The Library of Congress

Get It Online . . . Words, Pictures & Sound

From Creation to Dissemination

A Case Study in the Library of Congress's use Open Source Software

DLF Spring Forum

Corey Keith

ckeith@loc.gov

Introduction

- What is OSS
- Why OSS
- OSS used at LC
- XML is a favorite tool

Purpose

- Share information on available tools
  - Especially those outside the library community
- Promote using OSS
- Promote developing OSS

Open Source Initiative

- Open source promotes software reliability and quality by supporting independent peer review and rapid evolution of source code.

What is OSS?

- Software with source code attached
- Access to underlying code
- Derivative works
  - Add functionality
  - Enhance functionality
  - Remove functionality
- Redistribution (Gotcha)

Why OSS?

- Low experimentation cost
  - Technologies
    - Rapid evolution
    - Move to commercial solution if needed
- Not profit driven community

What types of OSS?

- Low Level
  - Programming Libraries
  - Databases
  - Languages
  - Operating Systems
  - Servers
  - Internet Infrastructure
- High Level

Selecting OSS for use

- Size
  - Active developers
- Alive/Dead projects
- Reliable Support
- Sponsored Projects
  - Apache Foundation
- Licenses

Benefits of OSS

- Peer reviewed
- Less defects
  - “Many eyes makes all bugs shallow”
- Increased security

Standards

- Promote standards through software development
- Collaboration by development

Benefits for Software Producers

- Development speed
  - Interesting projects attract developers
  - Less likely to switch once started
- Lower overhead
- Smaller institutions can handle larger projects
- If you release OSS, hire from OSS community

Benefits for Software Consumers

- No vendor lock in
- License maintenance
- Own vs rent

Costs for Producers

- Supporting the project
  - Goal: Self sustaining
- Preparing for open source distribution

Costs for Consumers

- Finding technical support
- Services
  - Free software
  - $$$ Services
- Possible increased outsourcing costs

LC Case Study

- I Hear America Singing
- Digital Production
  - METS Making
- Dissemination
  - METS Transformation
- Project Management

Philosophies

- Get data to XML as early as possible
- Flexible manipulation of XML with XSLT
- Aggregation of XML from variety of sources
- Pipelined XSLT

Digital Production

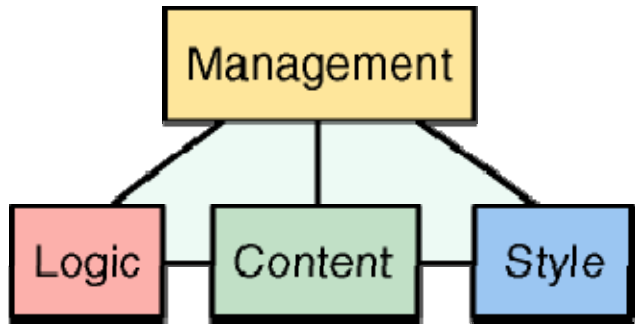
- Aggregate from different sources
  - MySQL DB Descriptive Data
  - Filesystem for Structure
- Apache Cocoon

Apache Cocoon

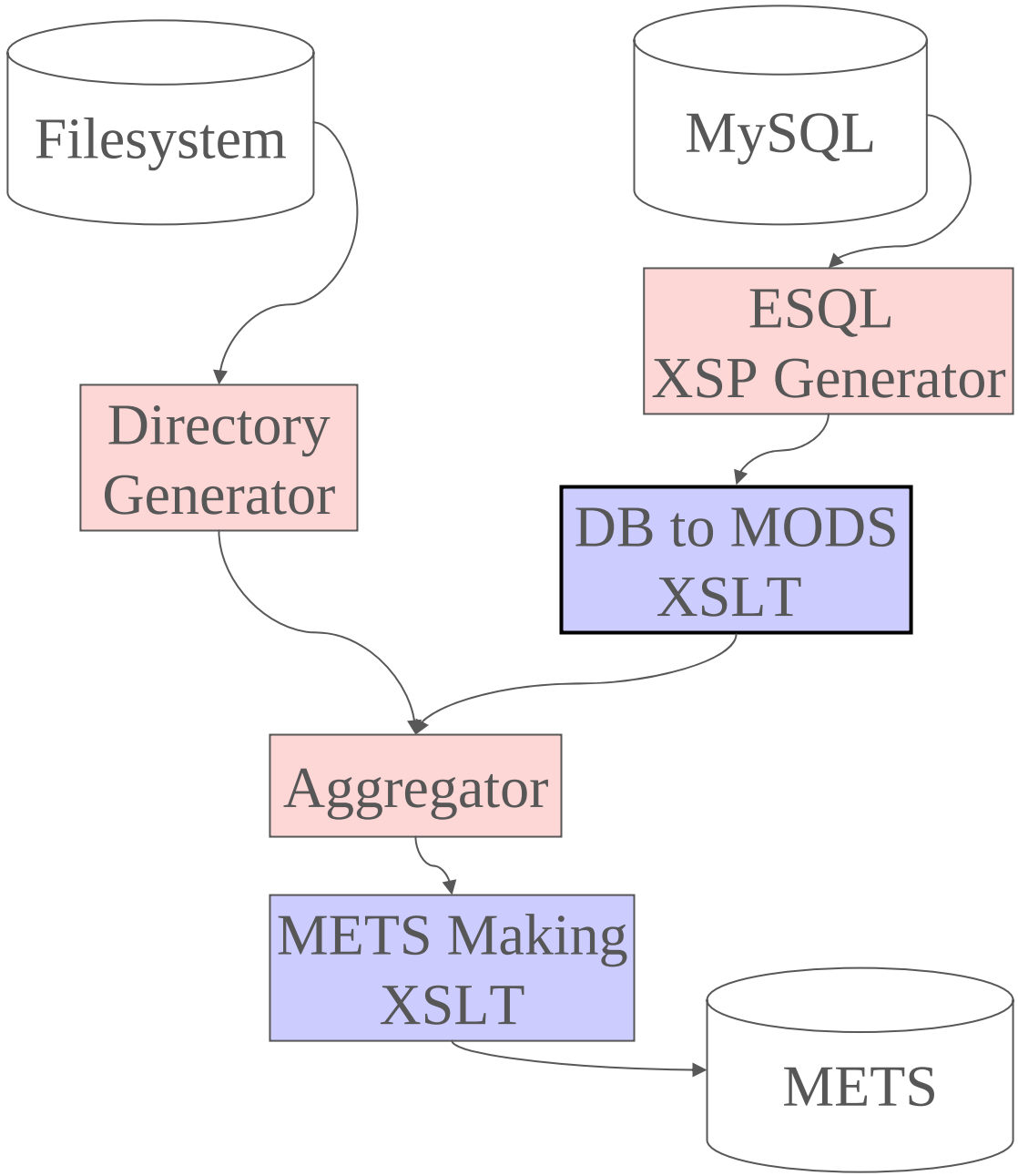
- XML Glue
- XML Pipeline
- XML Publishing Framework
- Separation of content and style

Cocoon Pipeline

- Generate XML
  - From files (or URLS)
  - From databases
  - From code (XSP, JSP, PHP)
  - From MARC21 records
- Transform XML
  - XSLT
- Serialize
  - XML, HTML, PDF, SVG, JPEG
- Caching, Logging
- Pass parameters to XSLT's
- Maps URL to Generate/Transform/Serialize
- Command line interface



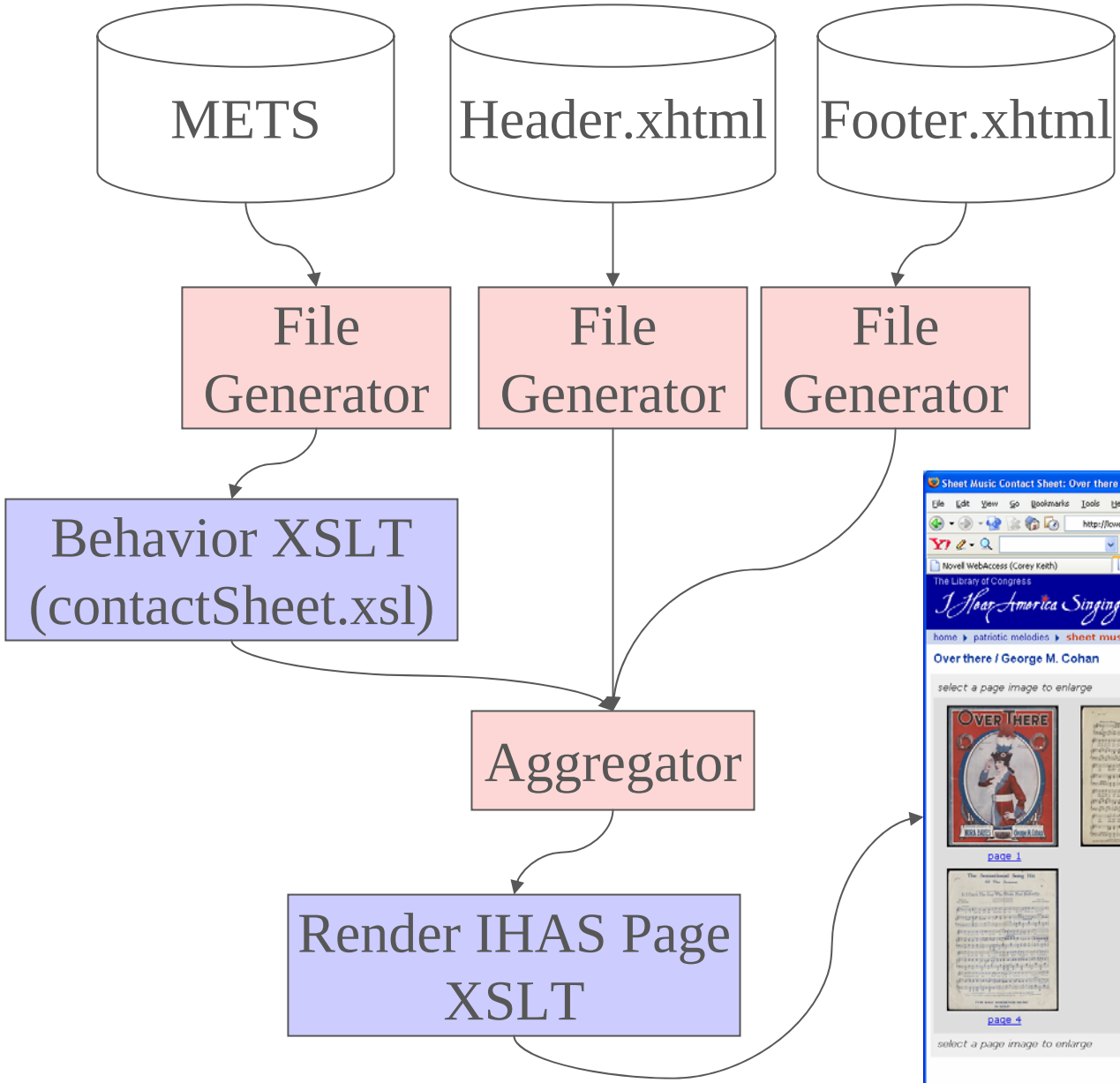
Digital Production



Dissemination

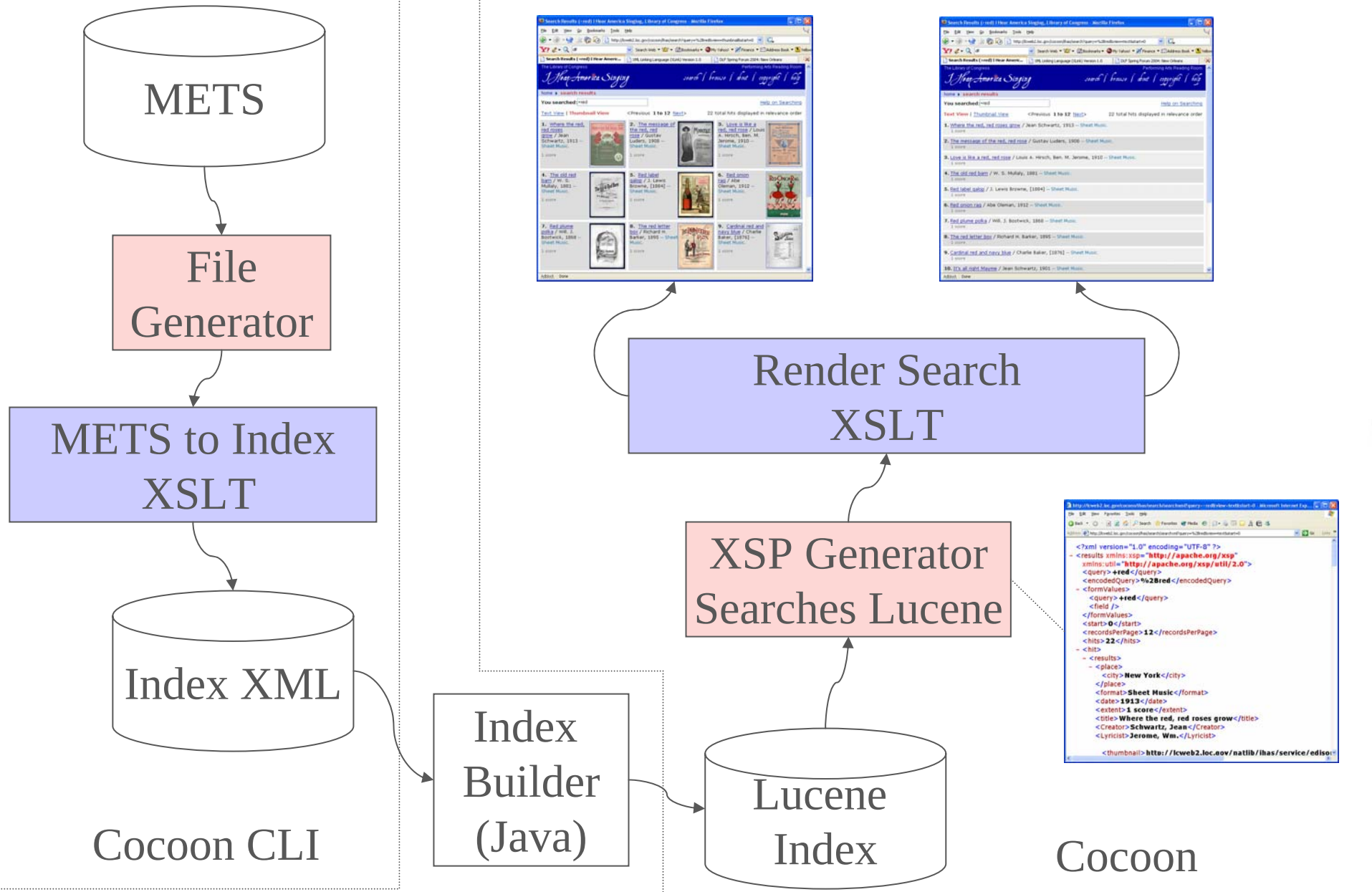
- Apache – Web Server
- Tomcat – Application Server
- Cocoon – XML Transformation
- Lucene – Searching/Indexing

Dissemination



Apache Lucene

- Text Indexing API
- Flexible
- Fast
- Hierarchical
- Cross-collection
- Depends how you build indexes


METS
File Generator
METS to Index XSLT
Index XML
Index Builder (Java)
Lucene Index
XSP Generator Searches Lucene
Render Search XSLT
Cocoon CLI
Cocoon

Project Management

- CVS
- Bugzilla
- Ant

CVS

- Version Control
- Manage multiple document versions
  - Schemas
  - Documentation
  - Code
  - Libraries
- Multiple developer projects

Bugzilla

- Web-based defect tracking
- Avoids flurry of emails
- Products – Components
- Accountability
- Reporting

Ant

- Automated build tool
- Packaging
- Deployment

What you can do to support OSS

- Demand (well documented) source code when outsourcing
  - Release this code
- Release code your internal projects

Why this is hard

- Clean-up code
  - Embarrassing
- Documentation
- Preparing for release
- Fears of supporting the code
- Hosting
- Marketing
- Generalizing for others use

Summary

- OSS Software
  - Benefits
  - Costs
- Uses at LC
  - I Hear America Singing
- Questions