Chronicles in Preservation
Preserving Digital News & Newspapers
ALA 2013

Matt Schultz

Nick Krabbenhoeft

Chronicles in Preservation

- About: NEH grant-funded study (2011-2014)
- Objective: To study, document, and model data preparation and distributed digital preservation for digital newspaper collections
- www.metaarchive.org/neh

- Content Partners
  - Boston College
  - Clemson University
  - Georgia Tech
  - Penn State
  - University of North Texas
  - University of Utah
  - Virginia Tech
- DDP Partners
  - Chronopolis
  - University of North Texas
  - MetaArchive

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Why Digital Newspapers?

- At-risk and valuable scholarly content genre
- Success of the USNP & NDNP programs – cataloging, digitizing, archiving & providing access to public domain newspapers
- Success of research carried out by CRL
- Digitized and born-digital newspaper collections have been created with a variety of
  - standards
  - metadata
  - data models
  - technologies

Research Questions

- What is the spectrum of preservation readiness from essential to optimal?
- How do curators exchange digital newspapers in distributed ways for preservation?
- What are the strengths and challenges of performing distributed digital preservation for digital newspapers?

Deliverables

- **Guidelines for Digital Newspaper Preservation Readiness** – Recommendations for essential and optimal action for curating collections
- **Comparative Analysis of DDP Frameworks** – Analysis based on ingests from the Content Partners into the 3 DDP systems.
- **Interoperability Tools** - Documentation of tools to improve curation of existing collections.

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Guiding Principles

- Don’t Reinvent the Wheel
- Use What Is Already Working
- Improve It

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Tools & Resources

BagIt

Description Service

identify, validate and extract

DAITSS Description Service

PREMIS Event Service

Mark Phillips
University of North Texas
Denton
TX 76205, USA
+1 (940) 565-2415
Mark.Phillips@unt.edu

Matt Schultz
Educopia Institute
Atlanta
GA 30309, USA
+1 (616) 566-3204
Matt.Schultz@metaarchive.org

Kurt Nordstrom
University of North Texas
Denton
TX 76205, USA
+1 (940) 369-7809
Kurt.Nordstrom@unt.edu

UNT PREMIS Event Service

	Level One (Protect Your Data)	Level Two (Know Your data)	Level Three (Monitor Your Data)	Level Four (Repair Your Data)
Storage and Geographic Location	• Two complete copies that are not collocated • For data on heterogeneous media (optical disks, hard drives, etc.) get the content off the medium and into your storage system	• At least three complete copies • At least one copy in a different geographic location • Document your storage system(s) and storage media and what you need to use them	• At least one copy in a geographic location with a different disaster threat • Obsolescence monitoring process for your storage system(s) and media	• At least 3 copies in geographic locations with different disaster threats. • Have a comprehensive plan in place that will keep files and metadata on currently accessible media or systems

NDSA Levels of Preservation

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BagIt

- Digital newspapers have a range of legacy collection structures & conventions
- BagIt is file packaging format for storing and transferring data.
- Provides a simple data model
  - A data directory
  - A manifest inventory of the bag with checksums for all objects within
  - Metadata about the bag

- bagit.py
  - Python-based BagIt tool
  - Released in 2010
  - https://github.com/edsu/bagit
- Bagger
  - Java-based BagIt tool w/ GUI
  - Released 2012
  - http://sourceforge.net/projects/loc-xferutils/files/loc-bagger/

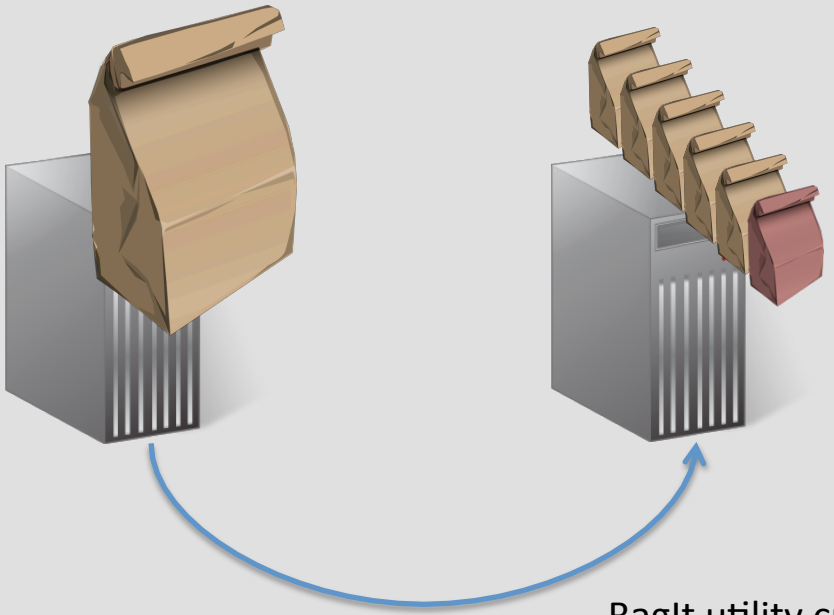
Exchanging Collections

- BagIt made it easy to group diverse collection data and package it with preservation value
- Each project partner bagged and sent 30-300GB of data according to BagIt usage instructions (made available in the project).
  - GUI was key
    - Partners preferred Bagger over bagit.py
  - Large bags require dedicated resources
    - Partners staging data on staff workstations ran the utility overnight in order to avoid interruptions
  - Bags require curation
    - BagIt utilities grab system files like .DS_store thumbs.db

Splitting Bags

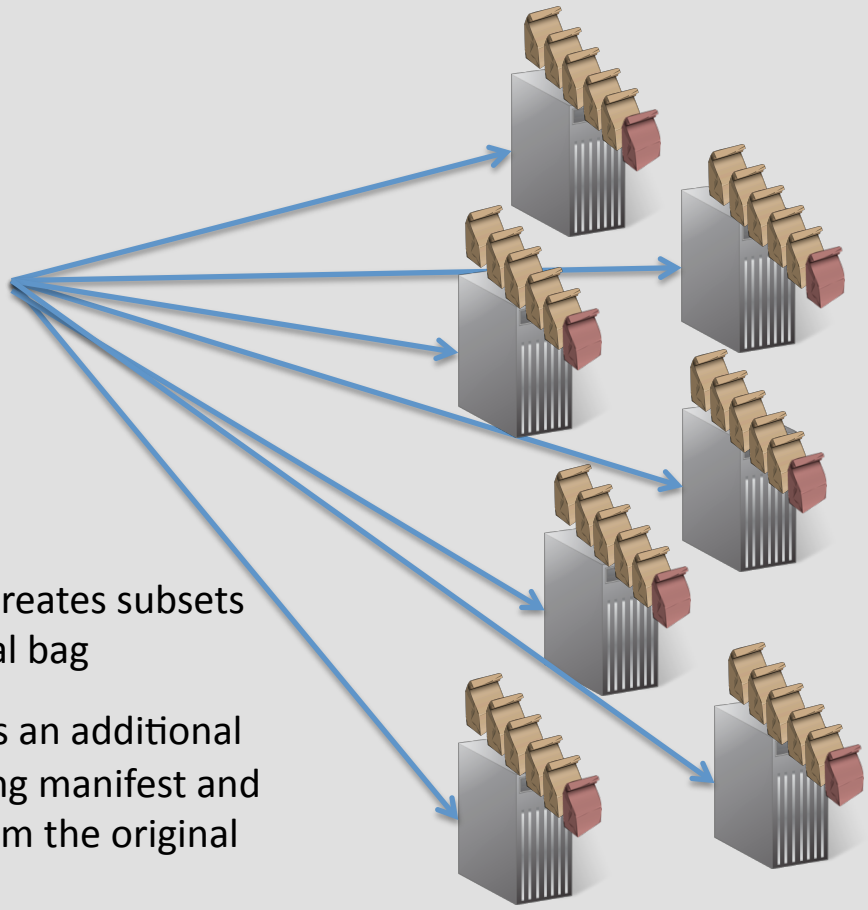
- For some systems, it can be helpful to break collections into manageable units in order to optimize checksum audit processes.
- The MetaArchive breaks collections into archival units (AUs) of 30GB.
- MetaArchive created a lightweight method of splitting and validating bags greater than 30GB and then reconstituting the original bag for export.

BagIt + Custom Scripts to Split



BagIt utility creates subsets of the original bag

Script creates an additional bag containing manifest and metadata from the original bag



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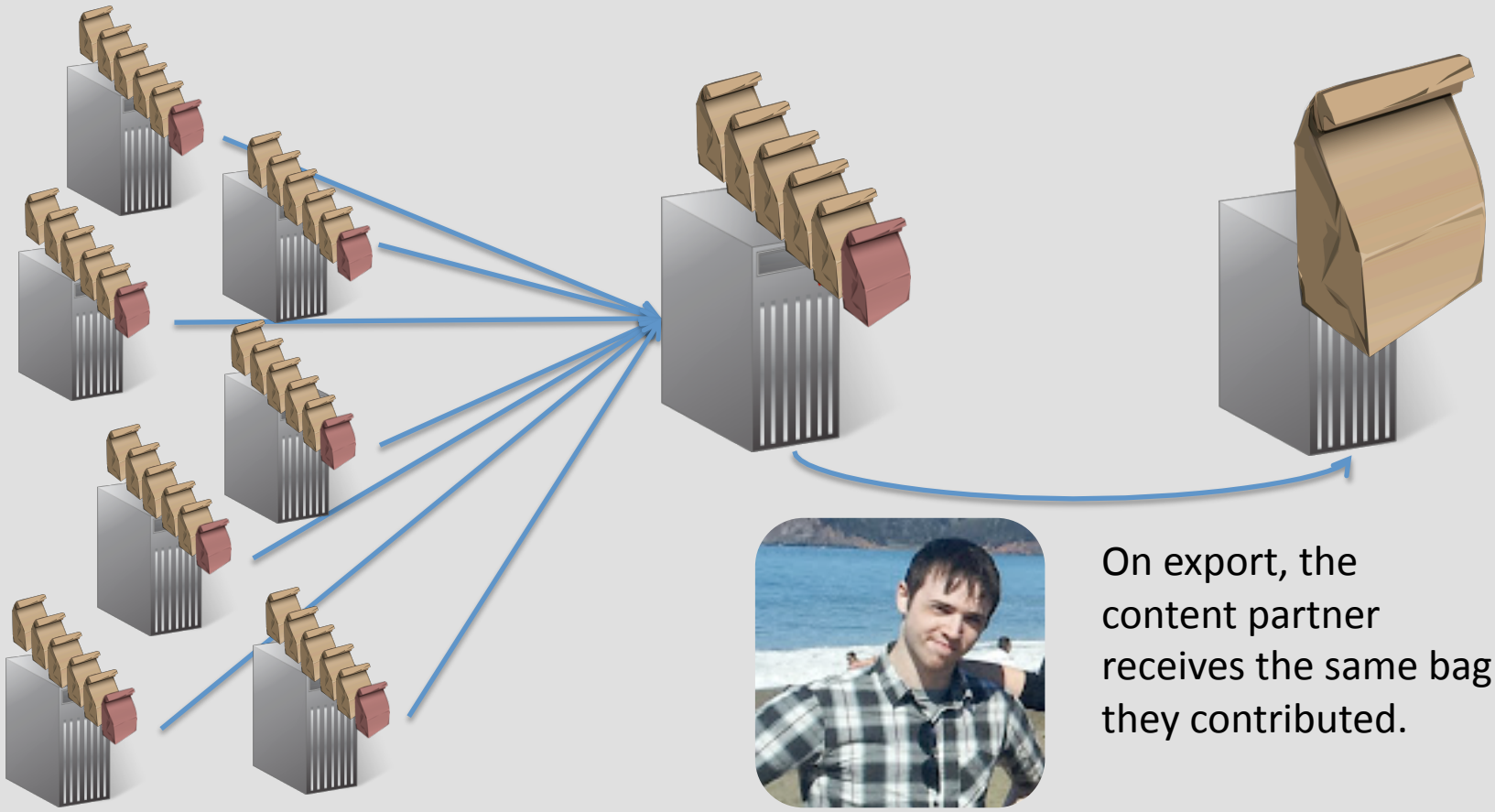
…and to Rebuild



On export, the content partner receives the same bag they contributed.

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Preservation Metadata for Objects

- Preservation metadata standards and specifications (METS/PREMIS) can be costly to implement
- Curators need lightweight and bulk applications to create and manage preservation metadata

- DAITSS Format Description Service
  - Web app that links DROID and JHOVE to create PREMIS
  - Released in 2009
  - https://github.com/daitss/describe

- UNT PREMIS Event Service
  - Web service to detect and log object events in an associated PREMIS file.
  - Available in 2014

Format Description Service

```
cd $BAG/data                                    # Enter the bag's "data" directory
find . -type f | while read line; do            # Go through each file found under this location
        mkdir -p "$BAG/premis/`dirname "$line"`" # Make a directory for the output file
        EXT=${line##*.}                         # Get the file's extension
         # Send the file to the description service (using its HTTP API) and save the output to a file
        curl -F "document=@$line" -F "extension=$EXT" $DESCRIBE_URL/description > "$BAG/premis/$line.xml"
done
```

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PREMIS Event Service

Events

- <premis:event xmlns:premis="info:lc/xmlns/premis-v2">
- <premis:eventType>
- http://purl.org/net/meta/vocabularies/preservationEvents/#MigrateSuccess
- </premis:eventType>
- <premis:linkingAgentIdentifier>
- <premis:linkingAgentIdentifierValue>
- http://metaarchive.org/agent/metaMigrateSuccess
- </premis:linkingAgentIdentifierValue>
- <premis:linkingAgentIdentifierType>
- http://purl.org/net/meta/vocabularies/identifier-qualifiers/#URL
- </premis:linkingAgentIdentifierType>
- </premis:linkingAgentIdentifier>
- <premis:eventIdentifier>
- <premis:eventIdentifierType>
- http://purl.org/net/meta/vocabularies/identifier-qualifiers/#UUID
- </premis:eventIdentifierType>
- <premis:eventIdentifierValue>
- e8ee3b1a8c9e4a5daf0a1e0446383d90
- </premis:eventIdentifierValue>
- </premis:eventIdentifier>

Agents

- <?xml version="1.0"?>
- <premis:agent xmlns:premis="info:lc/xmlns/premis-v2">
- <premis:agentIdentifier>
- <premis:agentIdentifierValue>
- MigrateSuccess
- </premis:agentIdentifierValue>
- <premis:agentIdentifierType>
- FDsys:agent
- </premis:agentIdentifierType>
- </premis:agentIdentifier>
- <premis:agentName>
- http://metaarchive.org/agent/metaMigrateSuccess
- </premis:agentName>
- <premis:agentType>
- softw
- </premis:agentType>
- </premis:agent>

Meeting NDSA Metadata Levels

Green indicates fulfilled metadata requirements, red indicates metadata requirements not in scope

	Level 1	Level 2	Level 3	Level 4
Storage				
Fixity	BagIt			
Security				
Metadata	BagIt	BagIt/ Event Service		
Formats		Format ID		

Level 1 Fixity: Check or create fixity

Level 1 Metadata: Store object manifest

Level 2 Metadata: Administrative and transformative metadata

Level 2 Formats: Inventory file formats

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Contacts & Links

- Matt Schultz (Program Manager, MetaArchive)
  matt.schultz@metaarchive.org
- Nick Krabbenhoeft (Project Manager, Educopia)
  nick@metaarchive.org
- Project URL: www.metaarchive.org/neh
- BagIt: http://sourceforge.net/projects/loc-xferutils/
- Description Service: http://description.fcla.edu/
- NDSA Levels: http://bit.ly/ndsa_levels

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