Comprehensive Redaction for Neurological Imaging

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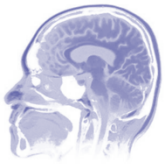
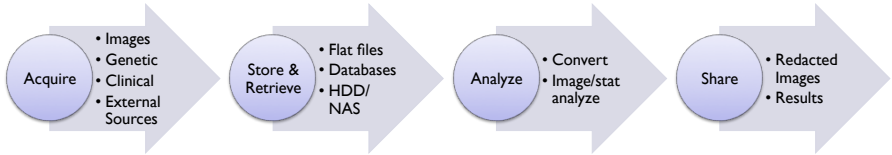


The Problem

- Large-scale studies have huge amounts of data (1PB/3Yrs)
- Data shared must be HIPAA compliant
- Inter-organizational collaboration must be easy
- Data exists as multiple abstractions, and simply removing it from a single layer is insufficient
- Method is needed to specifically redact all layers of PHI

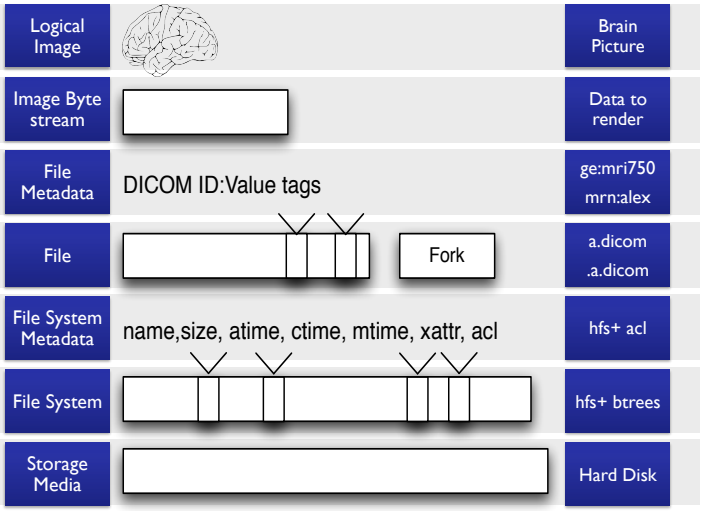
Workflow



Why redact?

Data Stack

- Logical (not architectural or physical) break down of different storage and display components
- Bottom up approach to understand what contains PHI

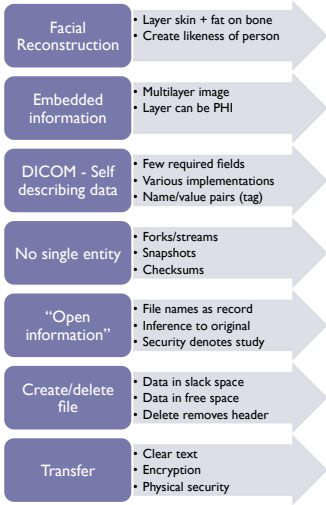


Example

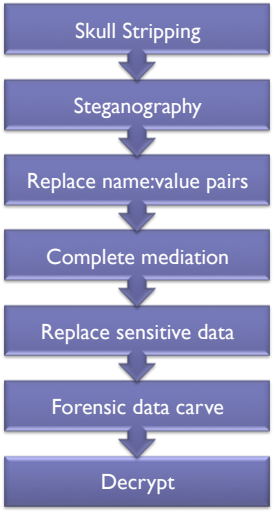
- Mac OS X
- Functional MRI
- Osirix/AFNI viewer

PHI Issues

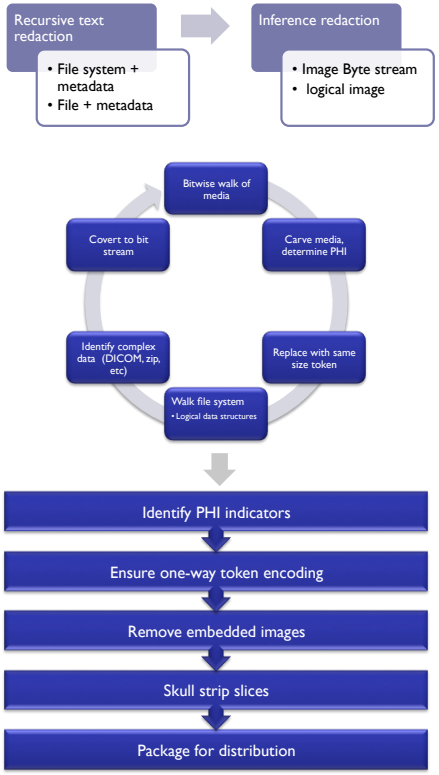
- Partial list of problems by layer mapping
- Complex, need knowledge of neuro study, computer science, and file formats



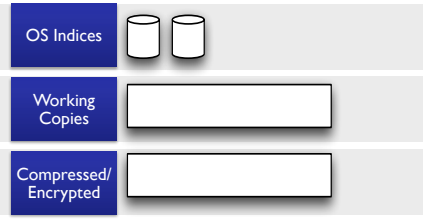
Remediation & Redaction Techniques



Our Redaction Process



External stores



- Data is not just stored in expected file location,
- Depending on application+ file system architecture, data is transferred to working copies
- Operating systems also index data for fast searching
- External data stores when producing images sets require redaction upon the entire media.
- Low level (bitwise) redaction of media is the only way to find all sources of PHI

Discussion + Future

- Comprehensive redaction is combination of recursive redaction at the block and file layer, with additional techniques to find and reduce inferred data
- Based upon body of work and code for legal production
- First step in exploring imaging specific redaction issues
- Expand and bundle current tools, produce integrated tool

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Photobucket – mri picture