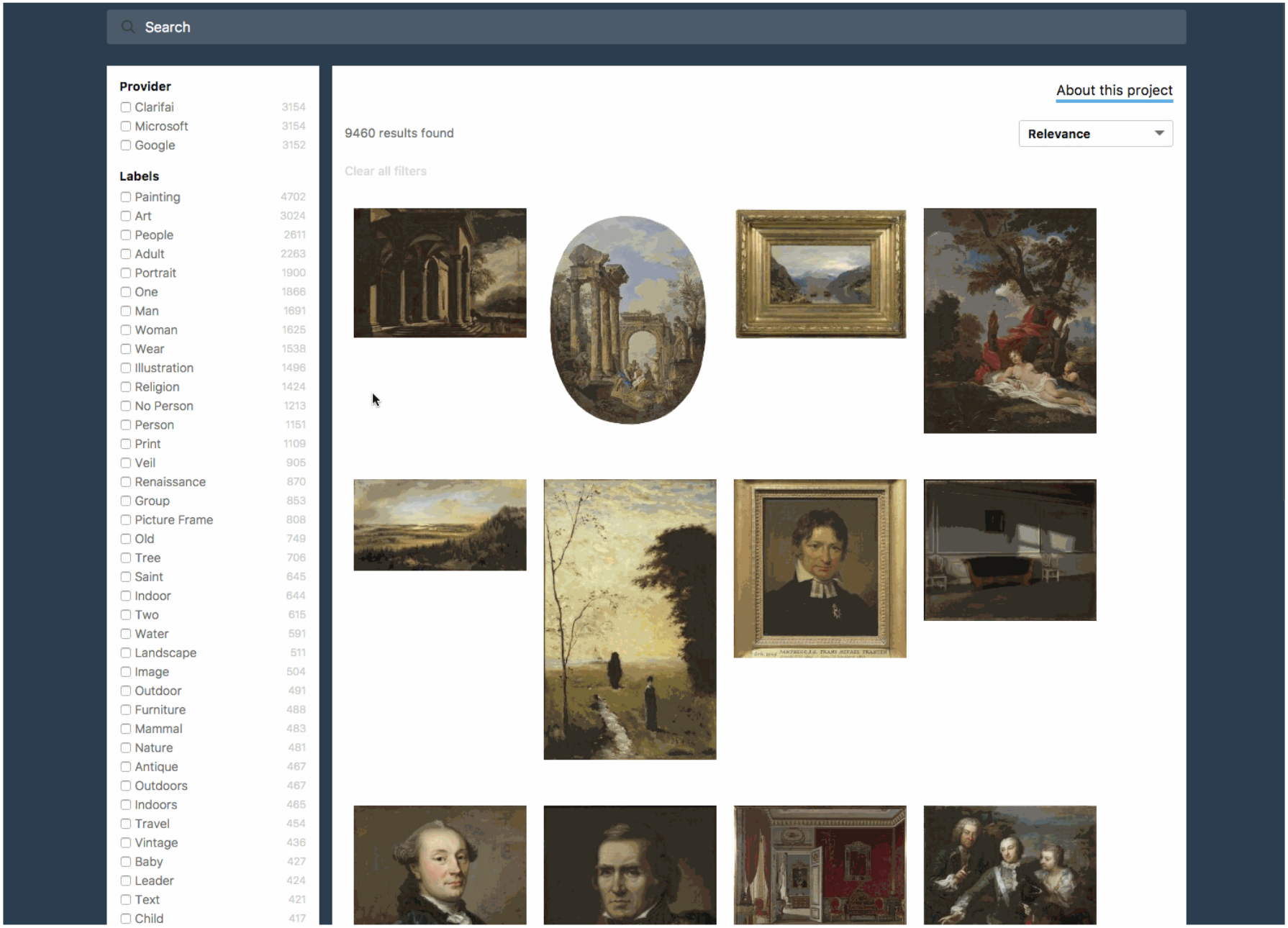
Review Template Match Results

Next Step

Create Image Templates

Change Layout Full Screen

Drop to Load Manifest



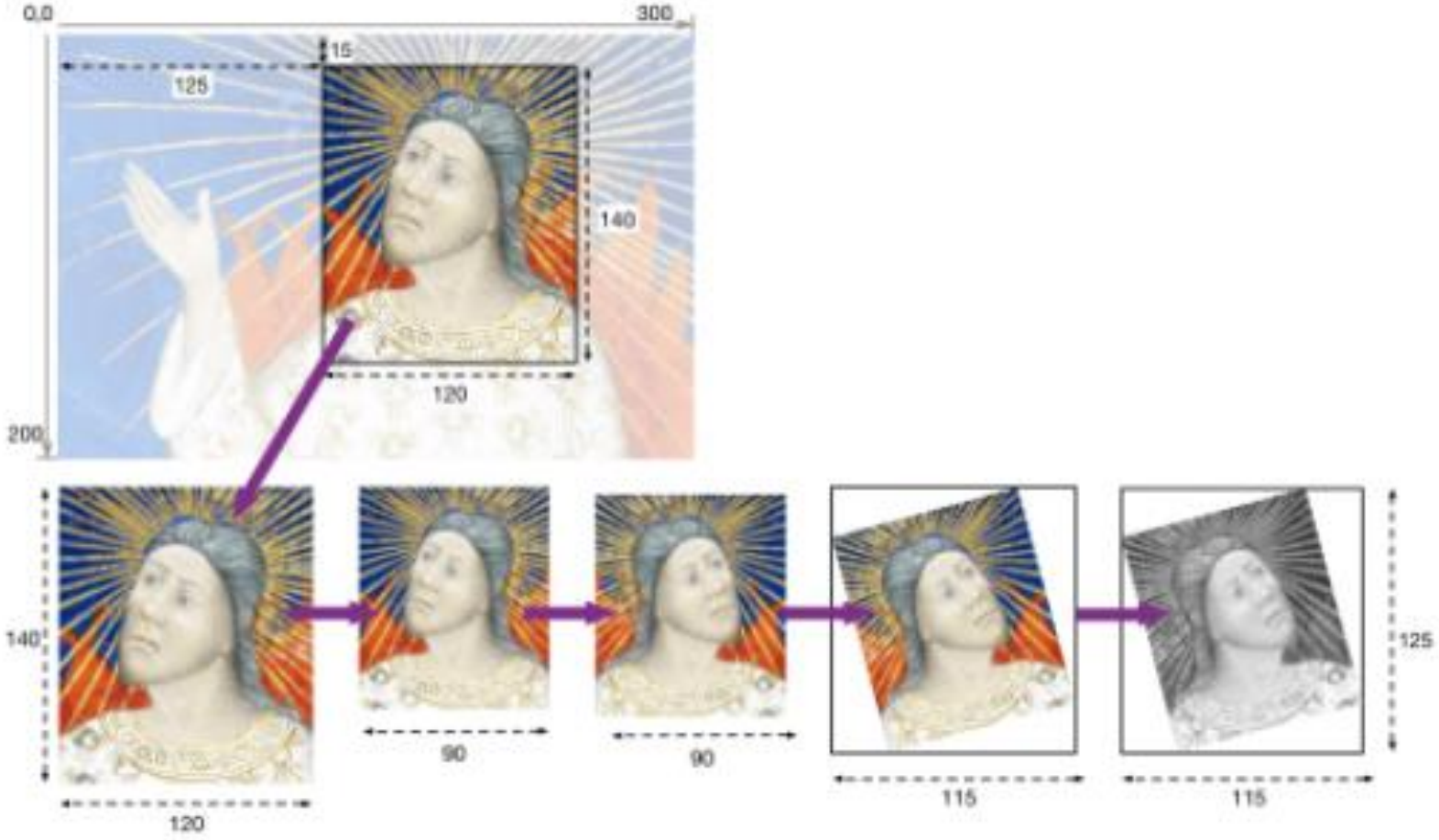
http://labs.cogapp.com/iiif-ml

IIIF APIs
& Demonstrations

Michael Appleby
Head of Information Technology
Yale Center for British Art
@mikeapps

YALE
CENTER
FOR
BRITISH
ART

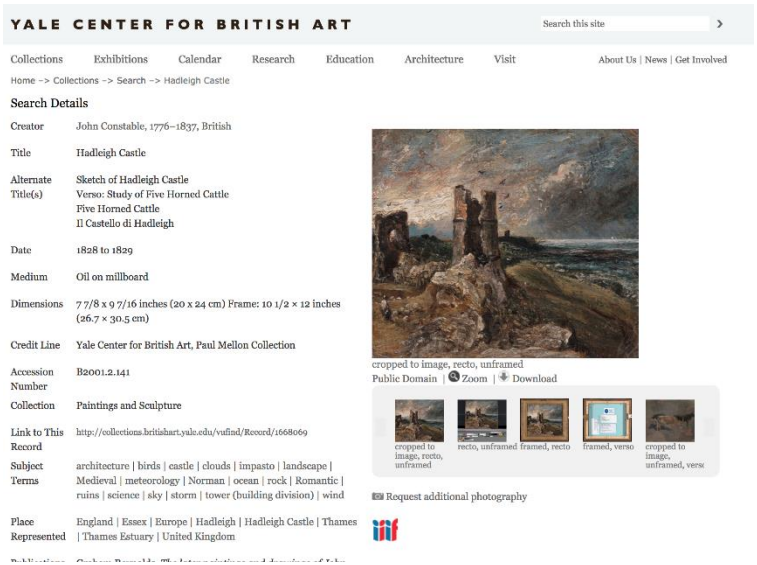
Image API

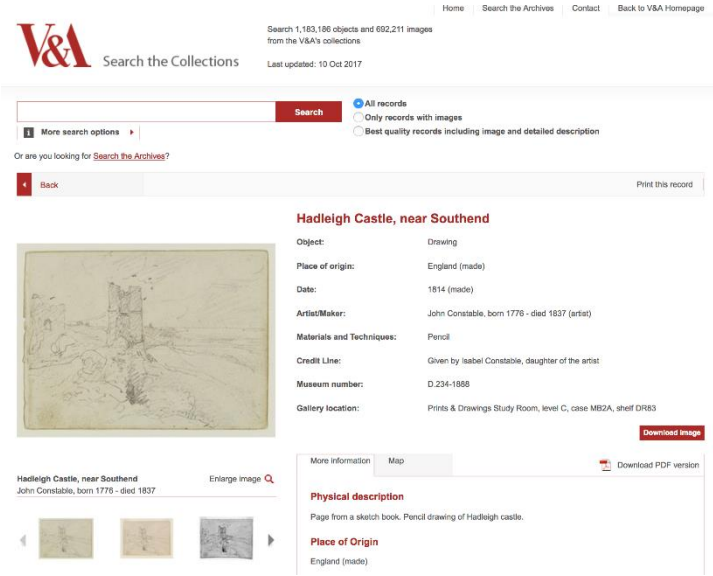


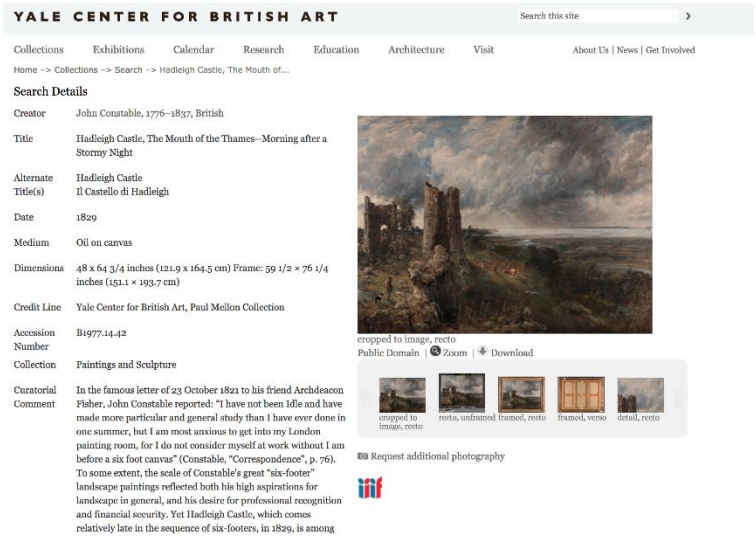
1 region=125,15,120,140 size=90, rotation=!345 quality=gray

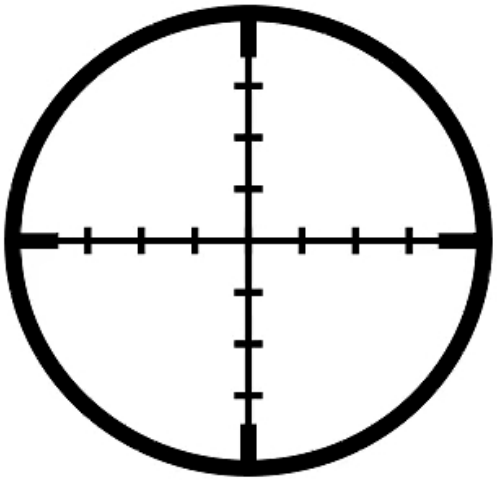
`.../125,15,120,140/90,/!345/gray.jpg`

Victoria & Albert Museum Compariscope: Constable's Hadley Castle

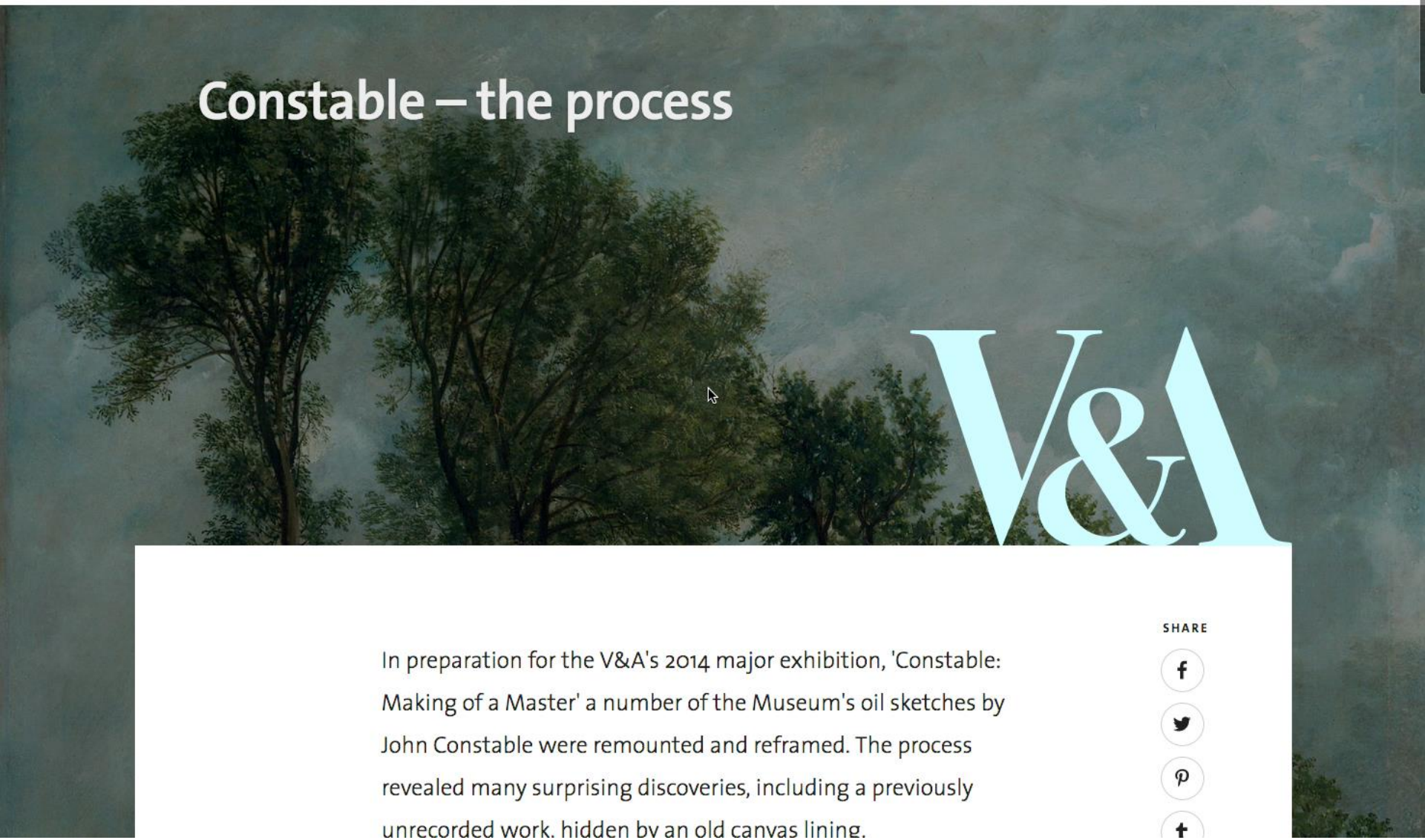








Preview



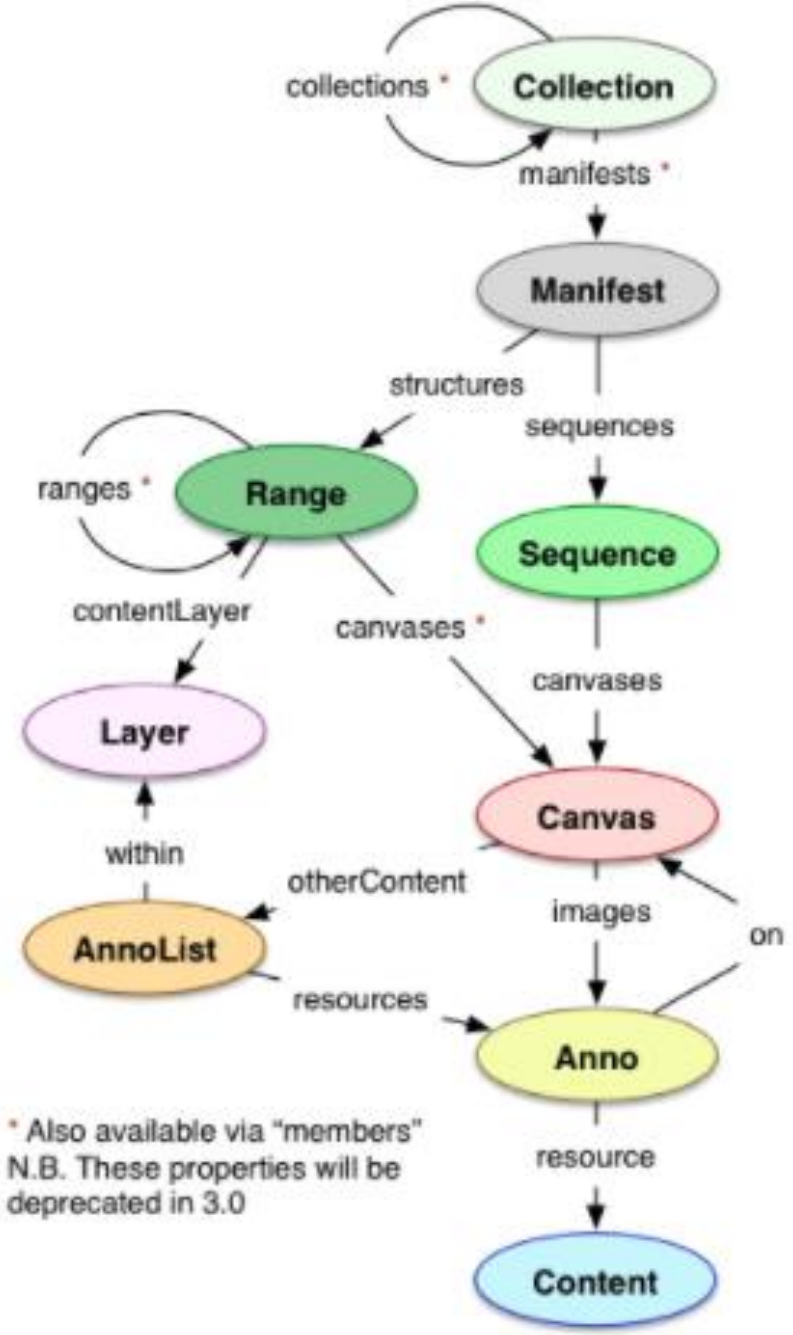
Constable – the process

In preparation for the V&A's 2014 major exhibition, 'Constable: Making of a Master' a number of the Museum's oil sketches by John Constable were remounted and reframed. The process revealed many surprising discoveries, including a previously unrecorded work, hidden by an old canvas lining.

SHARE

Presenta

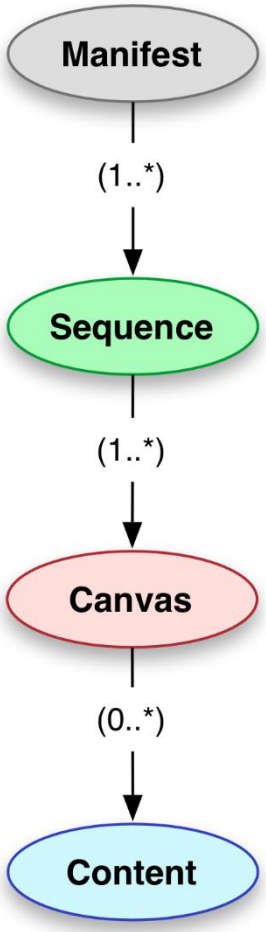
"The objective of the IIIF Presentation API is to provide the information necessary to allow a rich, online viewing environment for primarily image-based objects to be presented to a human user, likely in conjunction with the IIIF Image API."



Presentation API

The IIIF Manifest contains the data necessary to represent an object.

"**Manifest:** The overall description of the structure and properties of the digital representation of an object. It carries information needed for the viewer to present the digitized content to the user, such as a title and other descriptive information about the object or the intellectual work that it conveys. Each manifest describes how to present a single object such as a book, a photograph, or a statue."



Presentation API

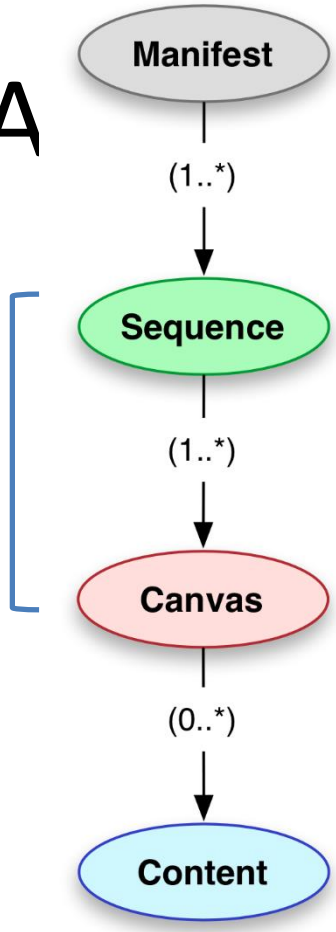
A Canvas is a coordinate space with X and Y dimensions (width and height).

Images are associated with the Canvas via Open Annotation.
(In Presentation API 3.0, W3C Web Annotations will be used.)

Presentation A

A Manifest contains one or more Sequences.

Each Sequence contains an ordered list of Canvases.



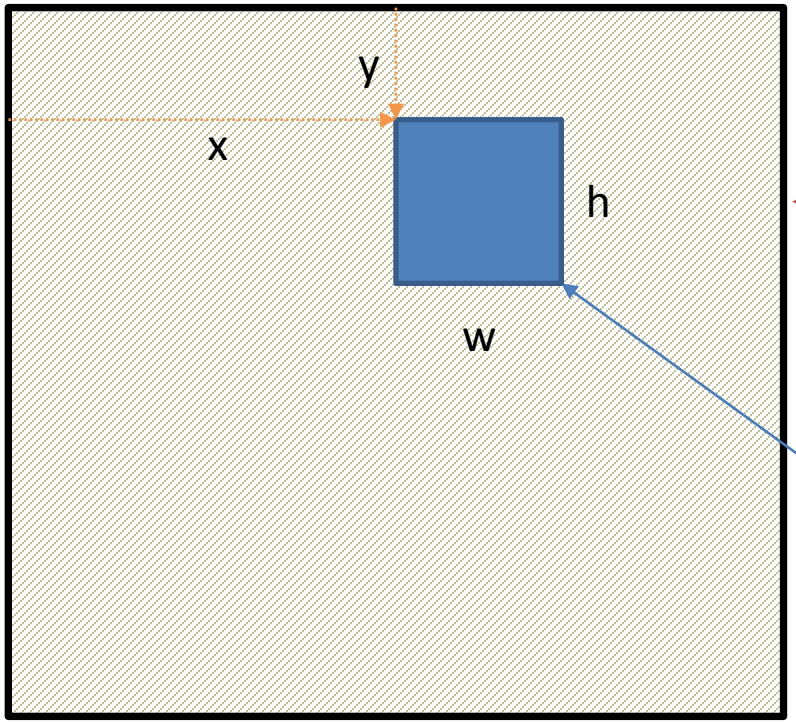
Presentation API: Other Properties

- Descriptive Properties
  (label, metadata, description, thumbnail)
- Rights and Licensing Properties
  (attribution, license, logo)
- Technical Properties
  (viewing direction, viewing hints, width, height, ...)
- Linking Properties
  (related, see also, start canvas, within, ...)
- Paging Properties
  (first, last, next, total)

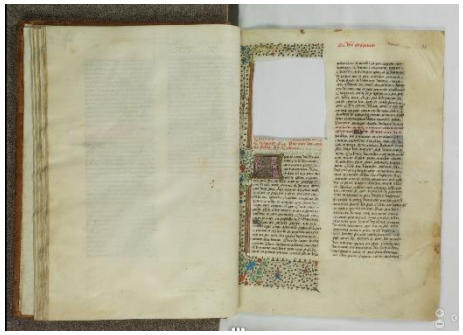
Audio-Visual

- IIIF Presentation API 3.0 will expand the notion of a Canvas from an x,y space by adding a time dimension
- This will allow for annotation of audio and video onto the Canvas at specific points in time
- Images, text, and other content can also be annotated on to the Canvas
- The video on the following slide shows the combination of video, still images, and text, all annotated on to a single canvas.

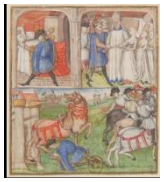
Presentation API:
Reconstruction of a Manuscript Folio



Canvas

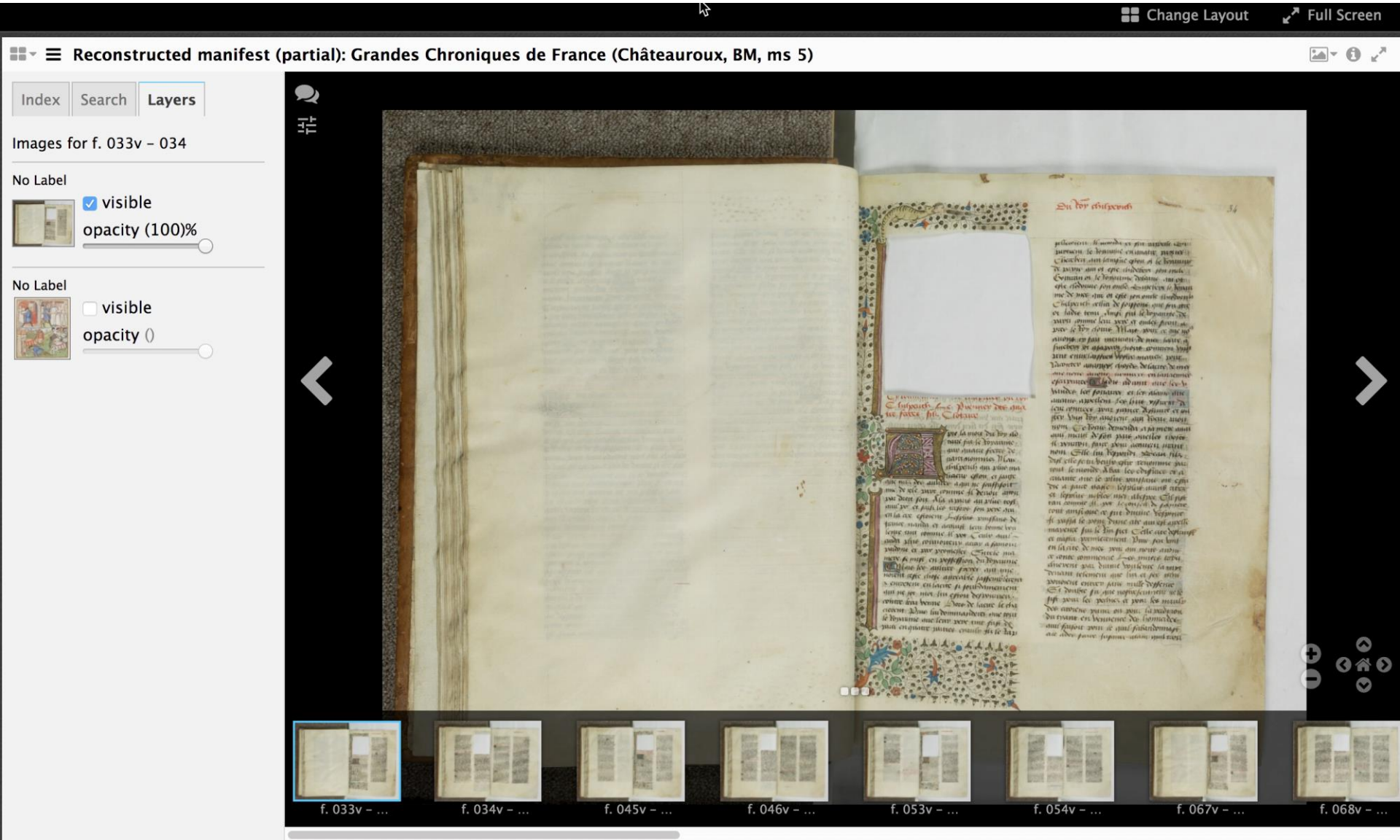


Page

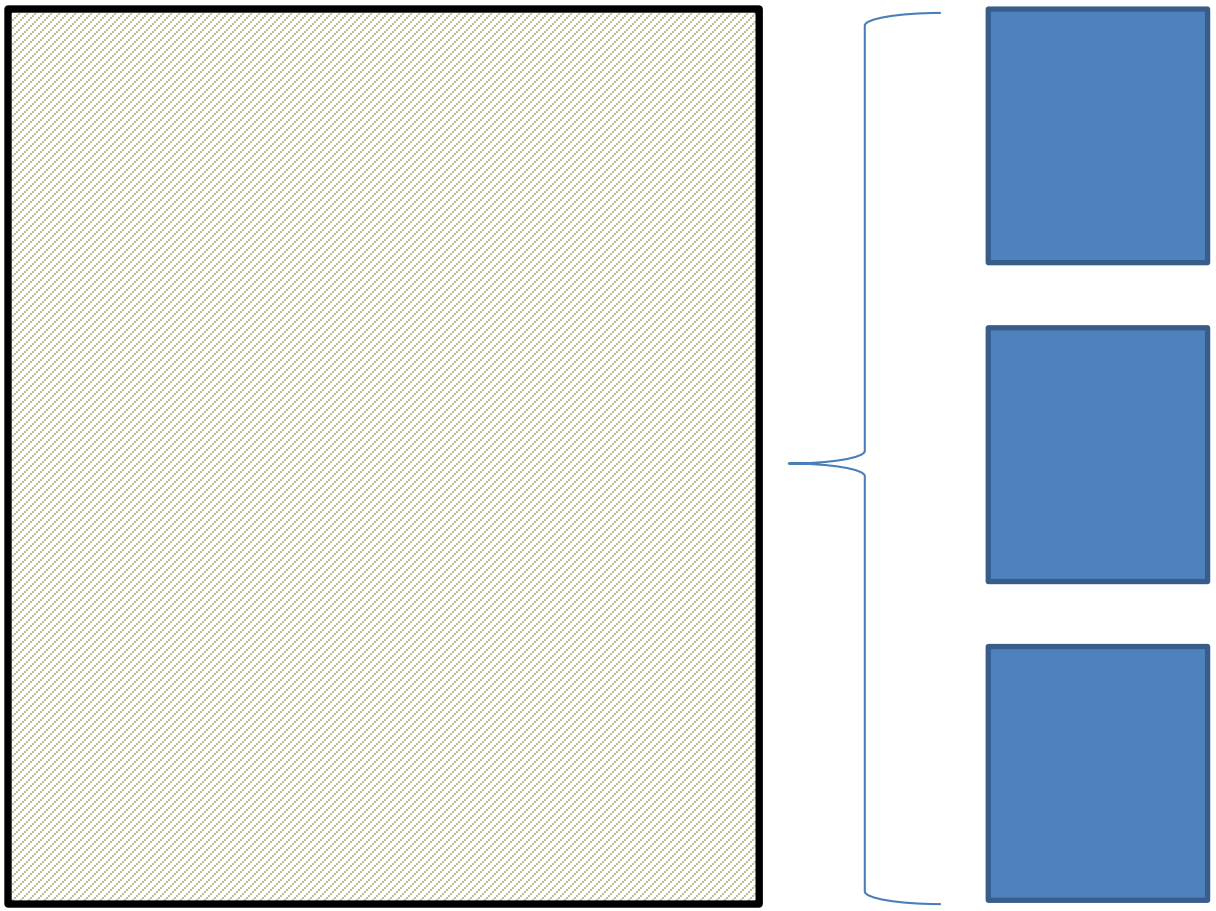


Fragment

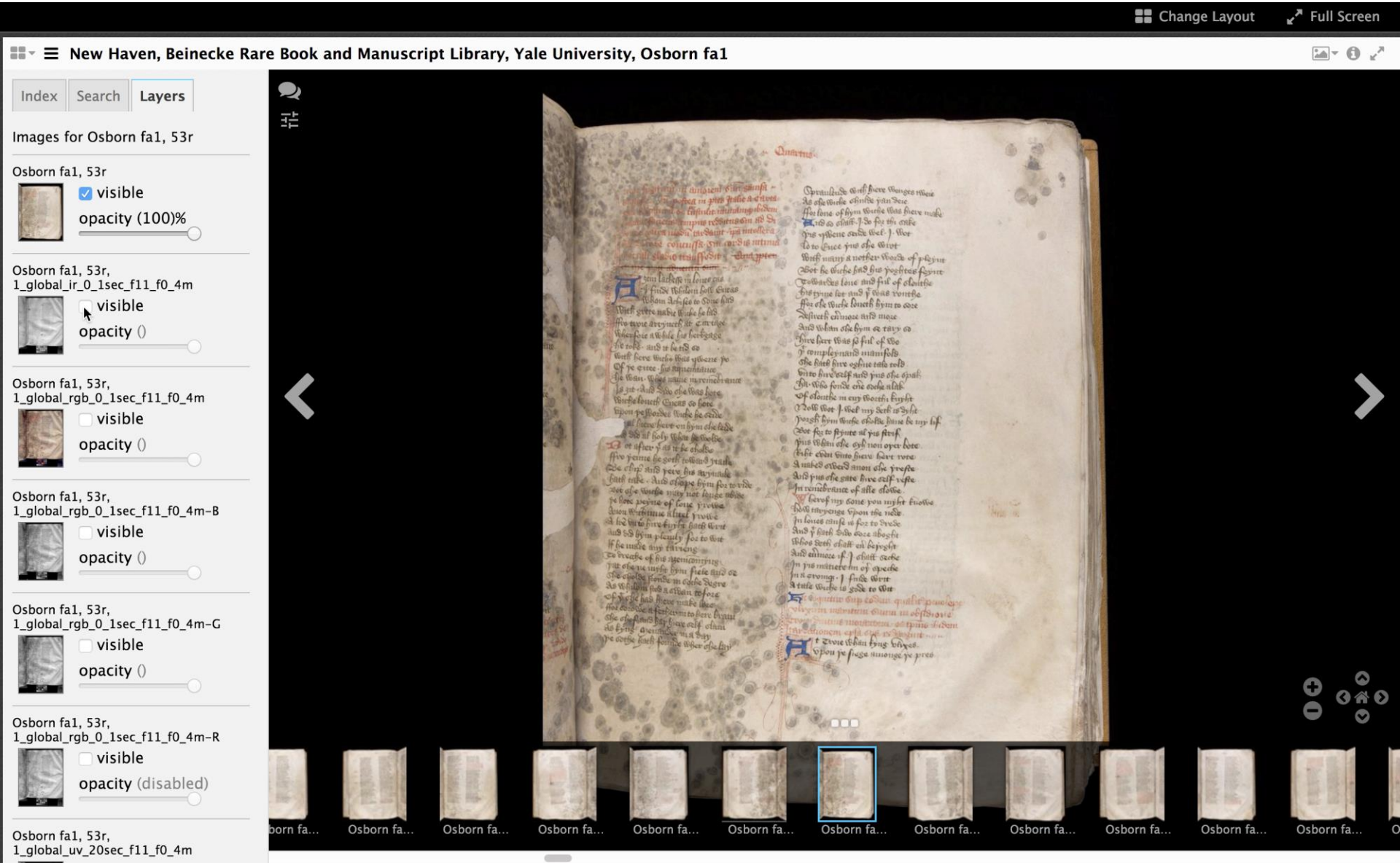
Demonstration: Manuscript Reconstruction



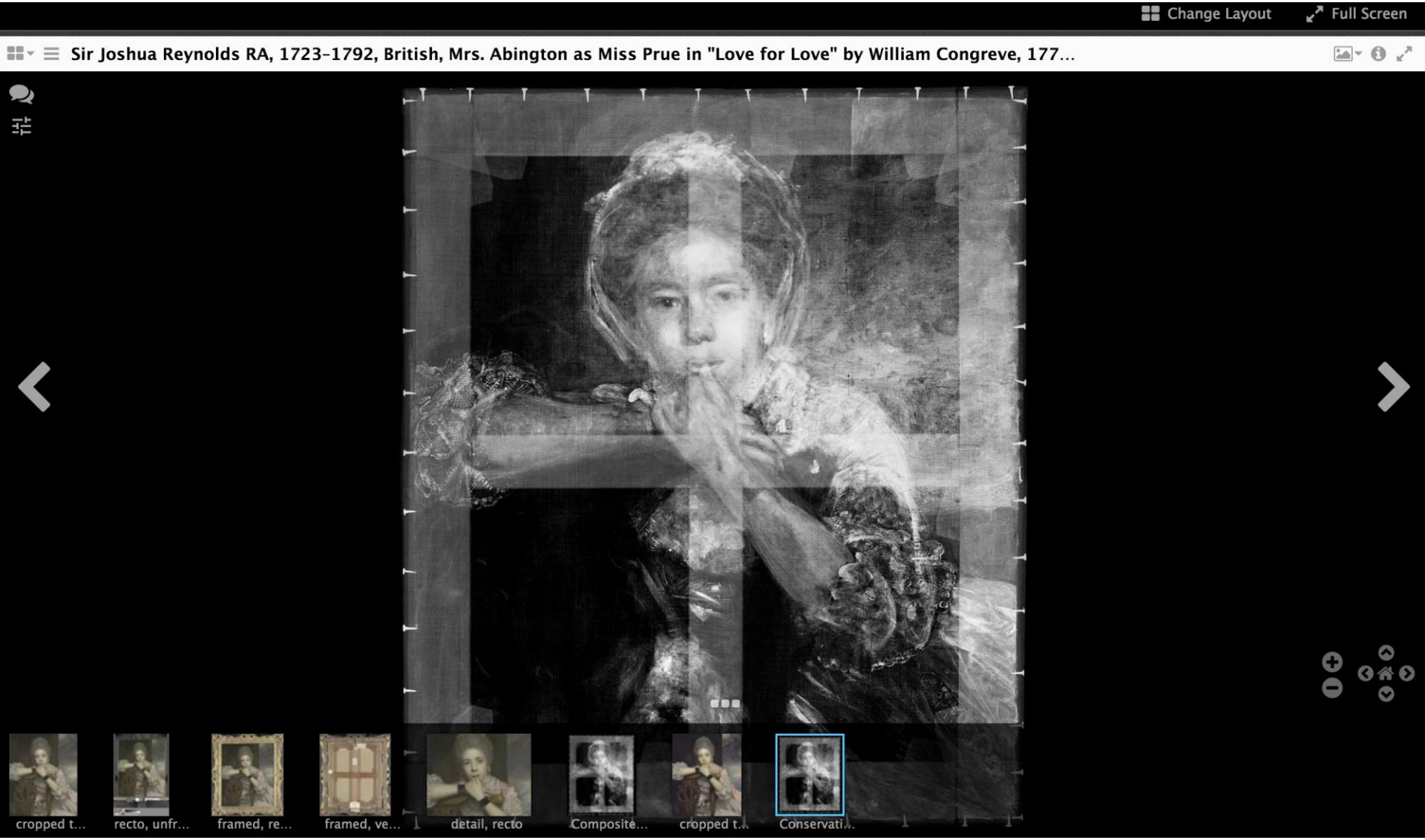
Multiple Images on a Single Canvas



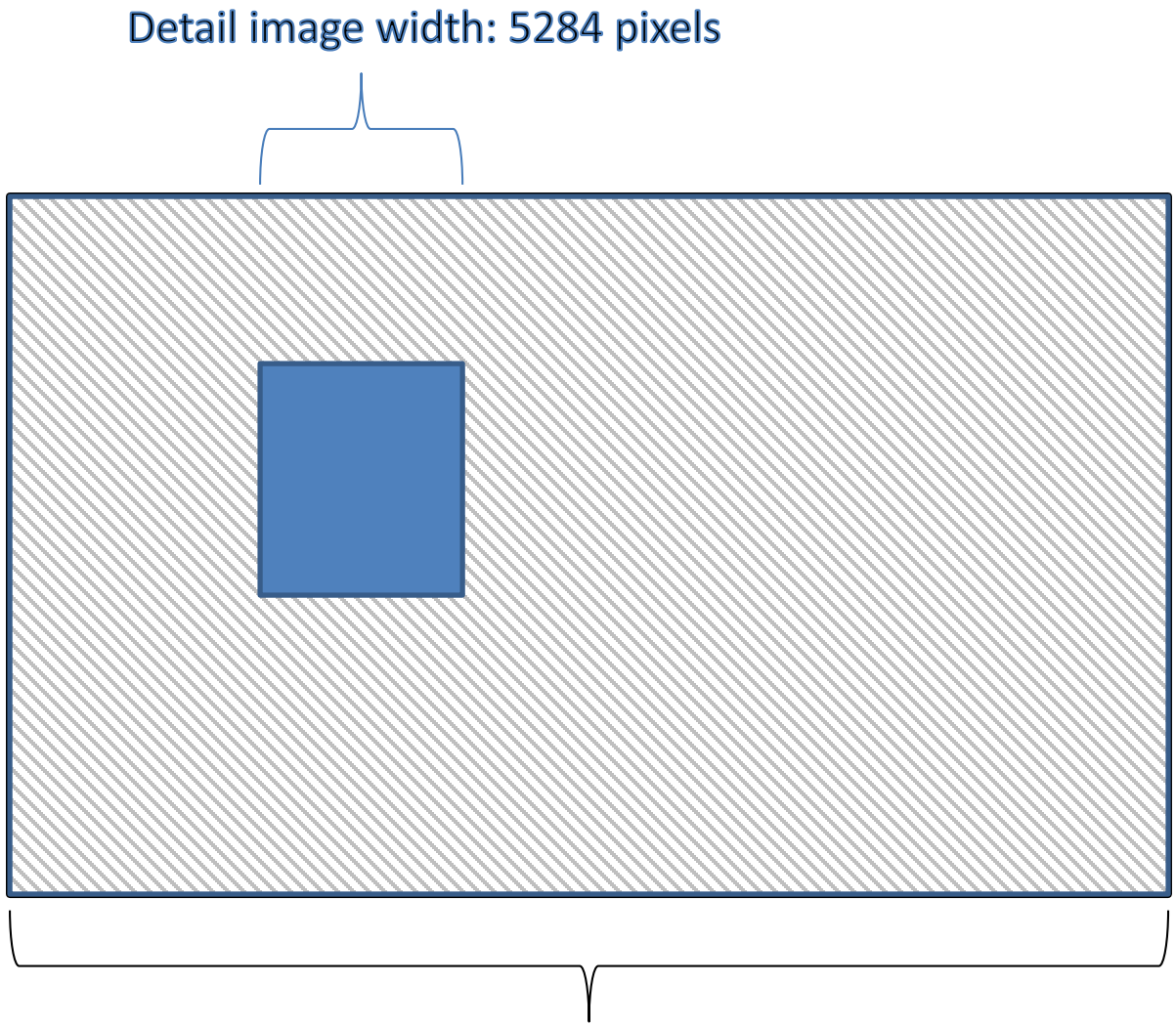
Demonstration: Multispectral Images



Demonstration: X-Ray and Conventional Photography



Demonstration: Detail Images and Deep Zoom



Demonstration: Detail Images and Deep Zoom

IIIF – Get Involved

How to Participate

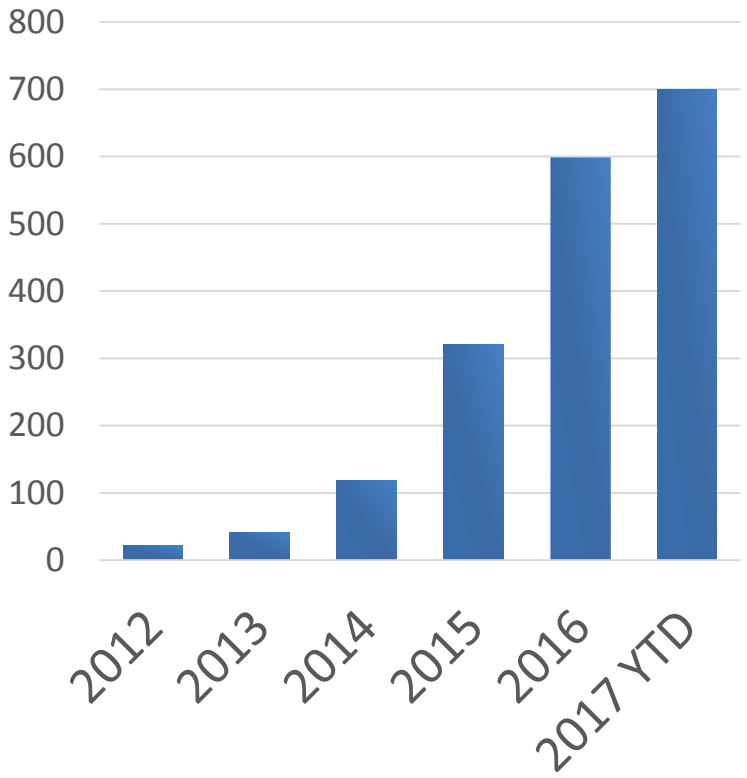
1. Use IIIF-compatible software and content
2. Expose your collections via IIIF
3. Make your software IIIF-compatible
4. Ask your software suppliers to become IIIF-compatible
5. Join IIIF communication channels - #japan on Slack
6. Sign up for IIIF-C

IIIF Communication Channels

- IIIF Website: http://iiif.io
- iiif-discuss@googlegroups.com
- IIIF Slack Team – Join at http://bit.ly/iiif-slack
- Twitter: @iiif_io and #IIIF
- Awesome-IIIF on Github
- IIIF YouTube Channel
- IIIF Events
- Contact me: srabun@iiif.io

Communication

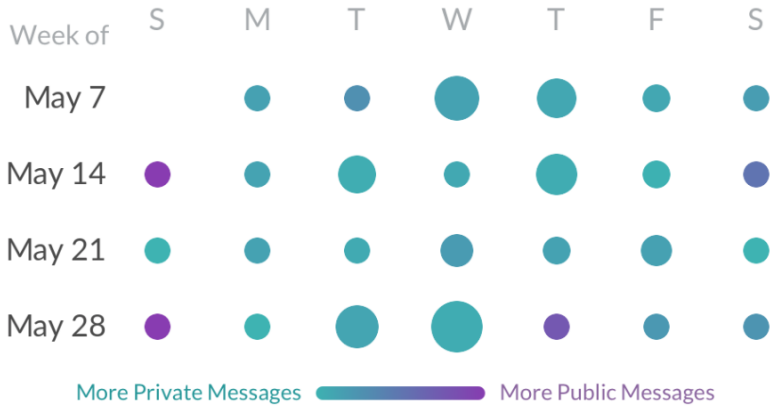
IIIF-Discuss Google Group



https://groups.google.com/forum/#!forum/iiif-discuss

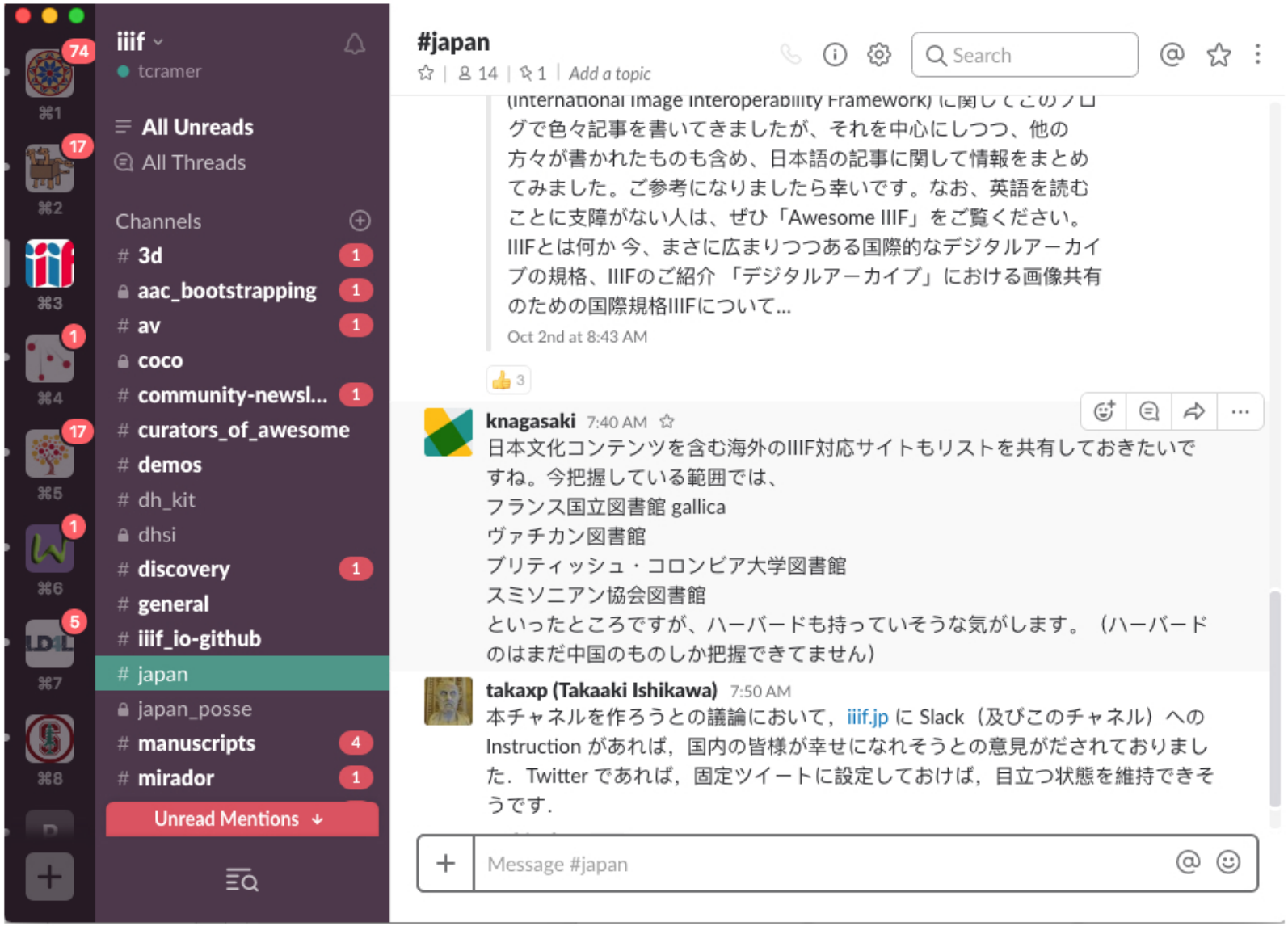
IIIF Slack

Total Messages



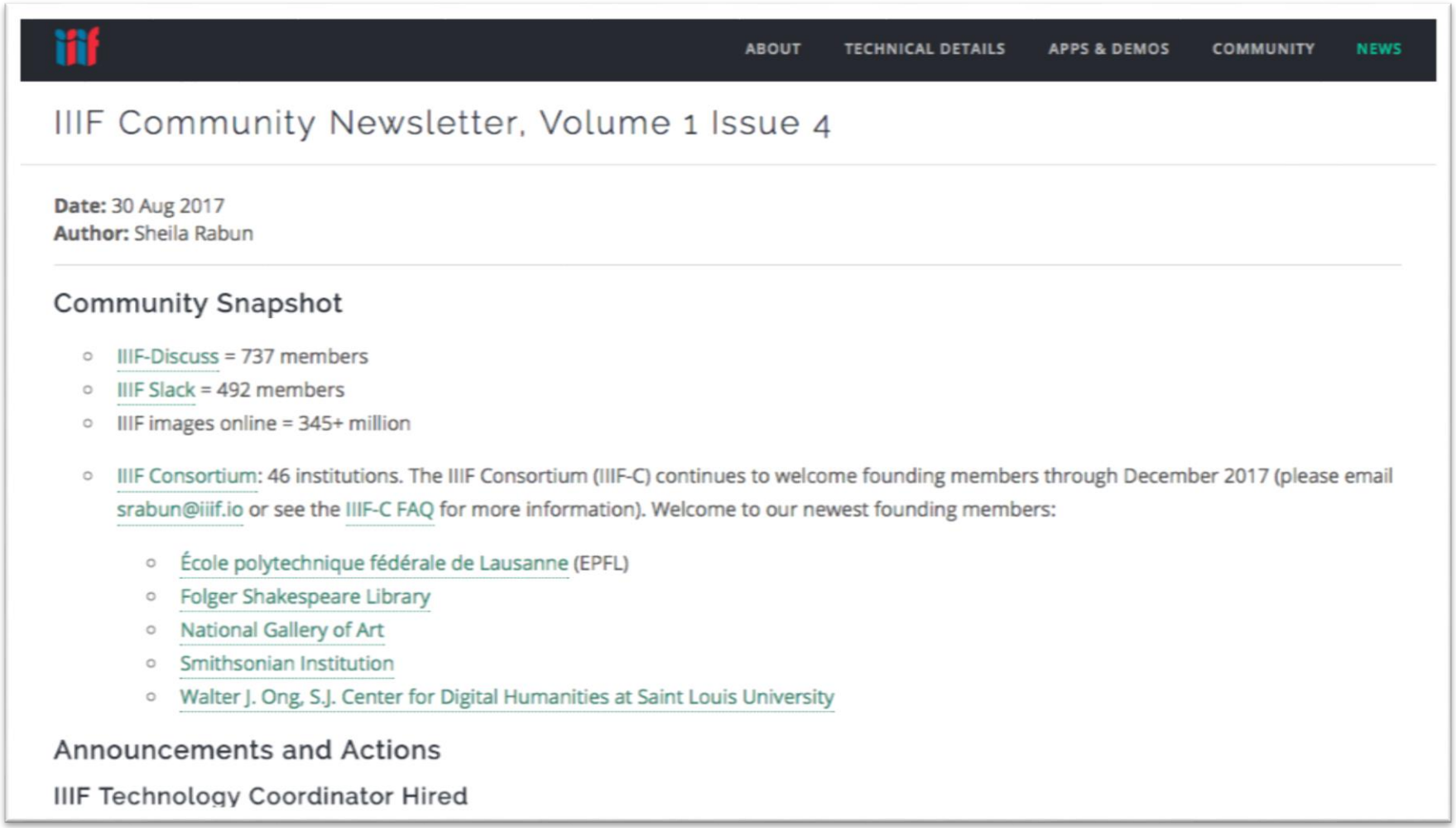
http://bit.ly/iiif-slack

#japan in IIIF Slack



IIIF Community Newsletter

- Learn about current activities – http://iiif.io/news



ABOUT TECHNICAL DETAILS APPS & DEMOS COMMUNITY NEWS

IIIF Community Newsletter, Volume 1 Issue 4

Date: 30 Aug 2017
Author: Sheila Rabun

Community Snapshot

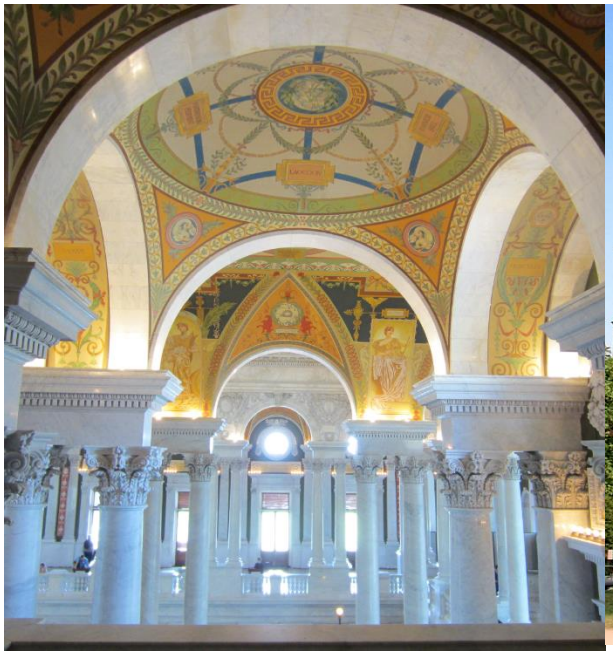
- IIIF-Discuss = 737 members
- IIIF Slack = 492 members
- IIIF images online = 345+ million
- IIIF Consortium: 46 institutions. The IIIF Consortium (IIIF-C) continues to welcome founding members through December 2017 (please email srabun@iiif.io or see the IIIF-C FAQ for more information). Welcome to our newest founding members:
  - École polytechnique fédérale de Lausanne (EPFL)
  - Folger Shakespeare Library
  - National Gallery of Art
  - Smithsonian Institution
  - Walter J. Ong, S.J. Center for Digital Humanities at Saint Louis University

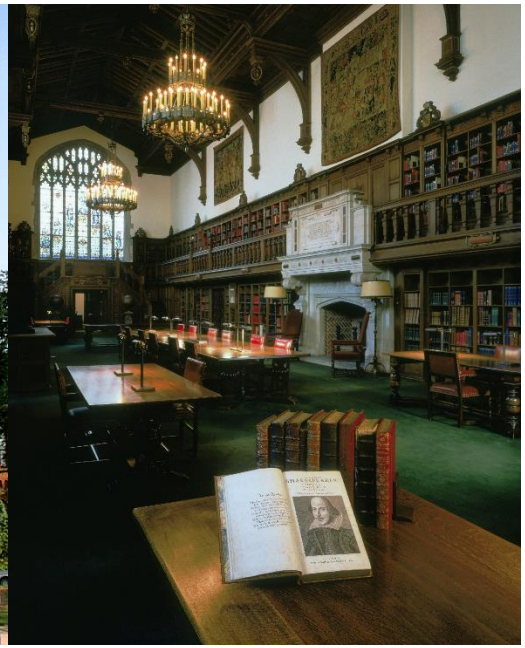
Announcements and Actions

IIIF Technology Coordinator Hired

2018 IIIF Conference in Washington, DC

- May 21-25, 2018
- Co-hosted by the Library of Congress, Smithsonian Institution, and Folger Shakespeare Library





IIIF Consortium

- http://iiif.io/community/consortium
- 47 institutional members
- Sustainability and steering for IIIF
- Additional Founding Members – through 2017
- Leading a revolution in digital access

Please consider joining!

IIIF-C Founding Members to Date

- Artstor
- Bavarian State Library (BSB)
- British Library
- Brown University
- Cambridge
- Chinese U. of Hong Kong
- Cornell
- Data Futures
- Ecole Polytechnique Federale de Lausanne (EPFL)
- Europeana
- Folger Library
- J. Paul Getty Trust
- Johns Hopkins
- Harvard University
- Hong Kong University
- Indiana University
- **Kyoto University Library Network**
- MIT
- National Gallery of Art (US)
- National Library of France
- National Library of Israel
- National Library of Norway
- National Library of Poland
- National Library of Scotland
- New York University
- North Carolina State University
- Ohio State University
- Oxford
- Penn State University
- Princeton
- Saint Louis University
- Smithsonian Institution
- Stanford
- University of Basel
- University of Edinburgh
- University of Göttingen
- University of Leiden
- University of Michigan
- University of Notre Dame
- University of Pennsylvania
- **University of Tokyo**
- University of Toronto
- Vatican Library
- Wellcome Library
- Yale University
  (incl. Yale Center for British Art)

International Image Interoperability Framework

iiif.io

@iiif_io