Agenda

• Introduction to IIIF
  – Meet Ben and Otto
• Image API
• Metadata API
• Exemplar Software Implementations
• Discussion
Digital Image Delivery is...

...too hard
  ...too slow
  ...too expensive
    ...too disjointed
      ...too ugly

...and we <repositories, software developers, users, funders> suffer because of it.
Digital Scholarship
Rocket Ships of Digital Scholarship

Parker on the Web

e-codices
Houston ...we have a problem
In their application to modern times, for which our knowledge of the past is principally valuable, it is not exalted above its own limits by too great an allowance of difficulty or even of inconsistency with the title of those volumes on which the addition of two supplementary chapters on Scotland and Ireland. This indeed I mention here to assert which perhaps ought not to be suggested, than to express my regret that an account of their history If for no other reason, they are both so disproportionate to the interest and importance of their subjects.

During the years that ambition aversions of different kinds have been occupied in the composition of this work, several others have been given to the world, and have attracted considerable attention, relating particularly to the periods of the Restoration and of the civil wars. It seems necessary to mention that I had read some of these till I had written much of the following pages as treat of the same subjects. The three first chapters indeed were finished in 1820, before the appearance of those publications which have led to so much controversy as to the ecclesiastical history of the sixteenth century, and I was equally acquainted with Mr. Rodwell's 'History of the British Empire from the Accession of Charles I. to the Restoration,' while engaged myself in that period. I have, however, on a revision of the present work, availed myself of the valuable labours of several authors, especially Dr. Lingard and Mr. Rodwell; and in several of my notes I have sometimes improved myself by their authority, sometimes taken the liberty to express my dissent, but I have seldom thought it necessary to make more than a few verbal modifications in my text.

It would perhaps not become me to offer any observations on those contemporaneous, but I cannot refrain from stating my opinion of the work of a distinguished foreigner, M. Guizot, 'Histoire de la Révolution d'Angleterre,' deposed 'Avancement de Charles I. jusqu'à la Çôte de Jacobin,' the 2nd volume of which was published in 1826. The extensive knowledge of M. Guizot, and his remarkable impartiality, have already been displayed in his collection of memoirs illustrating that part of English history; and I am much disposed to believe that, if the rest of his present undertaking shall be completed in as satisfactory a manner as the first volume, he will be entitled to the preference above any other, perhaps, of our native writers, as a guide through the great period of the seventeenth century.
The Mapping of California as an island
Cornell University
THE

WAR OF THE REBELLION:

A COMPILED OF THE
OFFICIAL RECORDS
OF THE
UNION AND CONFEDERATE ARMIES.

ADDITIONS AND CORRECTIONS
TO
SERIES I-VOLUME II.

PUBLISHED UNDER THE DIRECTION OF
The Hon. ELMER ROSE, Secretary of War,
by
The Zhou dynasty ruled China from ca. 1100-221 B.C. Society operated on a feudal system based on loyalty and hierarchy. The Shang belief in Shangri, the sun god, was the concept of ban (Heaven). The Chinese ruler was the “Son of Heaven,” and possessed the Mandate of Heaven, or ban reign, which blurred the line between religion and politics. The Zhou dynasty had several eras. The Western Zhou (ca. 1100-771) was followed by the Eastern Zhou (ca. 770-256). The Eastern Zhou was further divided into the Spring and Autumn Period (770-476) and the Warring States Period (477-221).

This may have been a provincial vessel, used by common people as opposed to members of the court.

Taoist motifs and laiwen (thunder pattern) appear around the foot and below the mouth of the vessel. Taoist motifs were associated with warnings against overindulgence and gluttony. The word “taste” came to mean “gluttony.”

Bodleian Libraries
I meditate, in my heart, upon Lord Shree Krishna, on whose left resides Radha and in whose heart resides Lakshmi, and who performs Lila with His Shaktas in Yrindavan.
Bibliothèque nationale de France
National Library of Norway
British Library
Welcome to Silo-ville

A World of Silos & Duplication

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

Scholars
- Find, Use, Analyze, Annotate
- Want: Mix & Match, Best of Breed

Repositories
- Host, Preserve (and Enrich) Resources
- Want: Use of Resources, Enriching services, Enriched content

Tool Makers
- Build useful tools and apps
- Want: Users & resources
APIs Enable Reuse

Applications
User interfaces present DMS data with specialized tools and contexts

Dictionary of Old English
Image Delivery
Description

Parker App
Image Delivery
Search
Description

TPEN Transcription Tool
Image Delivery
Transcriptions

API's
RESTful Web Services

Repository
Canonical Data Store for Images, Description, and TechMD

Import & Export
DMS apps and tools can both consume and contribute data via common web services. E.g., transcriptions or annotations can be deposited in the source repository, enriching the corpus for future researchers.
APIs -> Framework -> Ecosystem

- Parker App
  - Image Delivery
  - Search
  - Description

- Annotation & Transcription Tools
  - Image Delivery
  - Transcriptions

- Cross Repository Search & Delivery Environments
  - Image Delivery
  - Search

- Gallica
  - Image Delivery
  - Search
  - Description

- API's
- Oxford Data
  - Images
  - MD
  - Annot.

- Rose Data
  - Images
  - MD
  - Annot.

- BnF Data
  - Images
  - MD
  - Annot.
Mellan?
JISC
CLIR

Oxford
Shandy
K15?
N probes

Eurosena

HSL

BL

Inland Development
Small donation
Free for academic usage?
Bodeguita del Medio 3/19/11

Sean, Neil, Tom

Oxford, BnF, NPDL, LoC, Stanford, KB?, Europeana, BL, Norway?, JHU

djatoka

Image interoperable framework

Rich Clients Html 5

Web services + API

Consortial development
Small donation
Free-for- academic license?

$, Mellon?, JISC, CLIR
IIIF: Extend DMS To...

Books
Manuscripts
Newspapers
(Sheet) Music

Art / Vis. Resources
Archival Materials
Maps

Scrolls
Architecture

STEM Imagery
Use Cases

...a paleographer who would like to compare scribal hands from manuscripts at two different repositories

...an art & architecture professor who would like to assemble a teaching collection of images from multiple sources

...a humanities scholar who would like to annotate a high resolution image of an historical map (but her preferred annotation tool only is deployed against other sites)
More Use Cases

...a repository manager who would like to drop a newspaper viewer with deep zoom into his site with no customization required

...a national library that would like to host digital surrogates for resources held by smaller institutions (without local IT capabilities), but let them present resources with local branding

...a funder who would like to underwrite the digitization of a new scholarly resource, but doesn’t want to pay for the development of yet another, stand-alone, digital collection web site from scratch
Meet Ben & Otto

Otto Ege, 20th c. Biblioclast

Ben Albritton, 21st c. manuscripts scholar
Otto Ege, MS 1 - 1940
Stanford Leaves of Ege MS 1

MISC 0305 - http://purl.stanford.edu/kq131cs7229
Stanford Leaves of Ege MS 1

http://guillaumedemachaut.com/mirador/index_ege.html
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,

...in *any* combination of elements.
IIIF Participants

- ARTstor
- Bibliothèque nationale de France
- Bodleian Libraries, Oxford University
- British Library
- Cambridge University
- Cornell University
- DPLA
- Europeana
- Harvard University
- Johns Hopkins University
- le Louvre
- National Library of Denmark
- National Library of Norway
- National Library of Wales
- Princeton University
- St. Louis University, TPEN
- Stanford University
- Wellcome Trust
- Yale University
IIIF Objectives

• Define APIs for
  – Image Delivery
  – Metadata (to drive image presentation)

• Recruit repositories for API adoption

• Catalyze software development
  – Zoomers, Viewers, Page Turners, Anno tools
  – Really fast, really slippy image delivery

• Establish an ongoing effort
Image Delivery API

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

Order of Implementation

http://iiif.io/api/image/1.1/
Audience

• The Web!
• Assumes a curated set of source images
• Compression, color management, etc. are out of scope
IIIF Image API URI Syntax

# Base URI
{scheme}:://{server}{/prefix}/{identifier}

# Image Request
{$BASE}/{region}/{size}/{rotation}/{quality}{.format}

# Image Information (Metadata)
{$BASE}/info.json
Sample Image Requests – Region

( {$BASE}/{{region}}/{{size}}/{{rotation}}/{{quality}}{.format} )

Full Size
{$BASE}/full/full/0/native.jpg

By Pixel
{$BASE}/780,100,1100,1000/full/0/native.jpg

By Percentage
{$BASE}/pct:50,50,50,50/full/0/native.jpg
Sample Image Requests – Size

( \{\$BASE\}/\{region\}/\{size\}/\{rotation\}/\{quality\}\{.format\} )

Full
\{\$BASE\}/full/full/0/native.jpg

By Percentage
\{\$BASE\}/full/pct:10/0/native.jpg

By Width
\{\$BASE\}/full/200,/0/native.jpg

By Height
\{\$BASE\}/full/,200/0/native.jpg
Sample Image Requests – Size cont’d

( {$BASE}/${region}/${size}/${rotation}/${quality}.${format} )

By Width and Height, Aspect Preserved
{$BASE}/full/!200,200/0/native.jpg

By Width and Height, Aspect Forced
{$BASE}/full/200,200/0/native.jpg
Sample Image Requests – Rotation

( {$BASE}/{region}/{size}/{rotation}/{quality}.{format} )

0
{$BASE}/full/full/0/native.jpg

90
{$BASE}/full/full/90/native.jpg

(etc.)

[Arbitrary]
{$BASE}/full/full/75/native.jpg
Sample Image Requests – Quality

( {\$BASE}/{region}/{size}/{rotation}/{quality}{.format} )

Native
{\$BASE}/full/full/0/native.jpg

Color
{\$BASE}/full/full/0/color.jpg

Greyscale
{\$BASE}/full/full/0/grey.jpg

Bitonal
{\$BASE}/full/full/0/bitonal.jpg
Sample Image Requests – Format

( {\$BASE}/{region}/{size}/{rotation}/{quality}{.format} )

JPG

{\$BASE}/full/full/0/native.jpg

PNG

{\$BASE}/full/full/0/native.png

* See http://iiif.io/api/image/1.1/#parameters-format for a complete list of extensions
Sample Image Information Response

( {$BASE}/info.json )

{
    "@context": "http://library.stanford.edu/iiif/image-api/1.1/context.json",
    "@id": "http://libimages.princeton.edu/loris/pudl0052%2F6131707%2F000000001.jp2",
    "formats": [ "jpg", "png", "gif" ],
    "width": 122877,
    "height": 3783,
    "profile": "http://library.stanford.edu/iiif/image-api/1.1/compliance.html#level2",
    "qualities": [ "native", "bitonal" ],
    "scale_factors": [ 1, 2, 4, 8, 16, 32, 64, 128 ],
    "tile_height": 1024,
    "tile_width": 1024
}
Metadata Presentation API

http://iiif.io/api/metadata/1.0/
IIIF Metadata

• Just enough metadata to drive interoperable image delivery
  – labels, title, sequence, attribution, etc.
• Based on http://shared-canvas.org
  – Synthesis of OA (Open Annotation) and DMS
• Relate parts of image-based resources
  – Images, Text, Annotations, Transcriptions, Sequence / Structure
• Good URI’s for linking data
• Support for annotation tools & initiatives
• No need to change internal data model or internal data store: produce IIIF Metadata dynamic transforms; deliver via API on request
Shared Canvas Data Model

• Developed out of the Digital Manuscript Interop Work
• Provides a “lingua franca” for modelling image & text-based digital resources
• Based on Linked Data: Web and annotation-friendly!
Shared Canvas to Relate Parts

http://www.shared-canvas.org
Primary Resources

There are other types of resource including Annotation Lists, Annotations, Ranges and Layers
Other metadata fields are possible if required – by extension or endorsed by the community
All Resource Types

Manifest
  sequences
  structures

Sequence
  canvases

Range

Layer
  within

AnnoList
  resources

Canvas
  resources

Anno
  resource

Content

Full Object
  Order of Pages
  List of Pages
  Set of Lists
  Single Page
  List of Associations
  Association: Content to Page
  Digital Content
API Requests

• Base: {scheme}://{host}/{prefix}/{identifier}
• Resources:
  – /manifest.json
  – /sequence/{name}.json
  – /canvas/{name}.json
  – /annotation/{name}.json
    • See Open Annotation for more details
    • http://www.w3.org/community/openannotation/
API Responses

- Content-Type: application/ld+json
- Example: Canvas

```json
{
  // Metadata about this Canvas
  "@context":"http://www.shared-canvas.org/ns/context.json",
  "@id":"http://www.example.org/iiif/book1/canvas/p1.json",
  "@type":"sc:Canvas",
  "label":"p. 1",
  "height":1000,
  "width":750,

  "images": [
    {
      "@type":"oa:Annotation"
      // Link from Image to Canvas should be included here, as below
    }
  ],
  "otherContent": [
  
  ]
}
```
Compatible Software

http://iiif.io/apps-demos.html
IIIF Software Wishlist

• Performant, community-supported image server (or equivalent)
• Super-slippy suite of zoom-pan-rotate clients
• “Next generation” page turners, cover flow & gallery view clients
• Comparative and analytic tools
  – multi-up, annotation, transcription
• Open source AND Commercial solutions
Software Tiers from a IIIF View

- Marketplace to pick “best of breed”
- Plug and play deployments
- Mix & match clients for different needs
- Add new capabilities without new development
- Swap out any individual component

IIIF APIs

Internet Archive
BookReader

Mirador

etc.

Open SeaDragon

IIP Moo Viewer

OpenLayers

etc.

Image Servers

- Aware
- Content DM
- Djatoka
- FSI Server

Metadata

- Local data model
- Local data store of choice

IIP Image Server
- Loris
- Luratech
- Etc.
Demos
& Discussion
Artstor Mirador implementation
Looking Forward

• “Search Within” API
• Annotation API
• Discovery of IIIF-compatible Resources
• Adoption and Expansion
  – Repositories & Software Developers
  – Seasoning with Use Cases
  – Connect!
    • http://iiif.io
    • IIIF-Discuss@googlegroups.com
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