Cultural and Technical Transformations: Benefits from Yale’s Linked Data Cross-Collection Discovery Platform

https://lux.collections.yale.edu/

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CNI Fall Forum, 12th December 2022
Yale’s Cultural Heritage Units

Yale University Art Gallery

Yale Center for British Art

Yale Peabody Museum of Natural History

Yale University Library

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Teaching with Collections

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Yale
Lost Opportunities

Artist: Joscelyn Gardner
Lost Opportunities

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Artist: Joscelyn Gardner
Tried this before...

Yale
Model for Campus-Wide Content Strategy

Office of Digital Assets & Infrastructure
CNI-12.2009

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Discover Yale Digital Content

Search 1,500,000 records; 250,000 digital assets from across Yale’s collections

Yale Center for British Art
Yale Peabody Museum
Yale University Art Gallery
Yale University Library
What’s Changed?

• 2016: est. deputy/vice provost for collections position
• 2017: CIO, John Barden, created cultural heritage pillar in IT
  • Pathway to central funding
• 2018-20: New leadership in collections
• Commitment to IIIF and desire for cross-collection discovery
  • $$, new FTEs, and in-kind contributions by over 100 staff
• Awarded Andrew W. Mellon Foundation grant 2020-2022
  • Rob Sanderson
Principles and Culture

• Units retain ownership of their data
  • No new systems of record, including LUX

• Good enough is better than perfect
  • Collaboratively and incrementally work towards our goals

• Expertise exists throughout the institution
  • Development process promotes engagement and growth

• Collaboration takes us farther
  • And is rewarded by the university
Process

• Build consensus through engagement and experimentation
• Maintain an exciting vision and clear direction through project management and leadership at all levels
• Establish shared priorities and values, rather than trying to address all the concerns of all units
• Agreed-upon governance and cost sharing models
• Establish and formalized norms for collaboration
Results: Cultural Transformation

- Collaboration is contagious
  - Shared collection storage, positions, conservation labs, digital preservation, provenance expertise, diversity, equity & inclusion plans...
  - Peer connections forming
- Trust has led to generosity

https://artgallery.yale.edu/collections/objects/164129
LUX Technical Principles: LOUD

- LUX is LOUD: Linked Open Usable Data
- Standards are important
  - Too many to choose from with multiple domains!
  - Accurate semantics for cross-domain interoperability
  - JSON-LD syntax to ensure usability

- Using Linked Art: https://linked.art/
- Using IIIF: https://iiif.io/
LOUD: Easy to Use ... by Developers!
Linked Art Model From 50,000 Feet

- Phys Obj
- Info Obj
- Place
- Activity
- Timespan
- Actor
- Type

what
when
how
where
who
LUX Technical Principles: FAIR

- LUX is FAIR: Findable, Accessible, Interoperable, Reusable
- Every attempt made for:
  - Persistence of identifiers and sustainable system
  - Open licenses for images and content
  - Use of standards throughout
  - Availability of the data

https://www.go-fair.org/fair-principles/
LUX Technical Principles: SHARED

• LUX is SHARED:
  • Sustainable – Shared costs, integrated services
  • Harvestable – IIIF Change Discovery
  • Available – Open licenses, links to data, standards
  • Reconciled – Entities are aligned with 12+ systems
  • Enriched – … and enriched from their knowledge
  • Diverse – Every effort at inclusion and diversity
Technical Design and Process

- Practical approach to development of an ambitious project
  - Incremental prototypes – always ensure there’s a fallback
  - Separation of concerns via standards

- Collaboration and research for a solution architecture
  - Extensive analysis for back-end, multi-modal database
    - Must allow full-text, graph, and hybrid queries
  - Front-end interacts primarily with JSON-LD documents
    - Not via custom APIs or SPARQL
Demo!
Observation: LUX is a Knowledge Graph

• More like the web than a database
  • Everything is connected
  • Expected search features are available, augmented by useful graph features
  • Shifts the paradigm from known-item search
    • ... to browse, explore and discover
    • ... and towards cultural research

Observation: Reconcilation is Critical

- Connections across collections require reconciliation
  - Should have one record per entity, not one per dataset
  - Allows enrichment from external sources
  - Richer records are more relevant, and rank higher in search

“Trumbull, John, 1756-1843”
Observation: Cross-Domain is Hard

• Different domains have different descriptive practices
  • Object vs Work vs Collection
  • Requires a core ontology to be profiled and clarified
  • Domains expect domain-specificity, even aggregated

• Labels are traditionally used as identifiers
  • A mental shift for practitioners needed for *things not strings*
  • Cross-domain reconciliation can introduce unexpected results, e.g. “landscapes” = “ecological zones”?
Observations: Resources are Needed

- Trail-blazing is costly
  - Staff time
  - Technology licenses and infrastructure
  - Professional services
  - Time
    - For discussion, consensus and understanding
    - For implementation and testing
  - Hope to reduce cost for others to follow
  - There are many flowers along the way!

https://artgallery.yale.edu/collections/objects/120855
Conclusions: Known Unknowns

• Extent of Adoption?
  • Still being developed, tested
  • Launch event in spring
  • Challenges of a new site, UI & paradigm
  • What is “intuitive” and “innovative”

• Ease of Sustainability?
  • Is it “mission critical”? 
  • Mitigation: shared costs, automation
  • Phase 2: LUX as a service, not a site

https://artgallery.yale.edu/collections/objects/34281
Conclusions: Shareable Outcomes

- Data and Image content
- Data processing tools
- Database configurations
- Website code
- Technical documentation
- Process documentation
- Other? Ask!
Shifting Culture via Digital Transformation

- Moving from “Collections Discovery” to “Cultural Research”
- Improving our collection data, and hopefully others’
- Improving understanding of our internal culture
  ... and the originating cultures of the objects we curate
- Informing our understanding of cataloging practices
  ... across domains, systems, and formats
- Moving our culture towards effective collaboration
Thank You!

Discussion?