International Image Interoperability Framework (IIIF)

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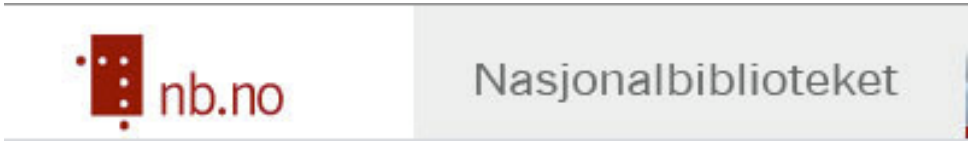
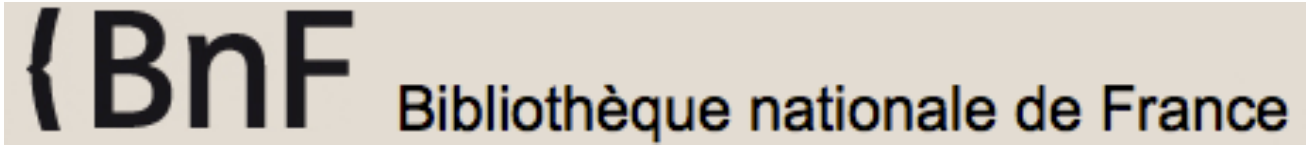
Stanford University Libraries

Coalition for Networked Information
December 13, 2011

IIIF Participants*

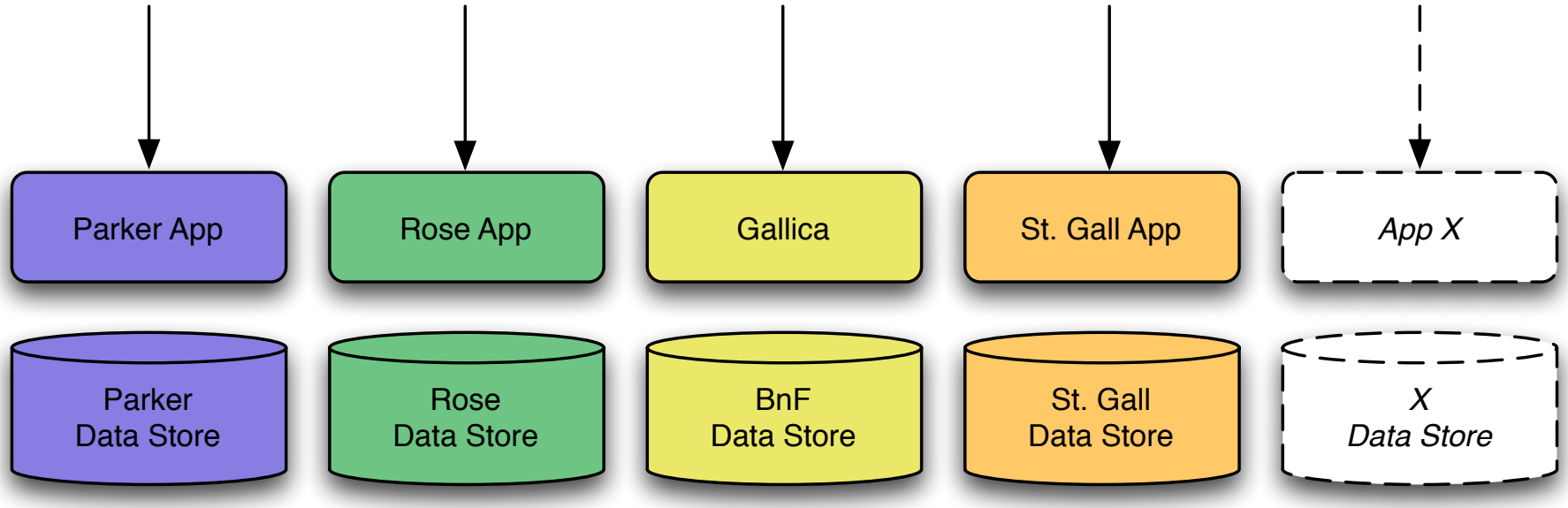
- Bibliothèque nationale de France
- The British Library
- Cornell University
- Los Alamos National Library
- Nasjonalbiblioteket (National Library of Norway)
- Oxford University, Bodleian Libraries
- Stanford University





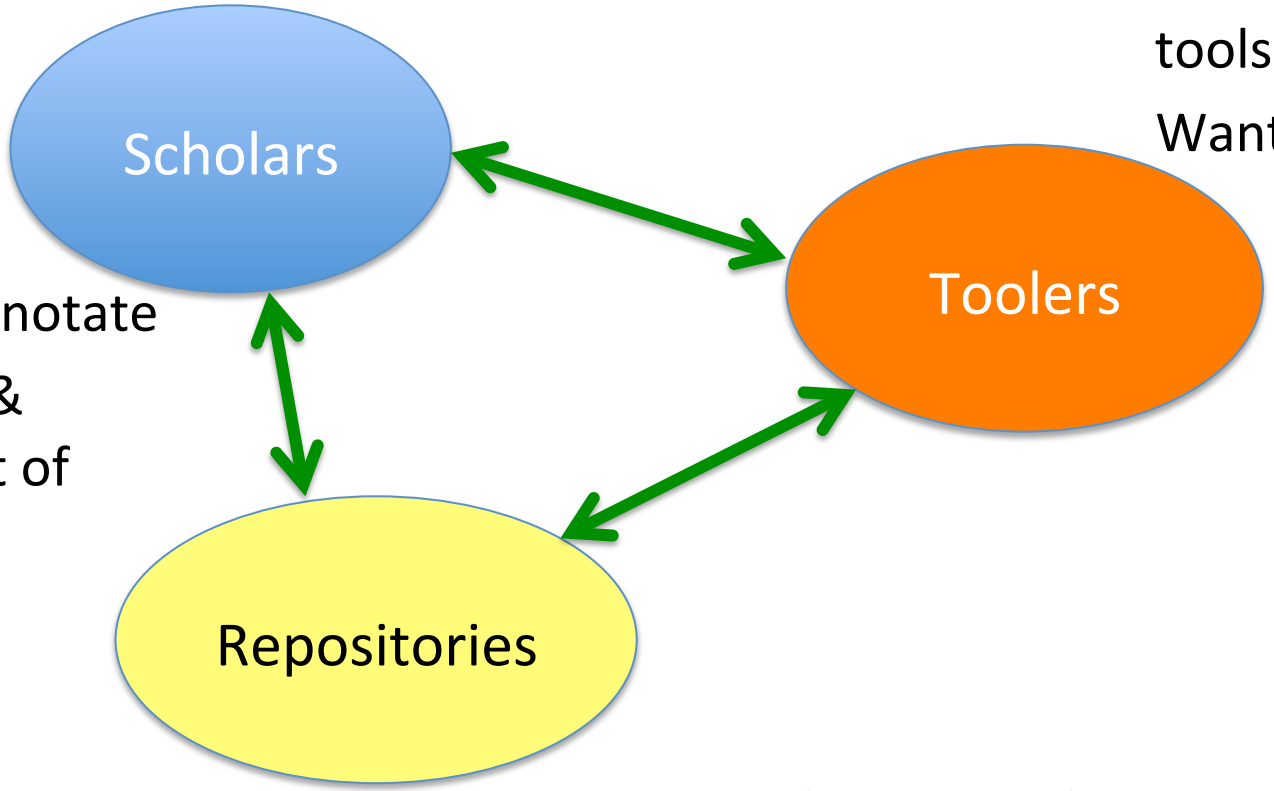
* With support from the Andrew J. Mellon Foundation

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



Build useful tools and apps

Want: Users & resources

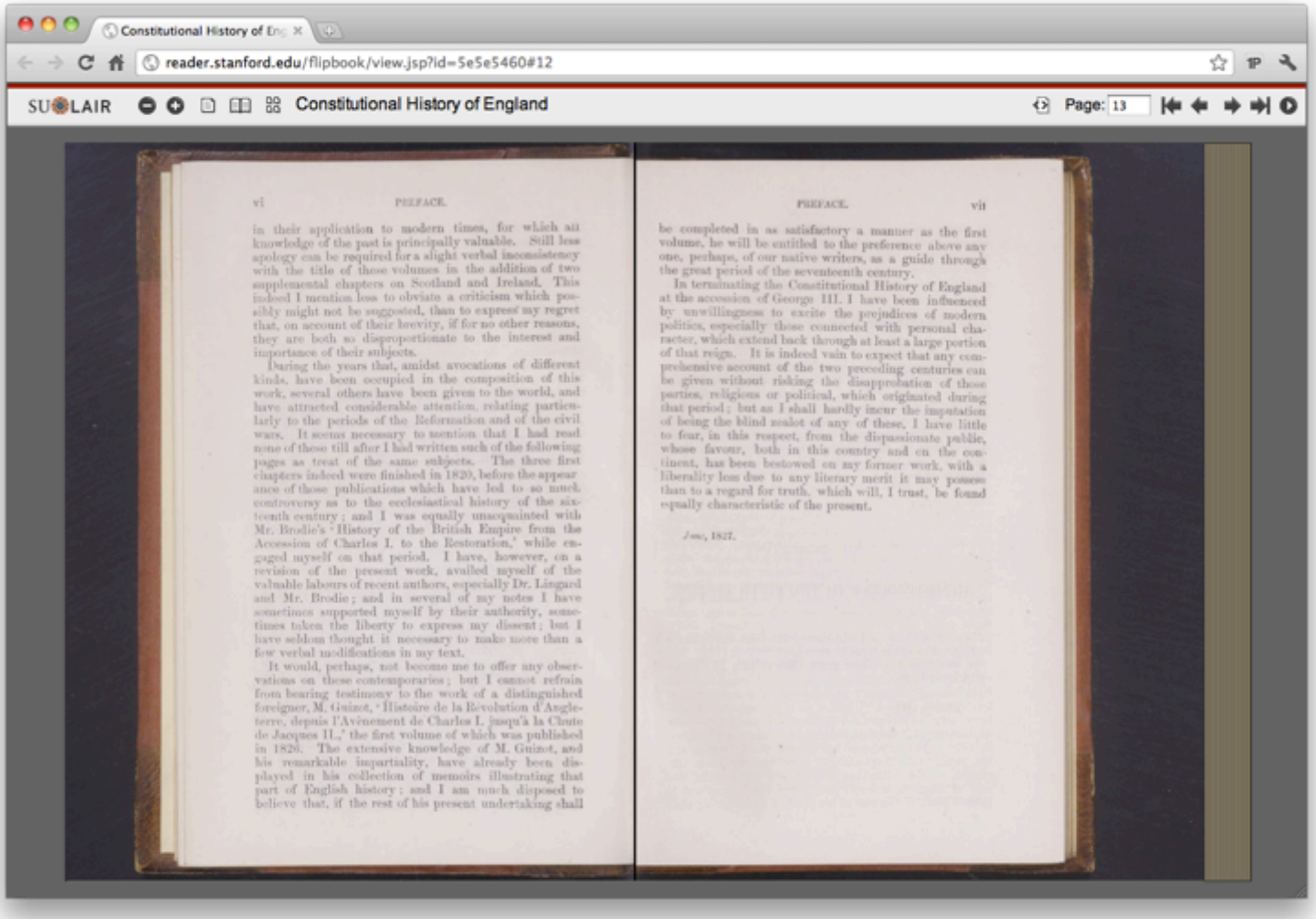
Find, Use, Analyze, Annotate

Want: Mix & Match, Best of Breed

Host, Preserve (and Enrich) Resources

Want: Use of Resources, Enriching services, Enriched content

Stanford University



vi PREFACE.

in their application to modern times, for which all knowledge of the past is principally valuable. Still less apology can be required for a slight verbal inconsistency with the title of these volumes in the addition of two supplemental chapters on Scotland and Ireland. This indeed I mention less to obviate a criticism which possibly might not be suggested, than to express my regret that, on account of their brevity, if for no other reasons, they are both so disproportionate to the interest and importance of their subjects.

During the years that, amidst avocations 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 Reformation and of the civil wars. It seems necessary to mention that I had read none of these till after I had written such 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 unacquainted with Mr. Brodie's 'History of the British Empire from the Accession of Charles I. to the Restoration,' while engaged myself on that period. I have, however, on a revision of the present work, availed myself of the valuable labours of recent authors, especially Dr. Lingard and Mr. Brodie; and in several of my notes I have sometimes supported 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 these contemporaries; but I cannot refrain from bearing testimony to the work of a distinguished foreigner, M. Guizot, 'Histoire de la Révolution d'Angleterre, depuis l'Avènement de Charles I. jusqu'à la Chute de Jacques II.,' the first 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

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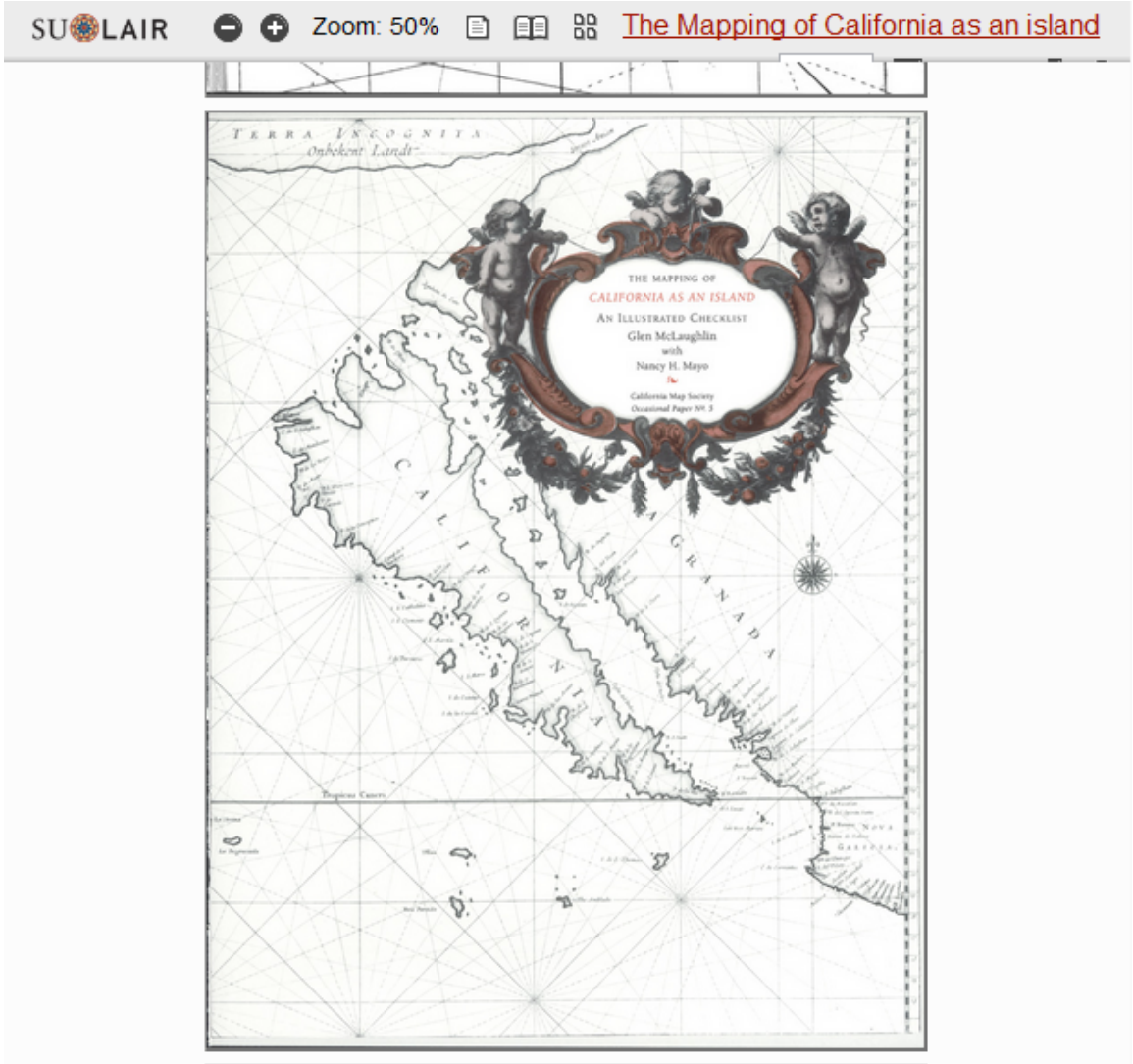
be completed in as satisfactory a manner as the first volume, he will be entitled to the preference above any one, perhaps, of our native writers, as a guide through the great period of the seventeenth century.

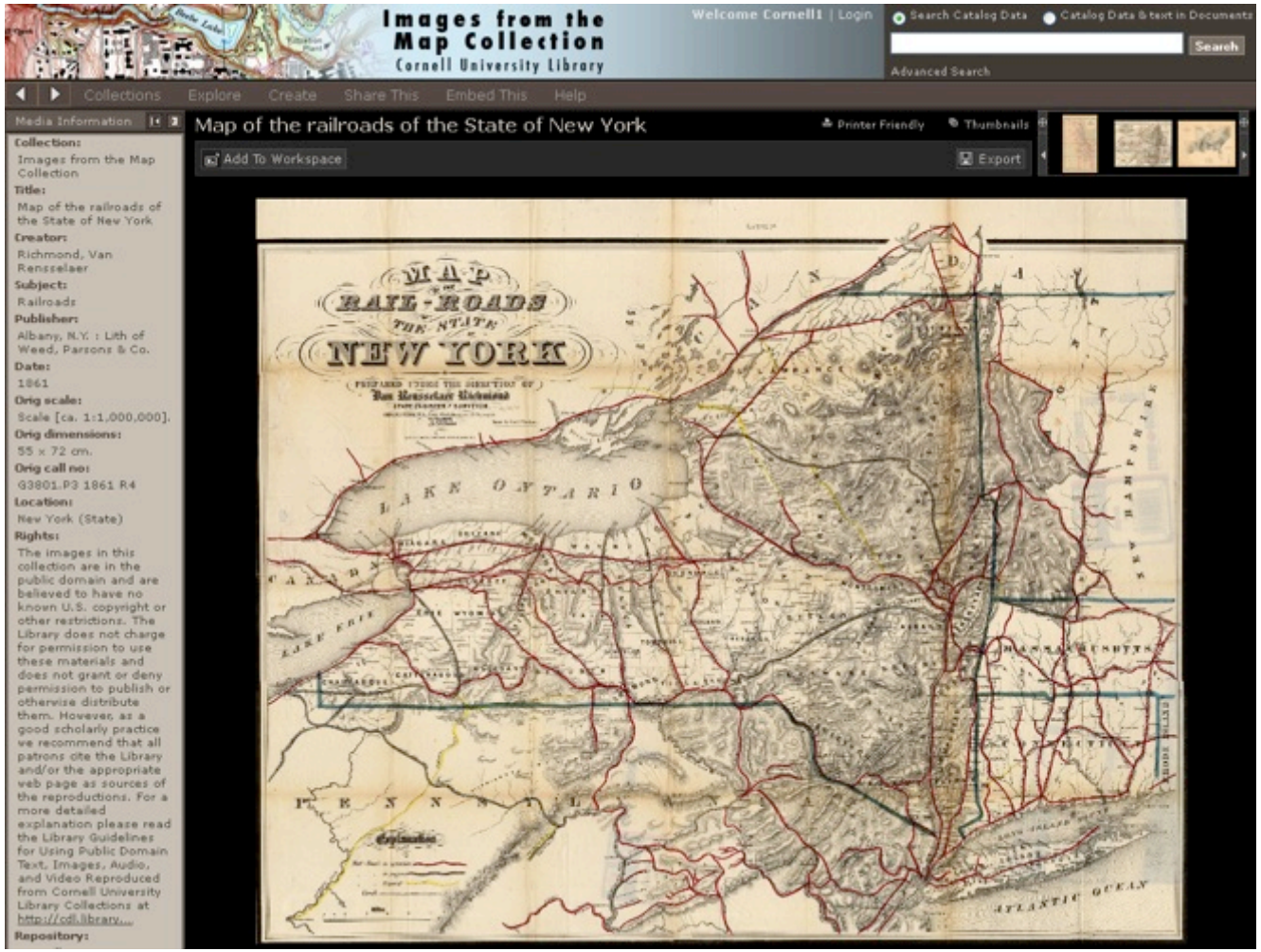
In terminating the Constitutional History of England at the accession of George III. I have been influenced by unwillingness to excite the prejudices of modern politics, especially those connected with personal character, which extend back through at least a large portion of that reign. It is indeed vain to expect that any comprehensive account of the two preceding centuries can be given without risking the disapprobation of those parties, religious or political, which originated during that period; but as I shall hardly incur the imputation of being the blind zealot of any of these, I have little to fear, in this respect, from the dispassionate public, whose favour, both in this country and on the continent, has been bestowed on my former work, with a liberality less due to any literary merit it may possess than to a regard for truth, which will, I trust, be found equally characteristic of the present.

June, 1827.

Stanford University

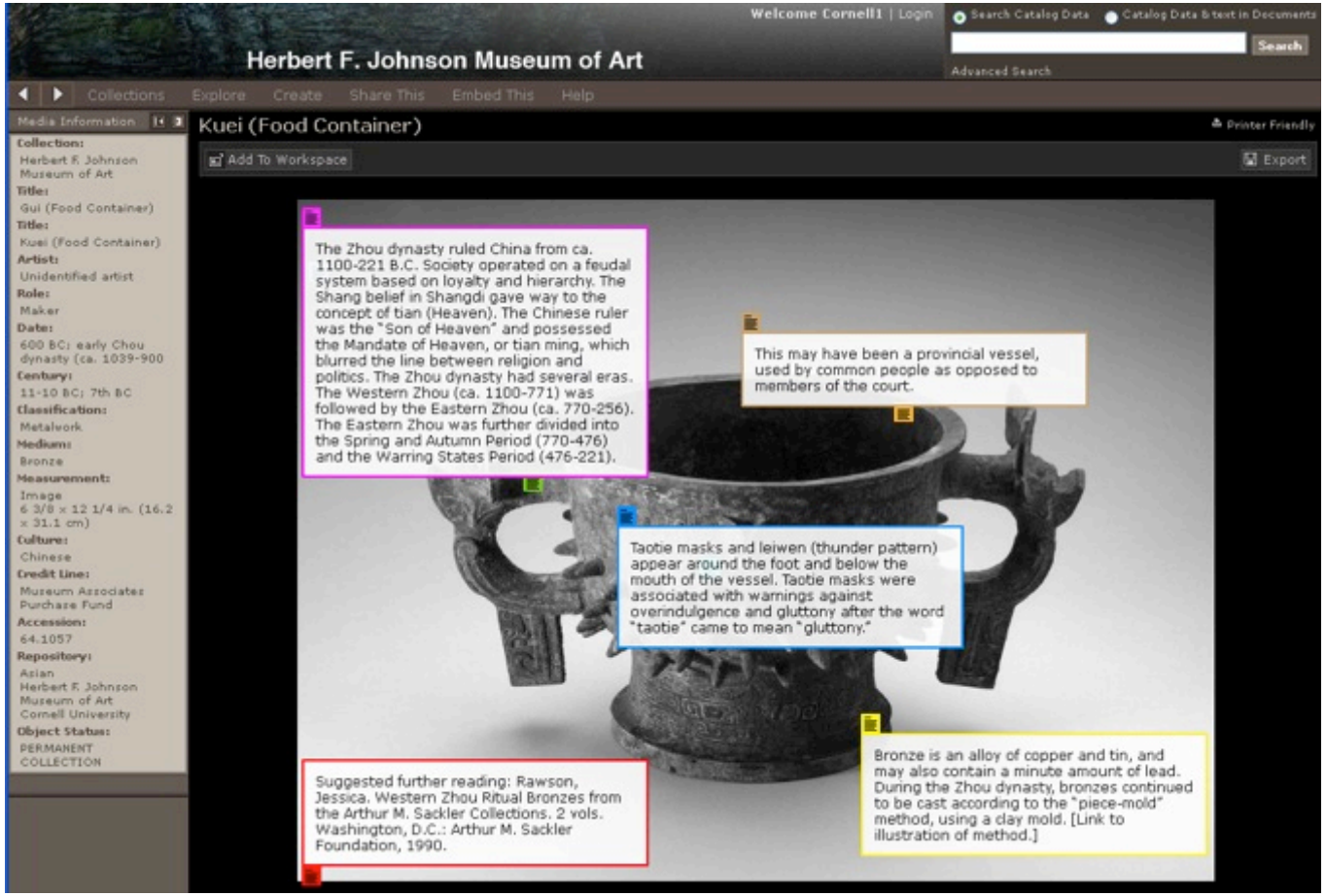


Cornell University

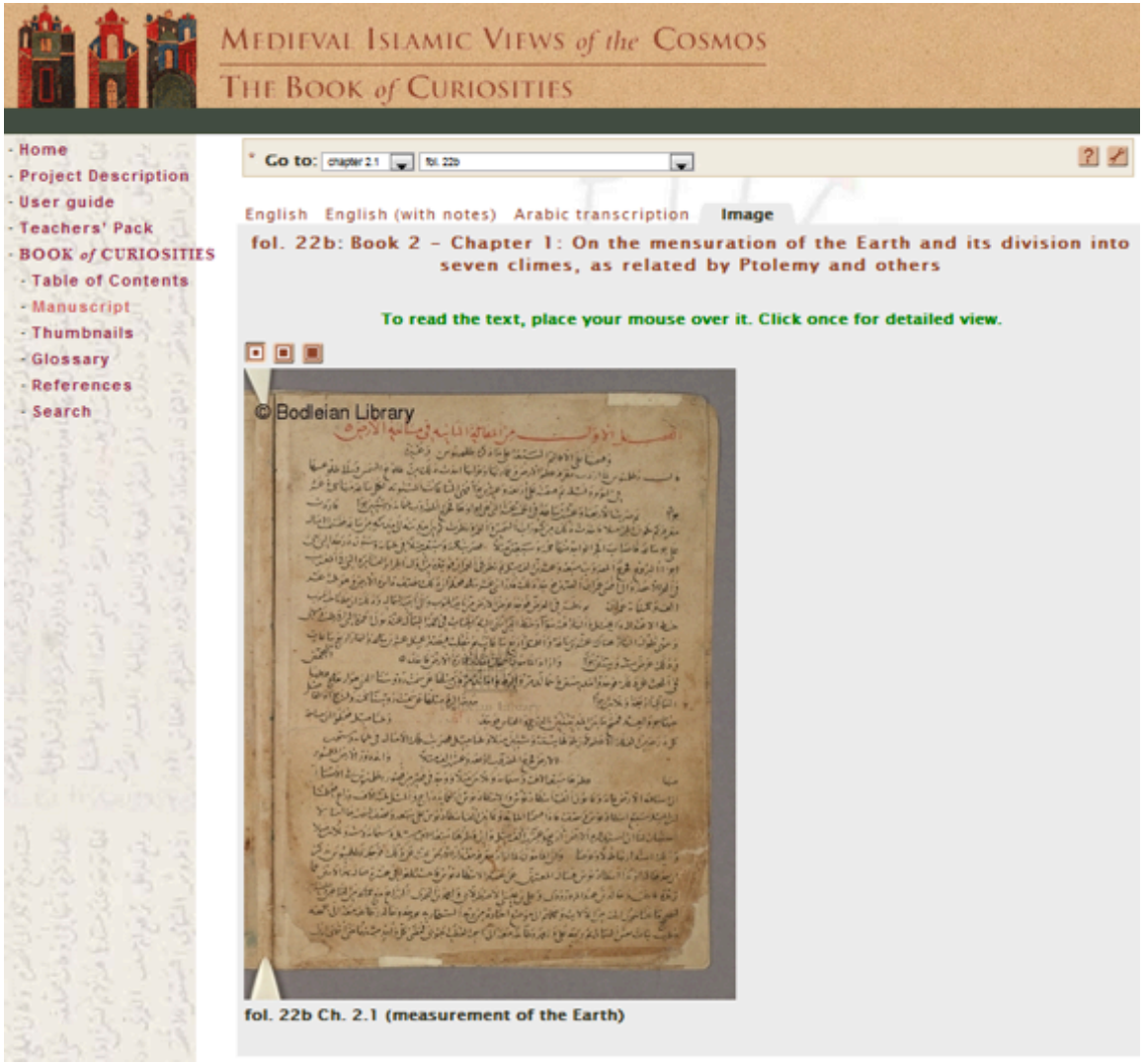


Cornell University

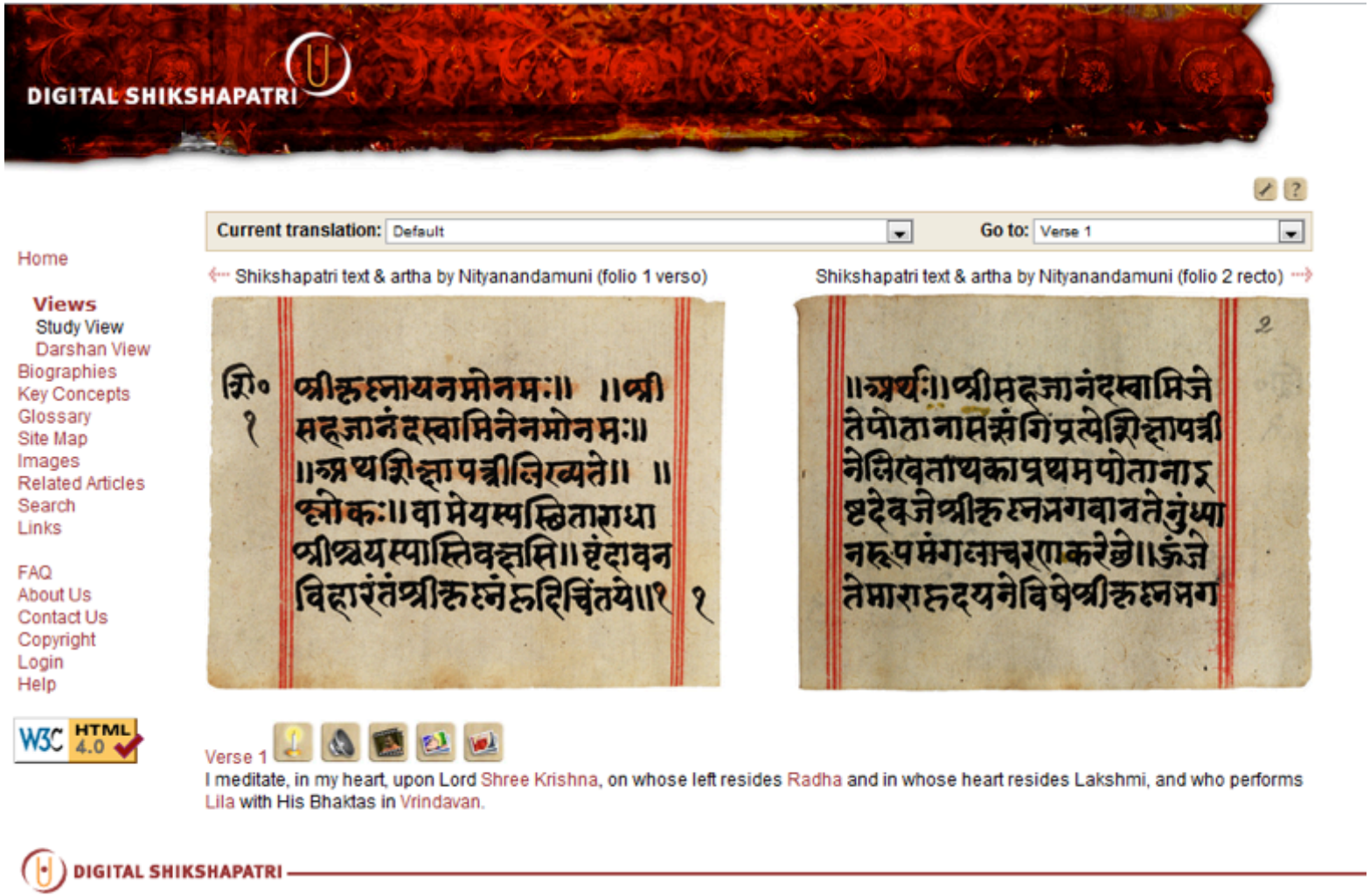
Cornell University



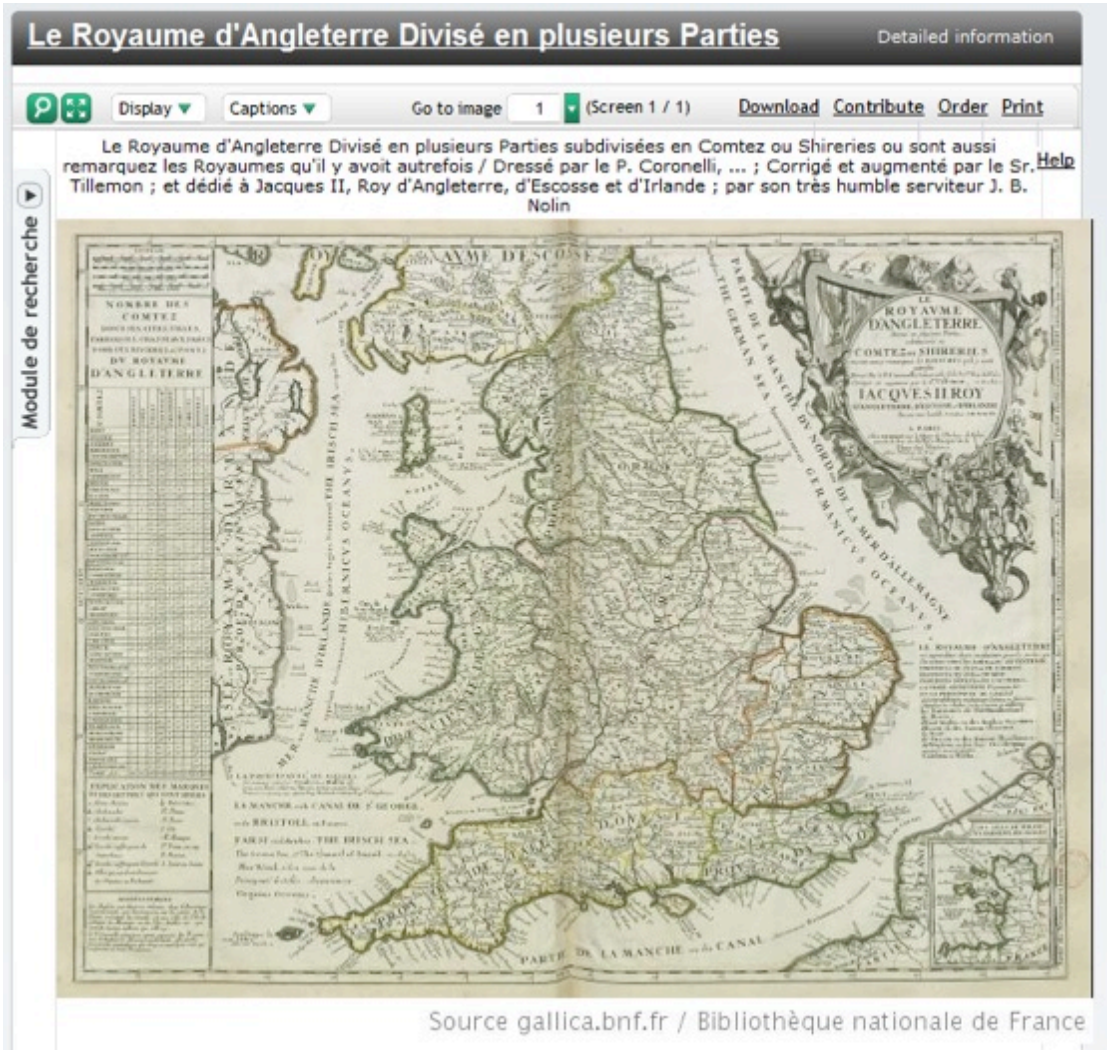
Bodleian Libraries



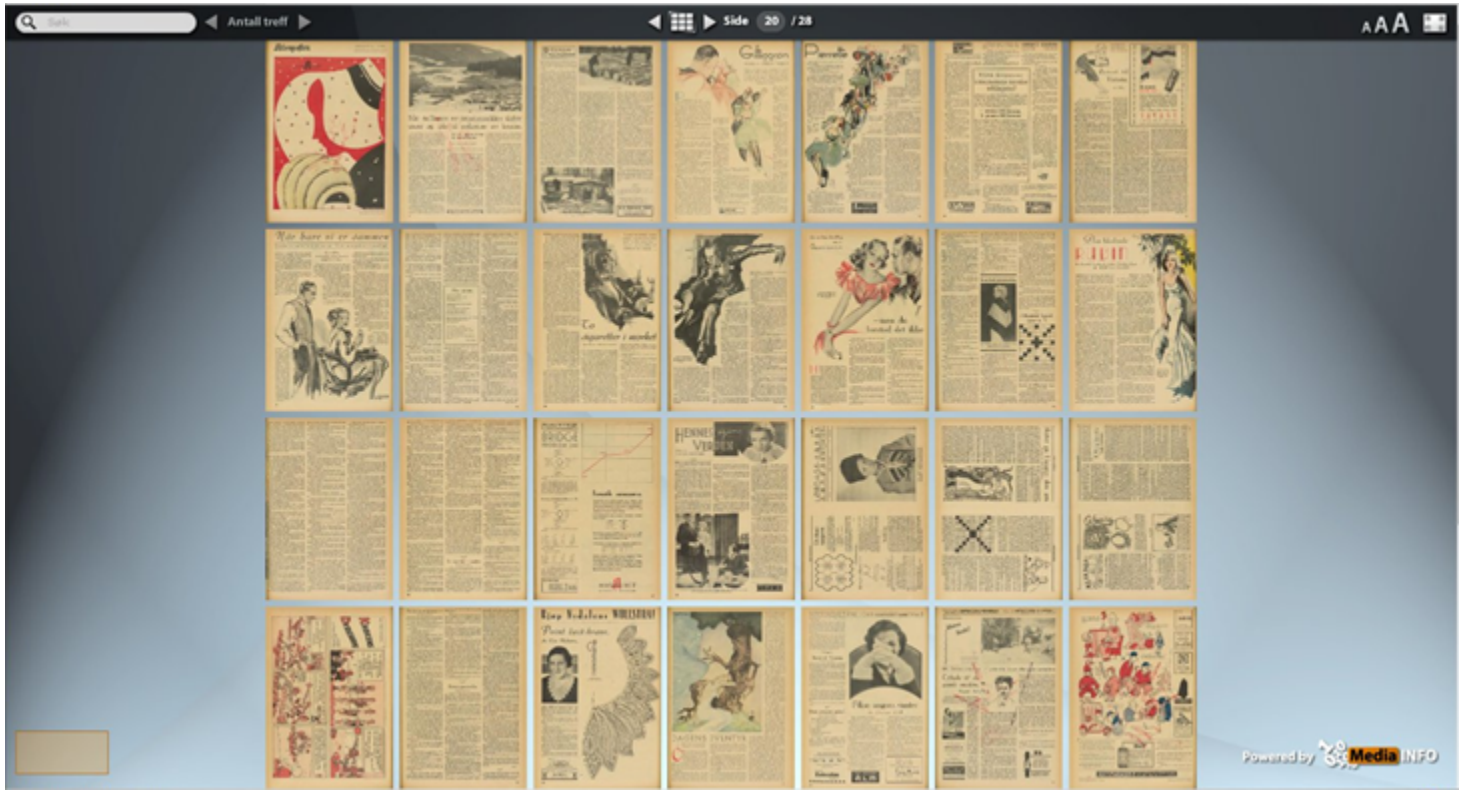
Bodleian Libraries



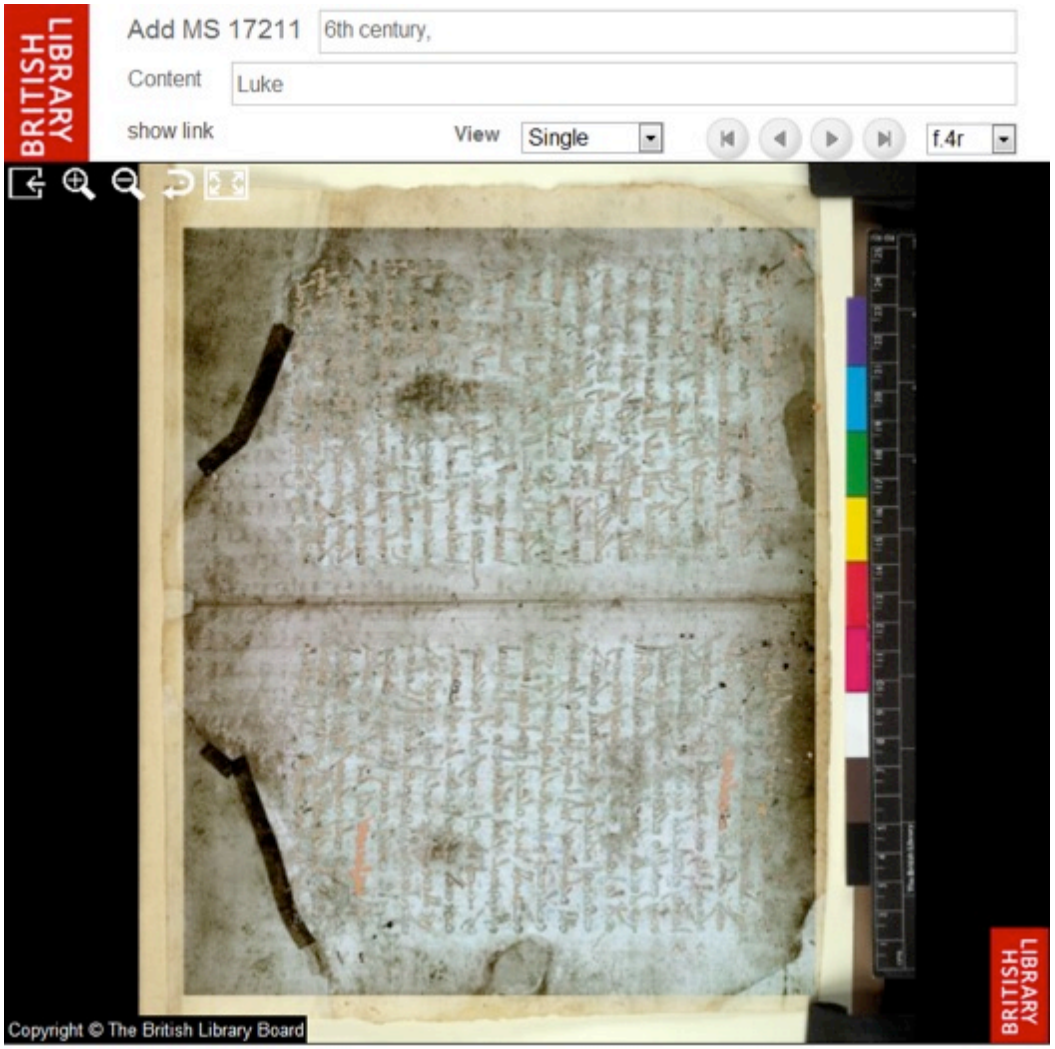
Bibliothèque nationale de France



National Library of Norway

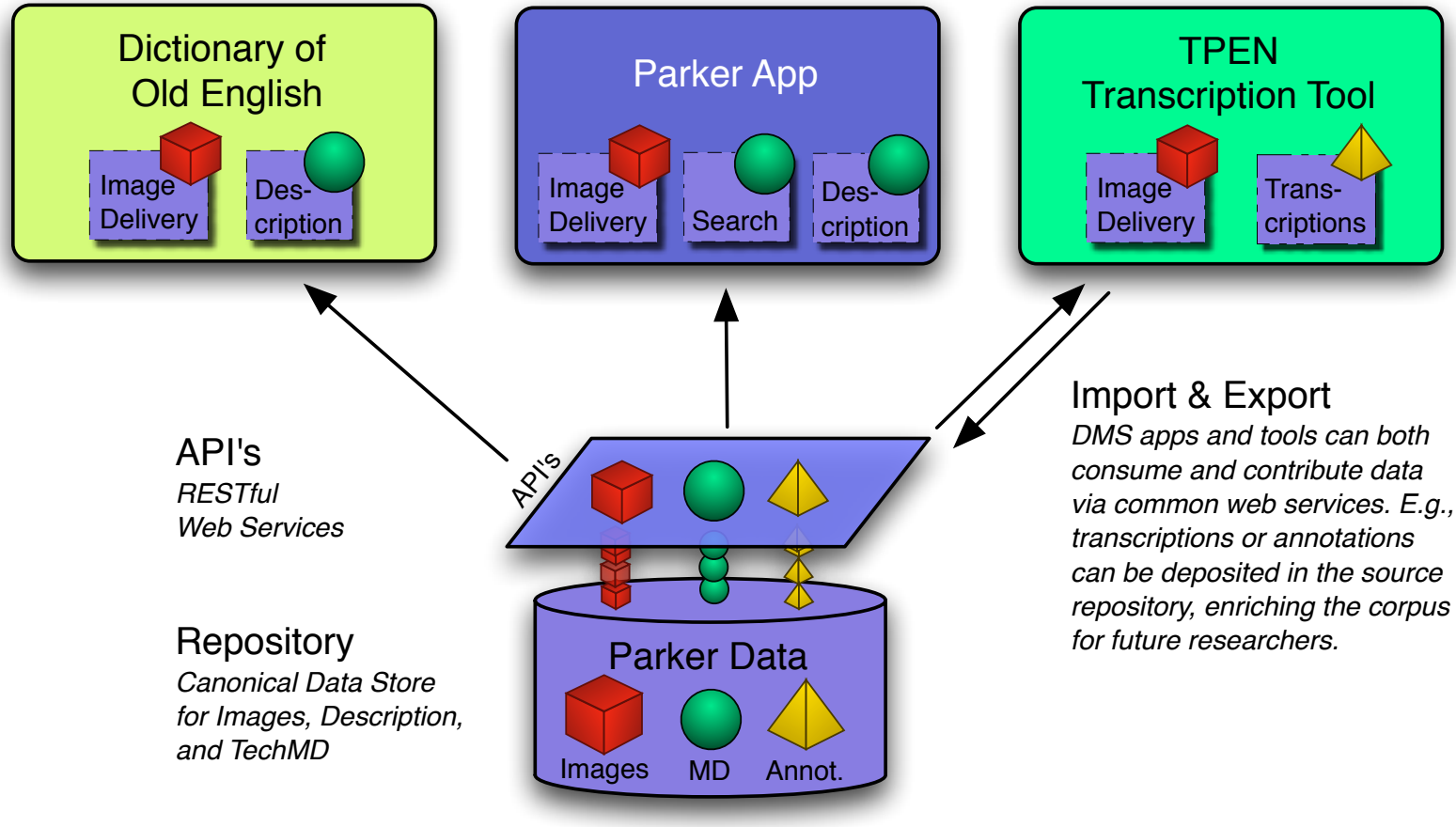


British Library



API's Enable Reuse

Applications
User interfaces present DMS data with specialized tools and contexts

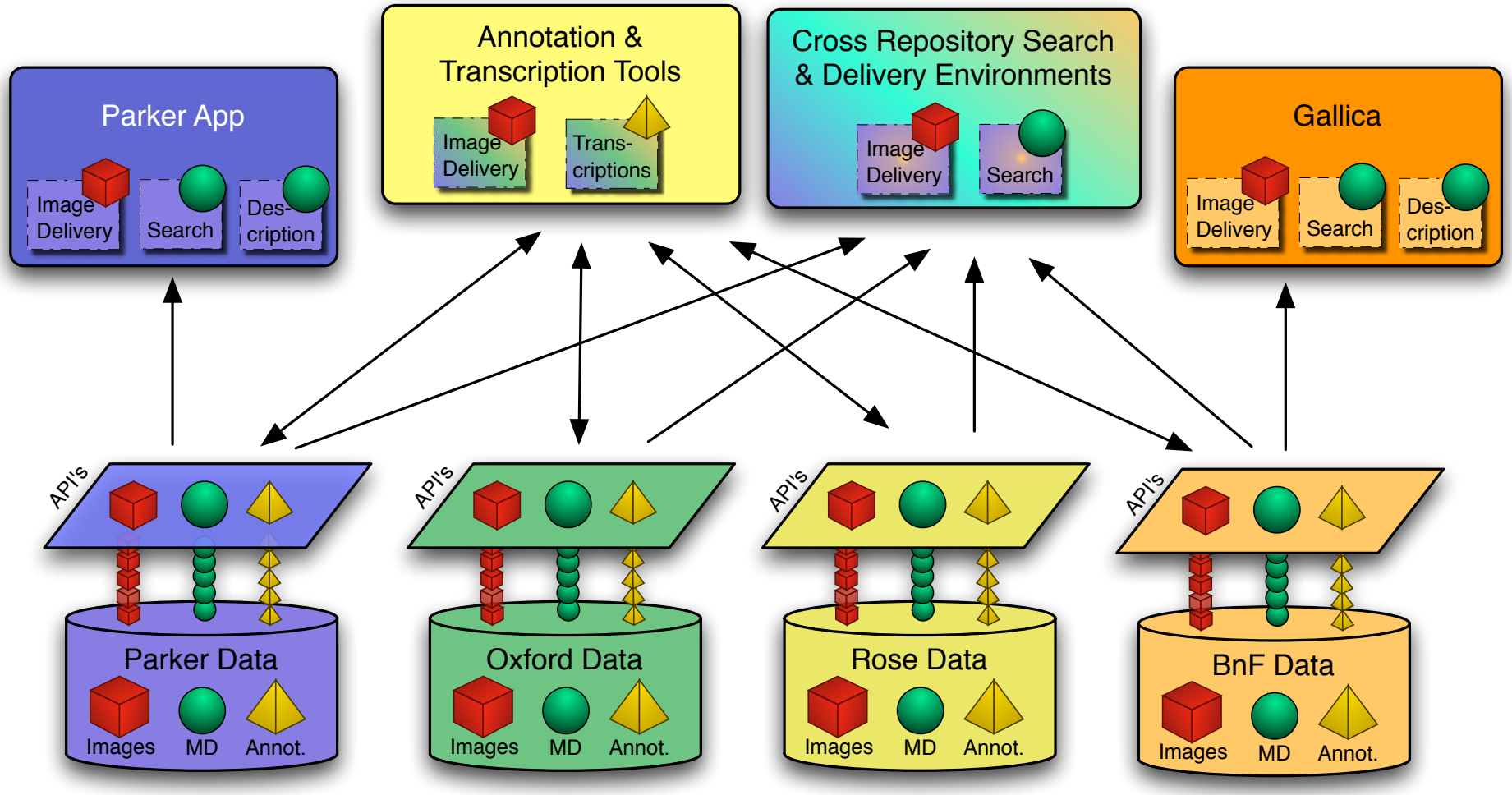


API's
RESTful Web Services

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.

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

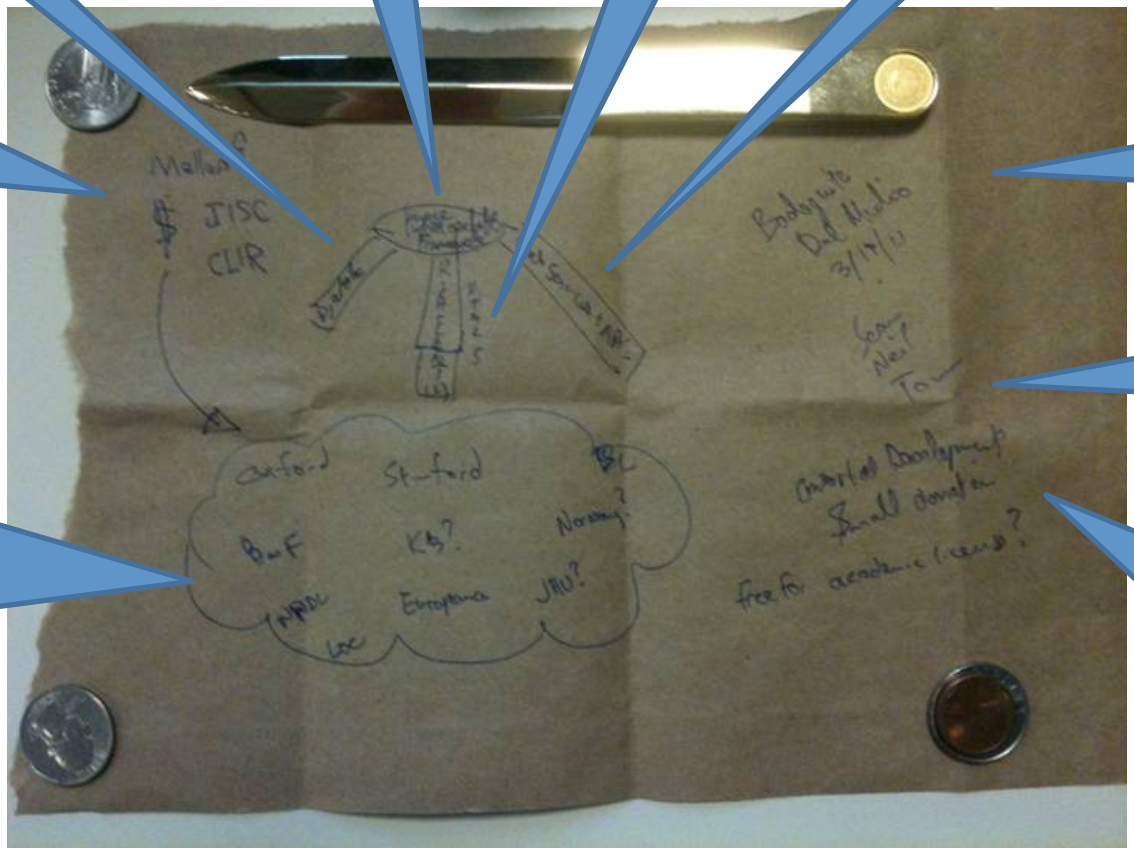
djatoka

Image interoperable framework

Rich Clients Html 5

Web services + API

Mellon, JISC, CLIR



Bodeguita del Medio 3/19/11

Sean Neil Tom

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

Consortial development

Small donation

Free-for-academic license?

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)

IIIF 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,
   - bug fixes, enhancements, optimization & performance tuning, reference integrations & implementations, and documentation.

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. Djatoka
   - Review of djatoka 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:

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

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

[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
]

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
- 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	*Functionality*	*Implementations*
Domain & Modality-specific Delivery Apps	• Page Turners, • Scroll Viewers • Gallery Views, Cover Flow • Show All & Zoom	• IIP Client • MediaInfo (Norway) • IA BookReader • Etc.
Image Clients	• (Deep) Zoom • Pan • Rotate	• IIP Client • SeaDragon / SeaJax • MediaInfo (Norway) • ZPR (Stanford)
Authentication & Authorization		
IIIF Image API		
Image Server	• (Tiled) Image Delivery	• 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]
- *continued next page…*

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