IIIF & ResourceSync:
Supporting discovery

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International Image Interoperability Framework

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

http://iiif.io/

IIIF Community

http://iiif.io/community

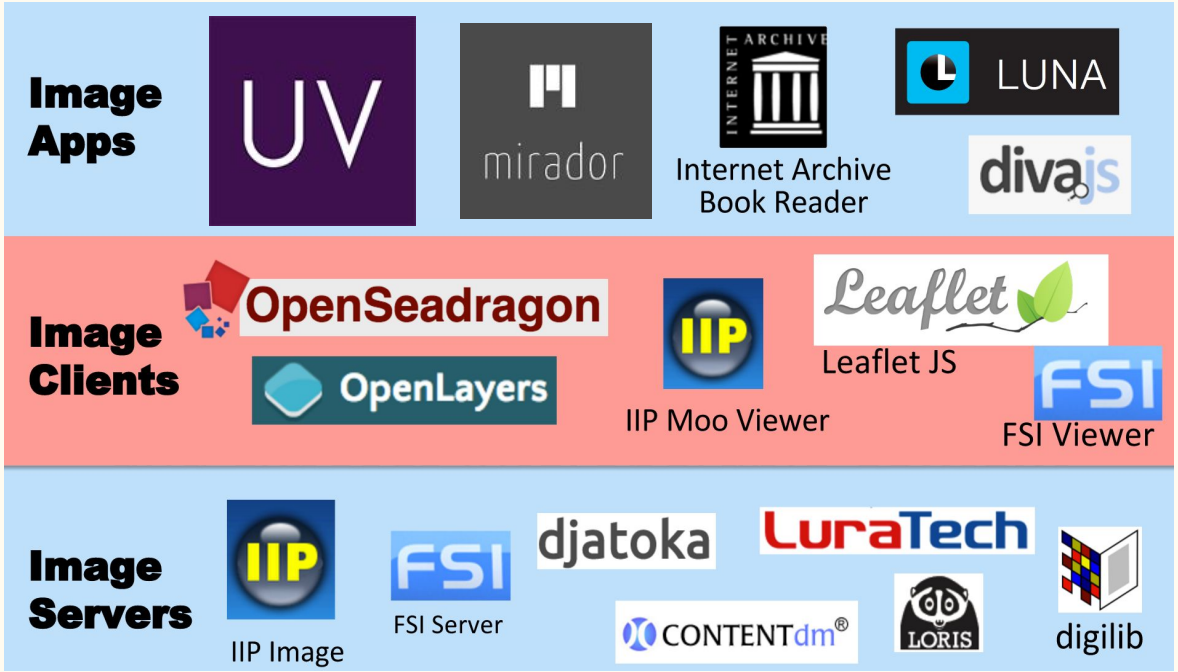
- IIIF Consortium
  - Currently 38 state/national libraries, universities, museums, tech firms
  - Provides sustainability and steering for the initiative
- Wider community
  - 80+ CH institutions, companies, and projects using IIIF standards
  - iiif-discuss list = 670+ members
  - IIIF Slack = 300+ members
- Community & Technical Specification Groups

Shared APIs

http://iiif.io/api/

- Image API
  - Transfer image pixels, regions, etc.
  - Image manipulation
- Presentation API
  - Presentation of an object (pixels + navigation and metadata)
  - Easily share and re-use, mix and match content
  - Annotate content
- Search API
  - Search annotations
- Authentication API
  - Provide interoperability for access-restricted content

Software Implementations

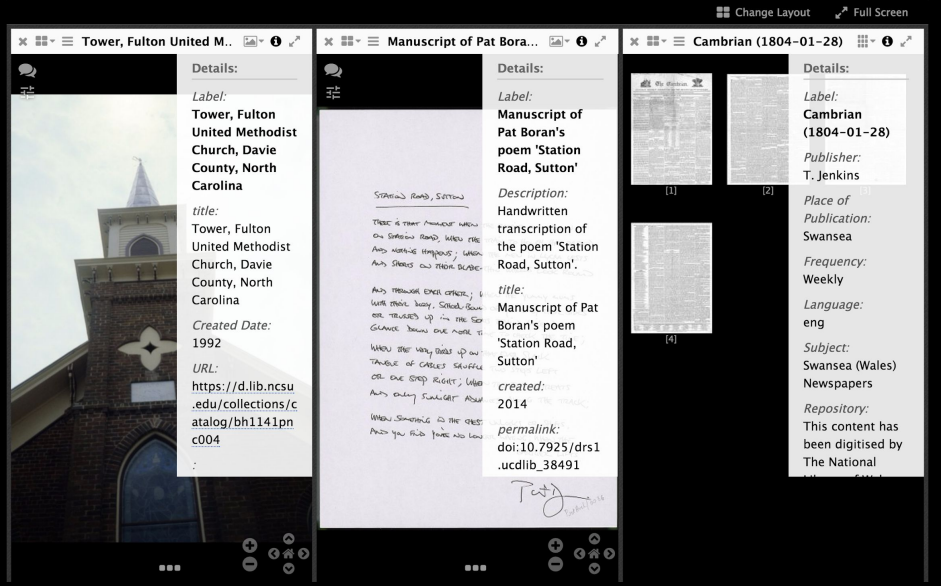


https://github.com/IIIF/awesome-iiif

IIIF Content

All kinds of image resources: artworks, photographs, manuscripts, newspapers

Investigating AV and 3D



“Discovery” in IIIF

Finding interoperable resources

Two main concerns:

- How can users *find* IIIF resources?
- How can users then *get those resources into an environment where they can use them*?

Scoping the problem

What <u>resources</u> can be discovered?

Types of resources in IIIF:

- Content (Image API)
- Description (Presentation API)

The Image API **does not provide description** of image content, just technical and rights metadata.

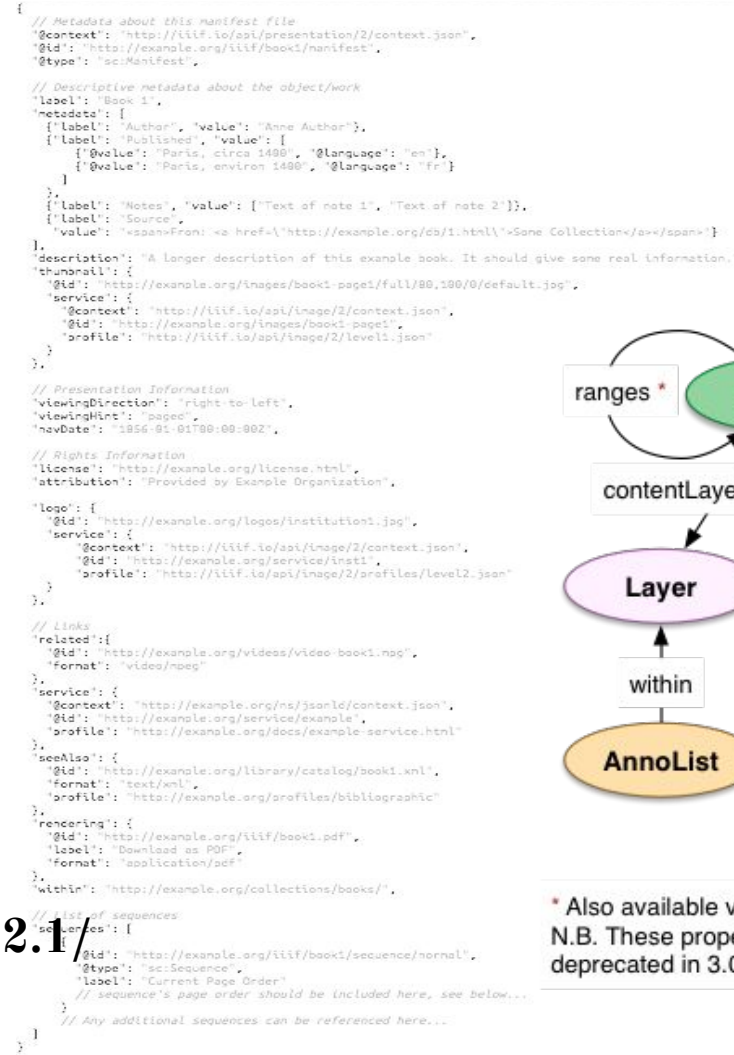
Discovery requires **Description** resources to provide information about **Content** resources.

Presentation API

A *Manifest* provides just enough metadata (descriptive, structural, etc.) to drive a viewer.

A *Collection* groups *Manifests* or other *Collections*.

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



Community work

IIIF Discovery Technical Specification Group

iiif.io/community/groups/discovery/

IIIF Discovery TSG scope:

- **Crawling and harvesting**
- Content indexing
- Change notification
- Import to viewers

Presentation API constraints

Informing decisions

The Presentation API does not include *semantic* descriptions, but can reference them using **`seeAlso`.**

IIIF (including the Presentation API) has a *resource-centric* view of the web, not a *service-centric* view (cf Sitemaps/ResourceSync vs OAI-PMH).

Examples

Basic Sitemaps at NC State

- Example demonstrates use of Simple sitemaps without any extensions, including ResourceSync
- Intended to expand upon existing practice of publishing sitemaps from digital collections

Sample of NCSU Sitemaps

Sitemap entry for manifests

```
<url>
    <loc>https://d.lib.ncsu.edu/collections/catalog/bh1141pnc004/manifest</loc>
    <lastmod>2016-12-13T15:38:19Z</lastmod>
</url>
```

Sitemap entry for landing page

```
<url>
    <loc>https://d.lib.ncsu.edu/collections/catalog/bh1141pnc004</loc>
    <lastmod>2017-03-27T19:33:52Z</lastmod>
</url>
```

Courtesy Jason Ronallo, North Carolina State University

Prototyping at Europeana

Exploring Sitemaps and extensions for discovery of IIIF resources for harvesting

- Partnership with University College Dublin and National Library of Wales
- ResourceSync satisfied key needs identified within requirements
- ResourceSync accommodated additional metadata prototyped in an IIIF Sitemap Extension
- Follows several synchronization paradigms

Example of NLW Sitemap Entry

Uses Sitemaps and IIIF Extension

```
<url>
     <loc>http://newspapers.library.wales/view/3320640</loc>
     <iiif:Manifest xmlns:iiif="http://iiif.io/api/presentation/2/">
         http://dams.llgc.org.uk/iiif/newspaper/issue/3320640/manifest.json
     </iiif:Manifest>
     <dct:isPartOf>http://dams.llgc.org.uk/iiif/newspapers/3320639.json</dct:isPartOf>
     <lastmod>2014-11-08</lastmod>
     <changefreq>monthly</changefreq>
     <priority>0.8</priority>
</url>
```

Courtesy Nuno Freire, Europeana

Example of UCD Resource List Entry

Uses Sitemaps and ResourceSync and DCMES as Extensions

```
<url>
     <loc>https://digital.ucd.ie/view/ucdlib:38491</loc>
     <rs:ln rel="alternate" href="https://digital.ucd.ie/view/ucdlib:38491"
       type="application/json" dcterms:conformsTo="http://iiif.io/api/presentation/2.1/"/>
     <rs:ln rel="collection" href="https://digital.ucd.ie/view/ucdlib:38488"
       type="application/json" dcterms:conformsTo="http://iiif.io/api/presentation/2.1/"/>
     <lastmod>2014-08-24T04:09:09.716Z</lastmod>
     <changefreq>monthly</changefreq>
     <priority>0.8</priority>
</url>
```

Courtesy Nuno Freire, Europeana

Sample of UCD Resource List

Uses Sitemaps, ResourceSync, and Sitemap Image Extension

```
<url>
    <loc>https://digital.ucd.ie/view/ucdlib:45877</loc>
    <rs:ln rel="describedby" href="https://data.ucd.ie/api/edm/v1/ucdlib:45877" dcterms:conformsTo="http://www.europeana.eu/schemas/edm/"/>
    <rs:ln rel="describedBy" href="https://data.ucd.ie/api/img/manifests/ucdlib:45877" dcterms:conformsTo="http://iiif.io/api/presentation/2.1/"/>
    <rs:ln rel="collection" href="https://digital.ucd.ie/view/ucdlib:45872"/>
    <image:image>
        <image:loc>https://iiif.ucd.ie/loris/ucdlib:45904/full/pct:20/0/default.jpg</image:loc>
        <rs:ln rel="describedby" href="https://iiif.ucd.ie/loris/ucdlib:45904" type="application/json"/>
        <rs:ln rel="alternate" href="https://digital.ucd.ie/view-media/ucdlib:45877/none"/>
        <image:title>Savoy Cinema site works</image:title>
        <image:caption>view from rear (north east) corner looking south west</image:caption>
    </image:image>
    <lastmod>2016-05-30T09:48:29.618Z</lastmod>
    <changefreq>monthly</changefreq>
    <priority>1.0</priority>
</url>
```

Courtesy John Howard, University College Dublin

Conclusions

Strengths

- ResourceSync addresses core requirements for exposing IIIF resources for harvesting
- Can build on publication of existing sitemaps easily
- Leverages *Many-to-One*, *Selective Synchronization*, and *Metadata Harvesting* paradigms
- Can adopt additional extensions to implement needed features
- Plenty of opportunity to contribute; *need more prototypes*

Challenges

- IIIF community's needs for discovery are not necessarily what other sitemap consumers want (e.g. Google)
- Identifying the primary resource influences structure
- Unclear whether search engines support custom extensions, and what ranking impact would be

Thank You!

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