Web Archiving Collaboration: New Tools and Models
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Exploring a National Collaborative Model for Web Archiving

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Why cooperate?

- The problem is too large for any one organization to respond effectively
  - Web scale
  - Technological “arms race”
    - Static HTML4/PDF ⇨ Dynamic JavaScript, AJAX, Flash, HTML5, paywalls, …

“Web archiving is hard”

- CDL case study (WAS)
  - Production service since 2008; currently supporting 42 curatorial units, 280 collections, 135 TB
  - Relying on the “standard” FOSS stack: Heritrix, Nutch, OpenWayback, with lots of Ruby/Rails/Rake “glue” and a locally-developed curatorial interface
  - Large infrastructural footprint: 11 servers, 100 TB DAS (staging), and 150 TB SAN (archival/access)
  - Approx. 2.5 FTE just to meet operation demands
    - Little time available for necessary improvements: Heritrix/OWB upgrades, Nutch to Solr replacement, deduplication

“Web archiving is hard”

- Harvard case study (WAX)
  - Production operation since 2009; currently supporting 3 curatorial units
  - Reliance on IIPC software (Heritrix, Wayback, NutchWAX, hcc), general open-source tools (Quartz scheduler, Tomcat, JBoss, Hadoop), custom Java modules to control the process (Harvester, Importer, Indexer, Archiver), and custom curatorial interface
  - Bad timing (2009 start of Library reorg)

“Web archiving is hard”

- Harvard case study (WAX)
  - 2009-2014 WAX stagnates - years of technical debt - the underlying software hasn’t been upgraded - many versions behind, still using ARC, still only used by 3 curatorial units
  - Estimated 2.5 FTE for one year to upgrade WAX and expand curatorial units; then 3 FTE on an on-going basis; 2 FTE is closer to what Library wants to commit to providing a service to curators

Benefits of collaboration

- Enable the collection of a rich body of Internet content from around the world
- Foster the development and use of common tools, techniques and standards that enable the creation of international archives
- Encourage and support national libraries, archives and research organizations everywhere to address Internet archiving and preservation

— International Internet Preservation Consortium (IIPC)

Steps toward collaboration

- CUL-hosted *Web Archiving Policies and Practice in the US* summit, May 2012
  - CDL, Columbia, CRL, Cornell, Duke, Georgetown, Frick, Harvard, Indiana, IA, LC, Michigan, North Texas, NYU, Sloan, Stanford, UC Irvine, UT Austin, Virginia Tech
  - "… an articulation of a small number of model programs for web archiving, and development of 'best practices' for documenting program elements"
  - *https://webarch.cul.columbia.edu/*

Steps toward collaboration

- CDL-hosted summit, June 2014
  - CDL, Columbia, George Washington, Harvard, IA, LC, North Texas, Stanford
  - "… more robust collaboration was desirable in order to collectively address these challenges [research use, intensive resource requirements, the pace of change, fragmented collection development, etc.] and went so far as to brainstorm the benefits and risks of an all-in, formal association"
  - *https://docs.google.com/document/d/1QxwdpUQxzG0vlf3bNZG3G7_Ln8B3OQOK19a7TESlhBM/edit*

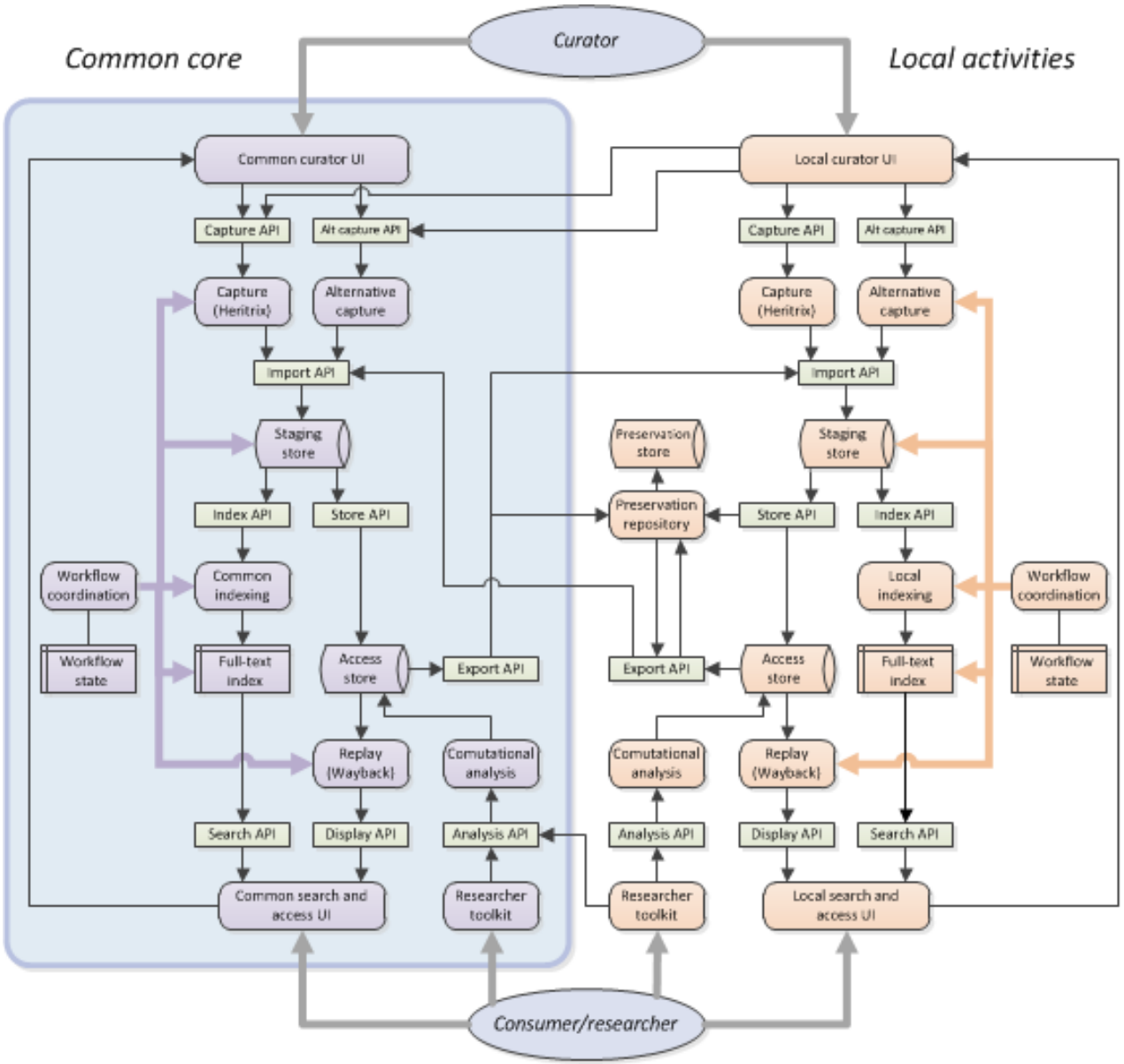
Steps toward collaboration

- Community Principles for Web Archiving at Scale
  - "… a lightweight structure by which web archiving institutions can work collectively in order to achieve significant functional goals and operational efficiencies that they are unlikely to achieve individually"
  - *https://docs.google.com/document/d/1Qfg1nDdzTuAhtK9NKuooMdpGtP4PKwZCBxS5BqjFMb0/edit*

The key step

- Recognizing the need to enable centralized, coordinated, and/or local tool development, operation, and collection building
- Defining a comprehensive set of APIs that expose function at critical junctures in nominal workflows
- “Commodity solutions when available, customized solutions when necessary”

Potential architecture



Pursuing collaboration

- IMLS NLG preliminary proposal, February 2015
  - CDL, Columbia, George Washington, Harvard, IA, LOCKSS, MIT, North Texas, NYARC, Stanford, UCLA
  - Environmental scan, community development, technical collaboration
  - Unfortunately, not invited to submit final proposal
  - All partners agree to continue to work together and plan to resubmit in 2016

Pursuing collaboration

- IIPC
  - "Facing the challenge of web archives preservation collaboratively" (2015), *D-Lib Magazine* 21:5/6 (May June) http://www.dlib.org/dlib/may15/goethals/05goethals.html
    - Collaborative activities: risks DB and assessment tool, and environments DB
  - Preservation working group (PWG) survey results (May 2015)
    - APIs "of interest" to 100% of respondents
    - 94% willing to participate in new IIPC API working group

Summary

- Widespread recognition of the benefits of collaborative approaches
- Willingness to work together to define APIs
- Continue to look for funding opportunities to help facilitate this effort