Disk Image Repository Considerations

Digital Forensics Research Workshop

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University of North Carolina at Chapel Hill

The Andrew W. Mellon Foundation

UNC
SCHOOL OF INFORMATION
AND LIBRARY SCIENCE

Archivists are pretty good at dealing with this kind of stuff:

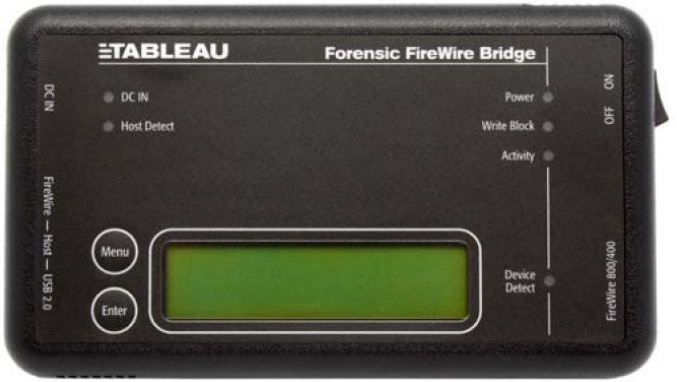
Source: The Processing Table: Reflections on a manuscripts internship at the Lilly Library. https://processingtable.wordpress.com/tag/archival-processing/

What about when they get this kind of stuff?

Source: Simson Garfinkel

Source: “Digital Forensics and creation of a narrative.” *Da Blog: ULCC Digital Archives Blog*. http://dablog.ulcc.ac.uk/2011/07/04/forensics/

Looks like they might need some of this kind of stuff:



AFFLIB

Open Source Computer Forensics Software

Perhaps you've seen some places that look like this:

El Paso County Sheriff's Office (Colorado)

http://shr.elpasoco.com/Law+Enforcement+Bureau/Investigations+Division/Computer+Crime+Lab.htm

How about these places?

Stanford University Libraries and Academic Information Resources (SULAIR)

Bodleian Library, Oxford University

British Library, London

Repositories (Archives, Libraries) are Getting Digital Media:

- Floppy disks in boxes
- CDs
- Entire machines
- …

What the Archivists can Get from Digital Forensics

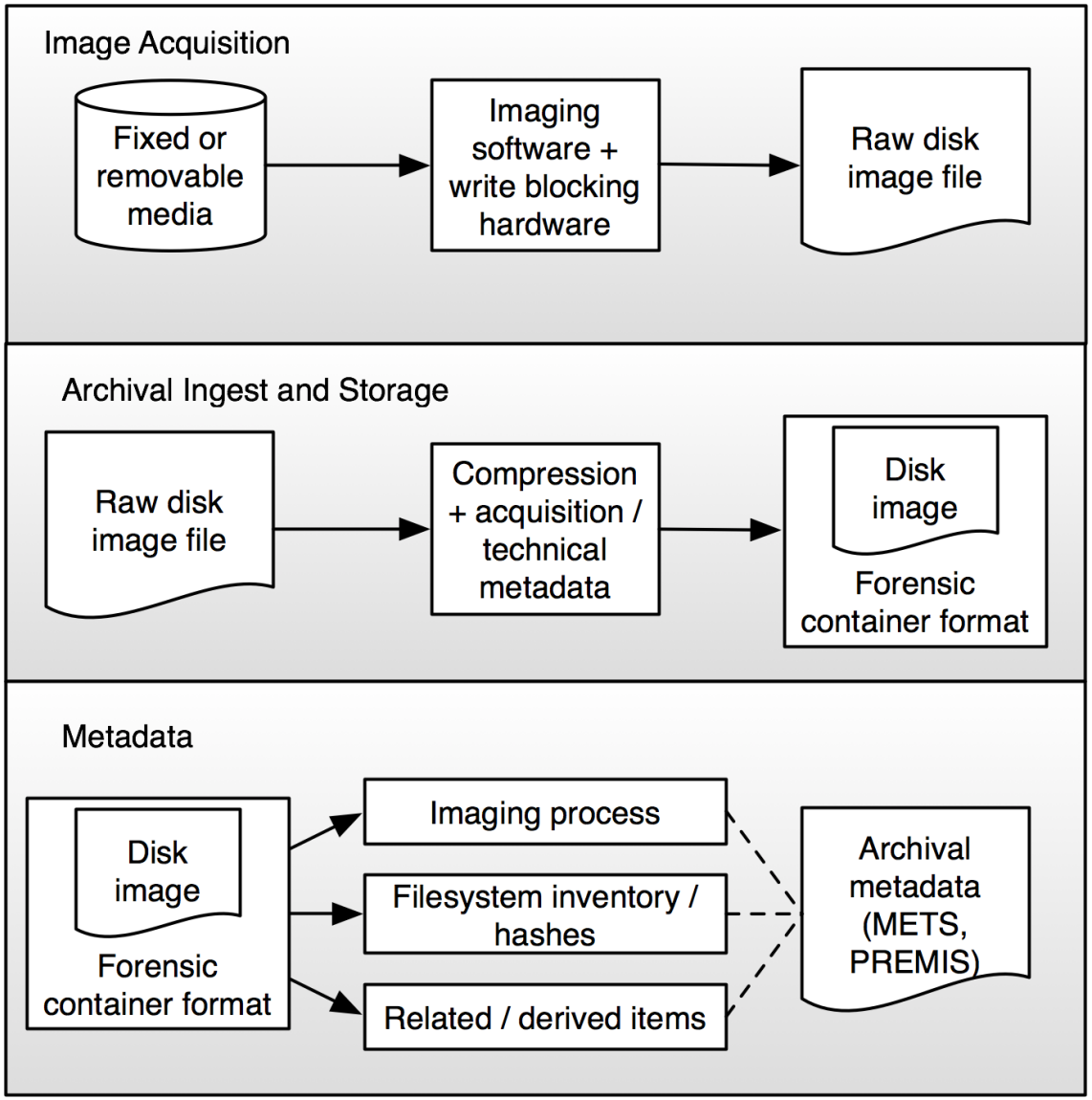
- Recover data when layers of technology fail or are no longer available
- Capturing evidence from places that are not always immediately visible
- Ensuring that actions don't make irreversible changes to essential characteristics (e.g. MAC values)
- Attending to order of volatility
- Documenting what we do, so others will know what we might have changed
- Taking advantage of the information associated with files to ensure that users of the files understand their context of creation

Particular Archival Considerations

- Long-term **preservation** of forensic images, including interoperability across applications
- Provision of **access** to images that contain sensitive information (e.g. zeroing out portions, hashes as surrogates for bitstreams, on-the-fly redaction)
- Conventions for **describing** and annotating images
- **User interfaces** for making sense of content at multiple levels of representation (e.g. sector level data, registry keys, parts of a .PST, entire discrete files)
- Distinct **scalability** issues (unit of analysis = collection, rather than a case)

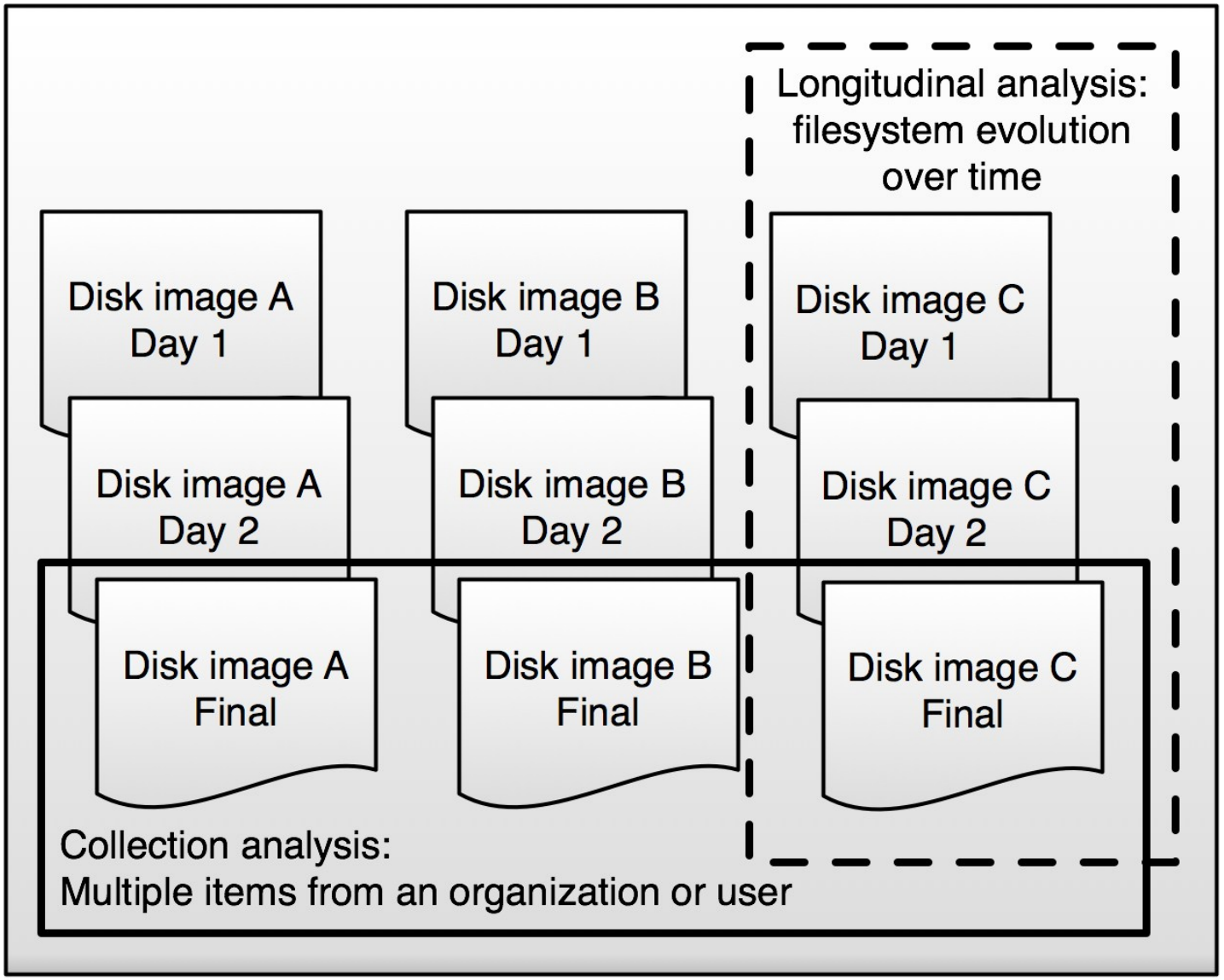
Curation of Disk Images

Storage Media Acquisition and Handling Profile for Digital Repositories*



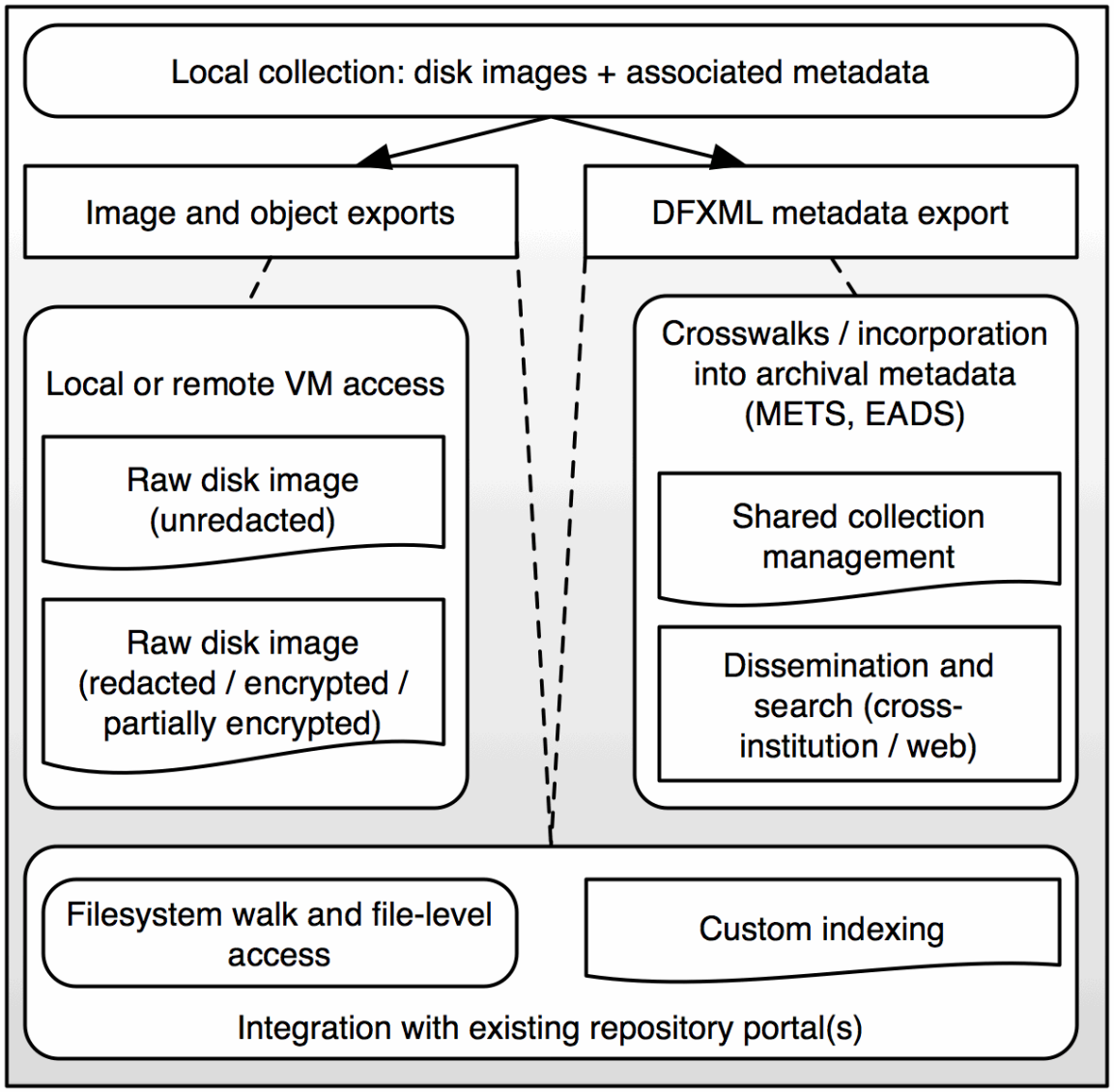
*Woods, Kam, Christopher A. Lee, and Simson Garfinkel. “Extending Digital Repository Architectures to Support Disk Image Preservation and Access.” In *Proceedings of the 2011 Joint Conference on Digital Libraries* (forthcoming).

Modes of Disk Image Collection Analysis*



*Woods, Kam, Christopher A. Lee, and Simson Garfinkel. “Extending Digital Repository Architectures to Support Disk Image Preservation and Access.” In *Proceedings of the 2011 Joint Conference on Digital Libraries* (forthcoming).

Distribution Paths*



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Vision for the Future

- Widespread incorporation of the right bits and pieces of forensics methods into routine processing of acquisitions by collecting institutions
- BitCurator – a modular software environment that implements various batch processes on bitstreams to support two contexts:
  - Collecting institutions that are already generating forensic images of removable media
  - Individuals and institutions that are just getting started (BitCurator in a Box)

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Thank you!