International Image Interoperability Framework (IIIF)

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Coalition for Networked Information
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IIIF Participants*

- Bibliothèque nationale de France
- The British Library
- Cornell University
- Los Alamos National Library
- Nasjonalbiblioteket (National Library of Norway)
- Oxford University, Bodleian Libraries
- Stanford University

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Digital Medieval Manuscripts Today: 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

- **Toolers**
  - Build useful tools and apps
  - Want: Users & resources

- **Repositories**
  - Host, Preserve (and Enrich) Resources
  - Want: Use of Resources, Enriching services, Enriched content
Stanford University
The Mapping of California as an Island

An Illustrated Checklist
Glen McLaughlin
Nancy H. Mayo
California Map Society
Occasional Paper No. 3
Map of the railroads of the State of New York
THE WAR OF THE REBELLION:
A COMPIATION OF THE
OFFICIAL RECORDS
OF THE
UNION AND CONFEDERATE ARMIES.

ADDITIONS AND CORRECTIONS TO
SERIES I—VOLUME II.
(To be inserted in this volume. For explanation see General Index volume, yearly No. 190, page XXVIII.)

PUBLISHED UNDER THE DIRECTION OF
The Hon. ELIHU ROOT, Secretary of War.
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 Shangdi gave way to the concept of tian (Heaven). The Chinese ruler was the "Son of Heaven." He possessed the Mandate of Heaven, or tian ming, 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 (475-221).

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

Taoist masks and leiwen (thunder pattern) appear around the foot and below the mouth of the vessel. Taoist masks were associated with warnings against overindulgence and gluttony after the word "taoist" came to mean "gluttony."


Bronze is an alloy of copper and tin, and may also contain a minute amount of lead. During the Zhou dynasty, bronzes continued to be cast according to the "piece-mold" method, using a clay mold. [Link to illustration of method.]
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 Bhaktas in Vrindavan.
Bibliothèque nationale de France
National Library of Norway
API’s 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

Repository
Canonical Data Store for Images, Description, and TechMD

API’s
RESTful Web Services

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.
API’s -> Framework -> Ecosystem
DMS Tech*: What’s Already Being Done

• Image delivery API (spec’ed & built)
• Data Model for medieval manuscripts (aka M3 / SharedCanvas)
• Support for authentication & authorization
• Reference implementation(s) of load balanced, performant Djatoka server
• Interactive, open source page turning & image viewing application

*More on DMS Tech at http://lib.stanford.edu/dmm
IIIF: Extend DMS To...

- Images
- Books
- Newspapers
- Manuscripts
- Maps
- Scrolls
- Single sheets collections

*More on DMS Tech at http://lib.stanford.edu/dmm*
IIIF Activities & Outputs

1. Agree on common, normalized specification for **an image delivery service API**

2. Agree on a **single metadata service specification**, or a framework that accommodates the necessary flavors of difference among different image-based content types
   - i.e., newspapers, medieval manuscripts, maps, photos, ephemera, single sheet manuscripts...

3. Draft specifications for a common a **search service**, i.e., an API that returns search results and text (OCR) coordinates (to enable highlighting)
III F Activities & Outputs

4. Define strategies for supporting authenticated access to image-based resources via the API’s described in points 1-3, above.

5. Commit to adopting these API's in local environments, in order to
   – test practicality and applicability of APIs in real life environments
   – provide a critical mass of interoperable content and services for scholars
   – demonstrate critical community mass to other potential adopters and tool developers

6. Catalyze the <local,open source, commercial> development of rich web applications that consume these API’s
IIIF Activities & Outputs

7. Seed the development of a **community** supporting the interoperability framework, including mechanisms for
   – vetting proposed specifications
   – outreach to new institutional adopters
   – outreach to potential developers of compatible tools
   – identifying and specifying further API's as needs for them arise

8. Explore needs and opportunities to support **Djatoka** as a common, open source resource,

9. **Support (and demonstrate?)** **annotations and annotation reuse using linked data**
Results from Workshop 1

1. Draft specification for the IIIF Image Delivery API
2. Frame metadata API
3. Frame annotation API
4. Use cases for interoperable image delivery
5. Dumatoka
   - Review of dumatoka enhancements, knowledge and needs
   - Resolution for coordinated development and knowledge exchange
6. Inventory of institutional components and code
7. Commit to local test implementations and next steps

Results to be published on http://lib.stanford.edu/iiif
Supported Functions in Draft Image API

**Required Parameters:**

- region (rectangular)
  - `xywh = (percents, pixels)`
    - {URI Media Fragment spec}
      - relative to requested scale / master scale?

- size / scale / resolution:
  - `height=n, width=n, longEdge=n, bestFit=(w,h)`
  - proportion= n {0-100 as percentage of full},
  - divisor=n
    - convenience URLs: named-size=
      - (square, thumb, small, medium, large, xlarge, full)

- format
  - `jpg, [png, jp2, tif, gif, bmp, pdf]`

**General Syntax:**

```
http://server/ prefix/ imageid/ ...
```

- `[]` = optional
- `( ... )` = list of options
- `n` = number
- `{}` = descriptor of field
Supported Functions in Draft Image API

**Optional Parameters:**

```
[rotation:
  0/90/180/270
]
```

```
[ quality:
  bitsPerPixel=n {float -- extraction from master file}
  compression=n {0-99??? -- encoding to delivered image}
  colorPalette=(full, reduced, grey, bitonal)
  convenience URLs: quality=mobile
]
```

```
[ clipping/region (non-rectangular)
  uri of descriptor file/svg primitive
]
```

**General Syntax:** http://server/ prefix/ imageid/

[] = optional
( ... ) = list of options
n = number
{} = descriptor of field
Metadata API’s

Two Metadata Services
- Harvesting: access to all MD via OAI-PMH
- Interactive: RESTful, common parameters

Metadata Types
Descriptive
Technical
Structural
Administrative

Metadata on Four Objects
- Files: images, full text, transcriptions, translations, etc.
- Canvas: a "page", relates files together
- Items: bibliographic entity such as Map, manuscript, book, newspaper
- Sets: of canvases, of items, of sets
Data Model: Shared Canvas

- [http://shared-canvas.org](http://shared-canvas.org)
- Relate parts of image-based resources
  - Images, Text, Annotations, Transcriptions, Sequence / Structure
- Good URI’s for linking data
- Support for annotation tools & initiatives
  - Open Annotation Collaboration
Tiers of IIIF Software

**Tier**

- Domain & Modality-specific Delivery Apps
- Image Clients
- Authentication & Authorization
- IIIF Image API
- Image Server

**Functionality**

- Domain & Modality-specific Delivery Apps
  - Page Turners,
  - Scroll Viewers
  - Gallery Views, Cover Flow
  - Show All & Zoom
- Image Clients
  - (Deep) Zoom
  - Pan
  - Rotate
- Image Server
  - (Tiled) Image Delivery

**Implementations**

- Domain & Modality-specific Delivery Apps
  - IIIP Client
  - MediaInfo (Norway)
  - IA BookReader
  - Etc.
- Image Clients
  - IIIP Client
  - SeaDragon / SeaJax
  - MediaInfo (Norway)
  - ZPR (Stanford)
- Image Server
  - Djatoka
Timeframe – 2011 - 2012

• **Workshop 1:** September 12 – 15, 2011
  – Draft image delivery API
  – Frame metadata, annotation and search API’s
  – Resolution to stand up Djatoka dev & support group
  – Collect use cases

• **Fall & Winter:**
  – Finalize draft image API, RFC to community
  – Implement trial systems that exercise the APIs
  – Expand and refine use cases
  – Coordinate development of image viewing software
  – Local development, open source development, and/or commercial development from third party partners
  – Launch djatoka djev jgroup [sic]

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Timeframe – 2011 - 2012

• **Workshop 2:** April, 2012, in the Hague
  – Examine authentication use cases, solutions
  – Draft metadata, annotation and search API’s
  – Detailed analysis of best of breed image software

• **Spring & Summer, 2012:**
  – RFC on metadata, annotation, and search API’s
  – Trial implementation of annotation, metadata and search API’s
  – Coordinate development of image viewing software
  – Final dissemination via web, email, and conferences
So what’s the IIIF?

• Spec some API’s
• Expose some resources
• Build some software
• Establish a community