Getting to Know FRED
Introducing workflows for born-digital content

Alice Prael
John F. Kennedy Presidential Library
@AlicePrael

Amy Wickner
University of Maryland Libraries
@amelish

MID-ATLANTIC REGIONAL ARCHIVES CONFERENCE
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born-digital at UMD

Why develop a born-digital program? Why now?

- Born-digital acquisitions
- Campus e-records and data management
- Legacy media in collections
- New digital repository system (Fedora 4)
- New archival information management system (ArchivesSpace)
born-digital working group

**CHARGE:** Identify opportunities, challenges, and concrete steps forward for a program to process and maintain born-digital collections.

**OUTCOME:** Defined goals, staff needs, and expectations for a Special Collections born-digital records program

**TIMELINE (2012 - 13 academic year)**

09/12 BDWG formed by UMD Libraries & Maryland Institute for Technology in the Humanities (MITH)

10/12 Processed papers of hypertext & e-lit pioneer Bill Bly

01/13 Established subgroups on Tools, Policy/Procedures, Metadata, Administration

02/13 Metadata subgroup dissolved

03/13 FRED purchased, configured
MEET FRED: a workstation for digital forensics imaging and analysis
FRED details

**DRIVES**
- Windows 7 Ultimate (64 bit) / Win98 DOS dual partition
- Ubuntu Linux 14.04.2

**SOFTWARE**
- FTK Imager 3.3.0 (Windows)
- BitCurator 1.2.1 (Linux)

**EXTERNAL HARDWARE**
- USB-connected 3.5” floppy disk drive
- TEAC 5.25” floppy disk drive
- FC5025 5.25” floppy disk drive controller card with USB connection
- SuperCardPro controller card
- Iomega zip drive

*but wait: there’s more...*
FRED details

BUILT-IN HARDWARE

- Tower connects to USB-capable drives, optical media, bare hard drives
why FRED?

High-profile purchase

Clear investment in developing a born-digital program

Future plans to develop dedicated digital curation workstation

- PC workstation
- Ubuntu Linux running BitCurator
our project

**Develop documentation and workflows for imaging and preserving born-digital content from physical storage media using FRED**

Collaboration between Special Collections and University Archives (SCUA) and Digital Systems and Stewardship (DSS)

**Sept. 2014 - Aug. 2015**

**WORK PRODUCTS**

- Draft workflow for capturing and preserving born-digital content
- How to FRED: A Beginner’s Guide
- Processing project ideas
WORKFLOW FOR BORN-DIGITAL MATERIAL: early concept
WORKFLOW FOR BORN-DIGITAL MATERIAL: overview

1. Donor offers born-digital material of value
2. Discuss privacy & access issues with donor
3. Receive digital objects on storage media
4. Follow FRED Guide to connect & image media
5. Write disk image to Working Space on library LAN
6. Virus check
7. Run BitCurator file & PII reports
8. SIP: disk image, file directory, PII reports, image checksum
9. Temporarily backed up as insurance copy
10. Extrac obj?
11. Extract obj?
12. Yes/No
13. Mount disk image, extract & normalize objects
14. Assign UUIDs, generate object checksums
15. Enhance digital object metadata
16. DIP: access copy, metadata, checksum, UUID
17. Batch upload DIP (s) to Fedora 4
18. AIP: preservation copy, metadata, checksum, UUID
19. Transfer AIP(s) to Archivist Space on library LAN

Alice Prael @AlicePrael · Amy Wickner @amelish
WORKFLOW FOR BORN-DIGITAL MATERIAL: detail

Donor offers born-digital material of value

Media?

Can process

Discuss privacy & access issues with donor

Can’t process

explore alternatives (digitization lab, vendor)

Receive digital objects on storage media

Accession

Resource

ArchivesSpace records

MARAC Fall 2015

Alice Prael @AlicePrael · Amy Wickner @amelish
Follow *FRED Guide* to connect & image media

Write disk image to Working Space on library LAN

**Virus check**

- Do not proceed

- not ok

- image ok

Run BitCurator file & PII reports

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*ArchivesSpace events*

- custody transfer
- capture
- virus check
- validation

**WORKFLOW FOR BORN-DIGITAL MATERIAL: detail**
WORKFLOW FOR BORN-DIGITAL MATERIAL: detail

Temporarily backed up as insurance copy

SIP: disk image, file directory, PII reports, image checksum

Identify material & groupings for access

Extract? yes

Mount disk image, extract & normalize objects

Assign UUIDs, generate object checksums

ingestion

normalization

Digital Object
Enhance digital object metadata

DIP: access copy, metadata, checksum, UUID

Batch upload DIP(s) to Fedora 4

AIP: preservation copy, metadata, checksum, UUID

Transfer AIP(s) to Archivist Space on library LAN

processed

cataloged

publication

fixity check

migration

WORKFLOW FOR BORN-DIGITAL MATERIAL: detail
How To FRED

Contents
1. How to Update BitCurator
2. How to Connect Media
   a. 3.5 inch Floppy
   b. 5.25 inch Floppy
   c. CD
   d. USB flash drive and USB connected external hard drive
   e. Internal hard drive
3. How to Create Disk Images
   a. FTK Imager in Windows
   b. Photoimager in BitCurator
4. How to Map Shared Drive
   a. In Ubuntu
   b. In Windows
5. How to Run Bulk Extractor
6. How to Run BitCurator Reports
7. Mounting a Disk Image
   a. In BitCurator
   b. In FTK Imager

How to Update BitCurator

1. All items saved locally (on the Ubuntu side) will be deleted in the process of updating. Save all data on LAN or other network (we used umd.box for temporary storage during updates).
2. Download ISO installation from wiki.bitcurator.net. If this download fails, try the “Download Mirror.”
3. Compare checksums for the original and downloaded image files. We used the program winMd5Sum to create and compare checksums.
   3.1. Download and save the MDS checksum from wiki.bitcurator.net (the most recent checksum will be directly below the BitCurator download). Open the file in a text editor to see the checksum alongside version information, e.g.:
      1dd19958bb0a6a48c5f19d675b7e4ff BitCurator-1.2.1.iso
   3.2. Create a checksum for the downloaded copy of BitCurator installation ISO. Right click on the downloaded disk image and select Send to > winMd5Sum.
   3.3. Ensure that these checksums are the same by copying the checksum downloaded in step 3.1 and pasting it into the Compare field in winMd5Sum. Click Calculate.
4. Create a BitCurator installation disk by burn the downloaded disk image to a blank DVD.
   4.1. Insert a blank disk. Cancel all AutoPlay options and DO NOT FORMAT.
   4.2. With a blank disk in the drive, right click on the downloaded disk image and select Burn disc image.
   4.3. Check the box next to Verify disc after burning, then click Burn.
   4.4. Refer to BurningHints in Ubuntu documentation for more information.
5. Insert disc into FRED and restart.
processing project ideas

- hard drives v. floppy disks
- e-records (campus & external)
- digital photo
- MARAC records!
- social science data collections

Format clues from born-digital inventory
beyond imaging

Recruit curators to communicate with donors about what we can do, will do, and are doing.

Extend workflow to accommodate born-digital material that isn’t transferred by imaging
- e-records
- email
- social media

Rethinking storage
- Dedicated born-digital space on library LAN
- Academic Preservation Trust

Looking ahead to ACCESS
lessons learned

Keep the lines open to IT  
Let people know what you’re working on

Be involved in the inventory process  
Recruit allies

Remember: we’re all facing the same roadblocks  
Balance conceptual thinking with hands-on tinkering
IN A WORD...

COMMUNICATE!