The Role of Atom/AtomPub in Digital Archive Services at The University of Texas at Austin

Peter Keane, UT Austin

Some Terms

- **Atom** -- syndication format
- **AtomPub** -- a "write-back" protocol
- **REST** -- architectural style of the Web
- **AJAX** -- Javascript-based rich interface technique

Presentation Outline

- DASe
- REST
- Atom/AtomPub

Digital Archive Services (DASe)

- lightweight digital repository
- 100+ subject-specific collections comprising 190K items
- 1.2 million images, audio, video, pdf
- 3 million pieces of metadata

What Starts Here Changes The World
THE UNIVERSITY OF TEXAS AT AUSTIN

Digital Archive Services DASe

- Home/Search
- My Cart (29)
- My Sets

Search selected collection(s):

Search

- ☑ American West Collection (1146)
- ☑ Archivision (Art and Architecture) Collection (16370)
- ☑ Art & Art History Visual Resources Collection (35607)
- ☑ Asian Studies Collection (18954)
- ☑ Blanton Museum Collection (1847)
- ☑ British Studies Lecture Series (66)
- ☑ Chinese 412K Audio (18)
- ☑ Chinese 506 Audio (53)
- ☑ Chinese 507 Audio (32)
- ☑ Classics Collection (13400)
- ☑ Constitution Collection (156)
- ☑ Costume Collection (2693)
- ☑ Cultural Anthropology Collection (1116)
- ☑ English Collection (4666)
- ☑ French 312N Audio (56)
- ☑ French 322E Audio (53)
- ☑ French 612 Audio (47)
- ☑ Friesen Collection (202)
- ☑ Germanic Studies (6949)
- ☑ Germans From Russia (131)
- ☑ Historic Images of Art & Architecture (Allan T. Kohl Collection) (351)
- ☑ Mexican American Experience (57)

Home/Search
My Cart (29)
My Sets

American West Collection (1146 items)

Search:

go

Browse:

Select Attribute Group:

- Collection Attributes
- Admin Attributes

Select Attribute: toggle sort

- Dase Rights Level (0)
- Title (927)
- Artist (250)
- Year (0)
- Description (89)
- Keyword (0)
- Lecture (2)
- Style (0)
- Medium (81)
- Period (188)
- Donor (1)
- Collection (0)
- Scratch Pad (1137)

Select Artist Value:

- Adam Clark Vroman (10)
- Alexandre Hogue (6)
- Alfred Waud (2)
- Allan Hausea (1)
- Allen Anderson (2)
- Alphonse de Neuville (1)
- Amado Pena (1)
- Amos Bad Heart Buffalo (8)
- Andrew Dasburg (2)
- Andy Warhol (1)
- Ansel Adams (2)
- Ant Farm Artists Collective (2)
- Arnold Blanch (1)
- Arthur Amiotte (2)
- Arthur Dow (1)
- Arthur Mitchell (1)
- Arthur Rothstein (12)
- A.R. Ward Pinxit, E. Cooper (1)

Digital Archive Services DASe

Home/Search
My Cart (15)
My Sets

Search Results 1 - 30 of 41 [grid | list | slideshow]

paul klee Search

prev | next

1. add to cart

00-04697
Art & Art History Visual Resources Collection

2. add to cart

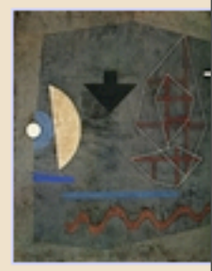
74-06723
Art & Art History Visual Resources Collection

3. in cart (remove)

08-00956
Art & Art History Visual Resources Collection

4. add to cart

68-07993
Art & Art History Visual Resources Collection

5. add

75-07234
Art & Art History V Resources Collec

6. add to cart

07-07806
Art & Art History Visual Resources Collection

7. add to cart

96-00250
Art & Art History Visual Resources Collection

8. add to cart

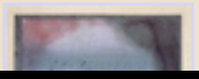
04-07664
Art & Art History Visual Resources Collection

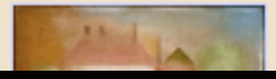
9. add to cart

04-07663
Art & Art History Visual Resources Collection

10. add

05-03495
Art & Art History V Resources Collec

11. add to cart


12. add to cart


13. add to cart

14. add to cart

15. add

	small	(599x480)
	medium	(749x600)
	large	(959x768)
	full	(3372x2700)

in cart (remove)

Art & Art History Visual Resources Collection

Main Entry
SHAHN, BEN
Title
Scotts Run, West Virginia.
Date
1937
Country
United States
Medium
Painting
Material/technique
tempera on cardboard
Dimensions
22-1/4 x 27-7/8"
Location City
NEW YORK CITY
Museum Name
Whitney Museum of American Art
Source
Pohl, Frances, Ben Shahn, 1993, flat scan
Item/page/plate
p.57, bottom
Accession Number
06-02075

show/hide admin metadata

add a user note

Home/Search
My Cart (15)
My Sets
create new set
ben shahn (6)
here is a set with a remarkably long and complicated name lklk (2)
my new slideshow (149)
nnnne (36)
pk set (6)
tcdl (16)
to delete (5)

ben shahn (6 items)

[grid | list | slideshow]

slide sorter | bulk editor

1. in cart

76-02496

Art & Art History Visual Resources Collection

2. in cart

06-02075

Art & Art History Visual Resources Collection

3.

06-01738

Art & Art History Visual Resources Collection

4. in cart

05-03205

Art & Art History Visual Resources Collection

5.

77-05939

Art & Art History Visual Resources Collection

6.

06-01739

Art & Art History Visual Resources Collection

check/uncheck all

save checked items to... add

remove checked items

delete entire set

Why Build?

- what are we building?
- must be simple and extensible
- importance of being RESTful
- new opportunities for reuse

Types of Reuse

- open-source applications
- code libraries/frameworks
- interaction design

Data First Approach

- meet the information provider where they are
- spreadsheets, FileMaker, Flickr, iPhoto, etc.
- model data close to the source
- map/transform to and from standard schemas

Home/Search
My Cart (15)
My Sets

American West Collection (1146 items)

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go

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- Dase Rights Level (0)
- Title (927)
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- Keyword (0)
- Lecture (2)
- Style (0)
- Medium (81)
- Period (188)
- Donor (1)
- Collection (0)
- Scratch Pad (1137)

Digital Archive Services

DASe

Home/Search
My Cart (15)
My Sets

Costume Collection (2693 items)

Search:

go

Browse:

Select Attribute Group:

- Collection Attributes
- Admin Attributes

Select Attribute: toggle sort

- Sarah's notes (79)
- Dase Rights Level (2)
- Title (1006)
- Description (1185)
- Period (17)
- Region (33)
- Gender (22)
- Garment Type (221)
- Accessory (148)
- Date (348)
- Season (4)
- Artist (25)
- Designer (34)
- Source (602)
- Page/Slide # (2)

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Digital Archive Services DASe

Home/Search
My Cart (15)
My Sets

Plan II Thesis Collection (318 items)

This digital archive of Plan II Senior Theses which will include all theses submitted from 2008 onward. When possible, theses submitted prior to 2008 will also be digitized and uploaded to this collection.

Search:

go

Browse:

Select Attribute Group:

Collection Attributes
Admin Attributes

Select Attribute: toggle sort

Author (296)
Title (297)
Semester (20)
Supervisor (254)
Supervisor Department (98)
Second Reader (251)
Second Reader Department (100)
Thesis Awards (3)
Supplementary Material (1)
Abstract (294)
Keyword (1769)
Dase Rights Level (0)
Scratch Pad (1)
Description (0)

Digital Archive Services

DASe

Home/Search
My Cart (15)
My Sets

Mexican American Experience (57 items)

Search:

go

Browse:

Select Attribute Group:

- Collection Attributes
- Admin Attributes

Select Attribute: toggle sort

- Program Number (39)
- Title (56)
- Short Description (1)
- Description (24)
- Host (5)
- Interviewee (6)
- Recording Date (29)
- Air date (28)
- Rerun Number (18)
- Series (16)
- Keyword (3)
- Transcript (2)
- Rights (0)

Atom Syndication Format

- Atom is an XML-based document format that describes lists of related information known as "feeds". Feeds are composed of a number of items, known as "entries", each with an extensible set of attached metadata. For example, each entry has a title.

DASe Item in Atom

Digital Archive Services DASe

Home/Search
My Cart (15)
My Sets

French 312N Audio

Item 1 of 5 for to delete

prev | up | next

mp3

in cart
(remove)

French 312N Audio edit | add metadata |

Unit
14
Title
Unit 14 Lesson 02.mp3

show/hide admin metadata

Original File Checksum
1a35a00701f6f7864e0776cc41946e0a
Sampling Rate (kHz)
22.05
Audio Time
29:31
Bitrate (kbps)
40
Original File Size
8855380
Original File Mime Type
audio/mpeg
Channel Mode
mono
Upload Date/Time
Tue, 23 Jan 2007 04:48:32 -0000
Original Filename
Unit 14 Lesson 02.mp3

DASe Item in Atom

```
<entry
    xmlns="http://www.w3.org/2005/Atom"
    xmlns:app="http://www.w3.org/2007/app"
    xmlns:d="http://daseproject.org/ns/1.0"
    xmlns:media="http://search.yahoo.com/mrss/">

    <title>Unit 14 Lesson 02.mp3</title>

    <id>http://www.laits.utexas.edu/dasebeta/item/french_312n/000384293</id>
    <link href="http://www.laits.utexas.edu/dasebeta/item/french_312n/000384293" rel=
    <link href="http://www.laits.utexas.edu/dasebeta/item/french_312n/000384293.atom"
    <updated>2008-08-22T09:13:20-05:00</updated>
    <published>2005-01-01T00:00:00-06:00</published>

    <d:unit>14</d:unit>
    <d:title>Unit 14 Lesson 02.mp3</d:title>
    <d:admin_checksum>1a35a00701f6f7864e0776cc41946e0a</d:admin_checksum>
    <d:admin_audio_sampling_rate>22.05</d:admin_audio_sampling_rate>
    <d:admin_audio_time>29:31</d:admin_audio_time>
    <d:admin_audio_bitrate>40</d:admin_audio_bitrate>
    <d:admin_file_size>8855380</d:admin_file_size>
    <d:admin_mime_type>audio/mpeg</d:admin_mime_type>
    <d:admin_audio_channel_mode>mono</d:admin_audio_channel_mode>
    <d:admin_upload_date_time>Tue, 23 Jan 2007 04:48:32 -0000</d:admin_upload_date_ti
    <d:admin_filename>Unit 14 Lesson 02.mp3</d:admin_filename>
</entry>
```

Everything is a Feed in DASe

- Collection
- Search Result
- User “Set”
- A User’s Sets
- Collection Attributes

Feeds in DASe

http://dase.laits.utexas.edu/collection/plan2.atom

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Subscribe Now

Plan II Thesis Collection

This digital archive of Plan II Senior Theses which will include all theses submitted from 2008 onward. When possible, theses submitted prior to 2008 will also be digitized and uploaded to this collection.

Strike Against Popular Unity: Why Radical El Teniente Miners Participated in the Strike of 41% Against Salvador Allende
Mon, Aug 11, 2008 1:44 PM

Media files
000488474_100.jpg (JPEG Picture)

Hitler's Ghost: The Shadow of Nazism in Contemporary Arguments about Biomedical Ethics
Mon, Aug 11, 2008 1:33 PM

Media files

Feeds in DASe

http://www.laits.utexas.edu/dasebeta/search.atom?q=paul+klee

Subscribe to this feed using Google

Always use Google to subscribe to feeds.

Subscribe Now

DASe Search Result

Art & Art History Visual Resources Collection: 25 Germanic Studies: 15 Classics Collection: 1

00-04697
Mon, Sep 15, 2008 11:06 PM

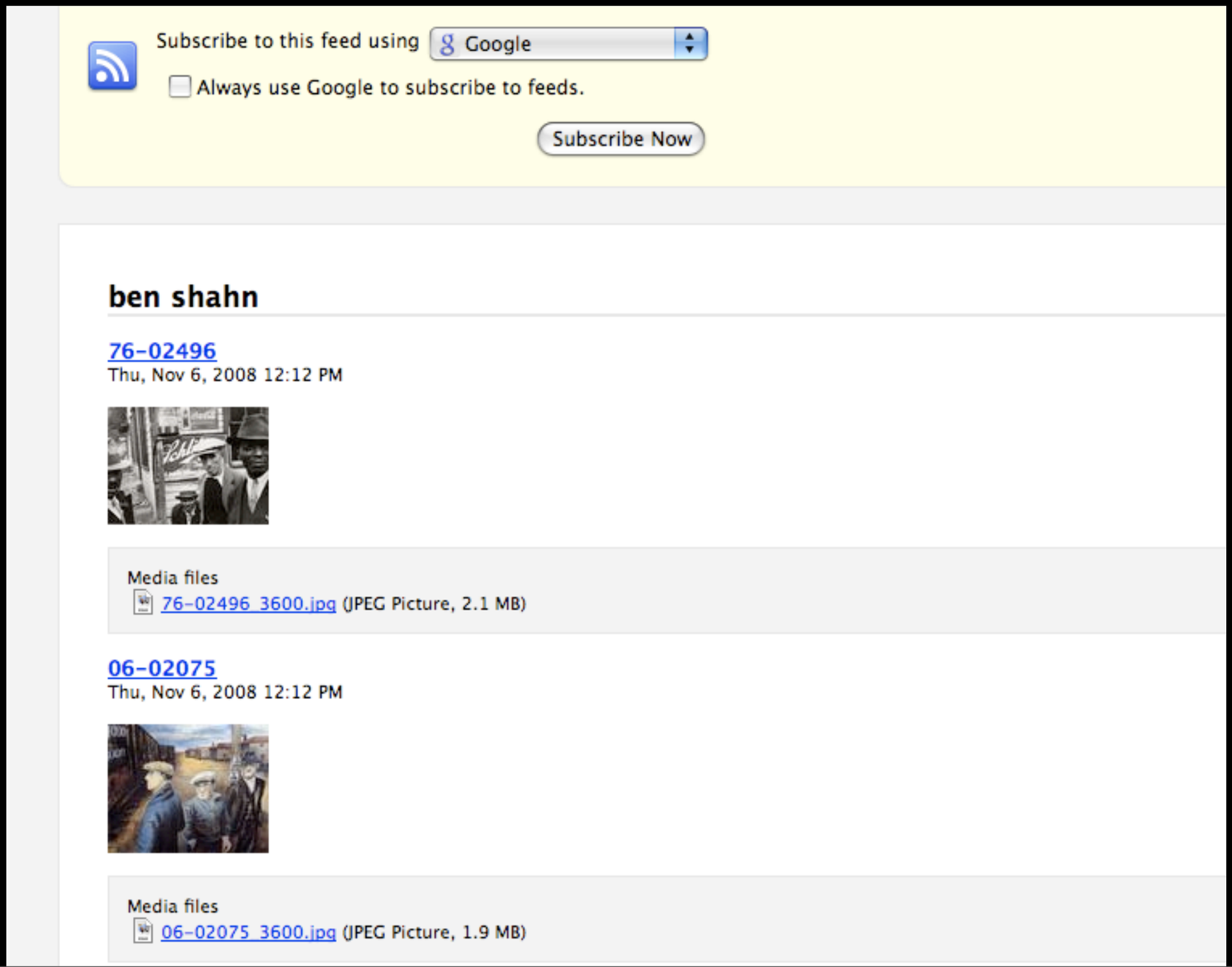
Media files
00-04697_3600.jpg (JPEG Picture, 7.9 MB)

74-06723
Fri, Oct 17, 2008 10:00 PM

Media files
74-06723_3600.jpg (JPEG Picture, 7.8 MB)

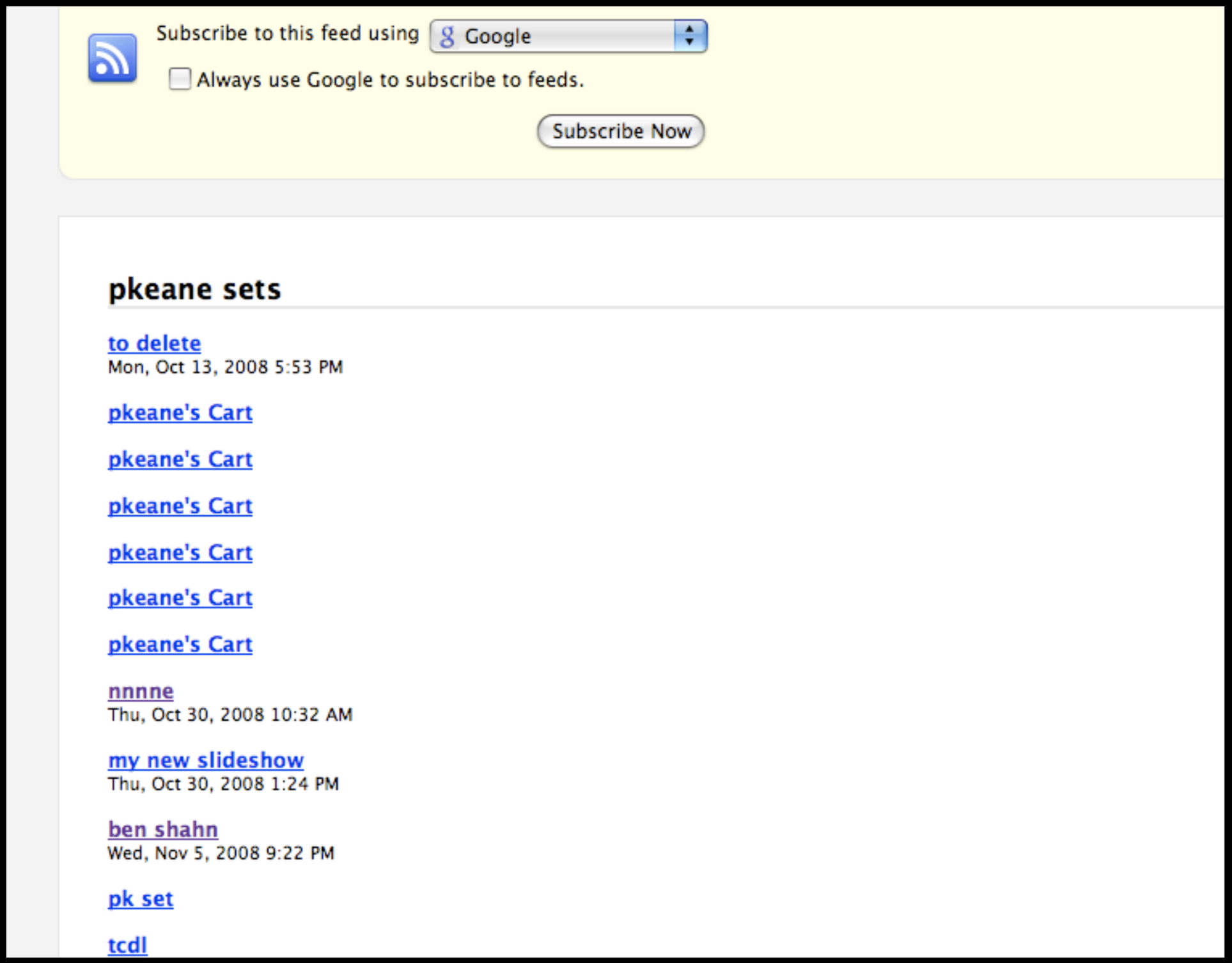
Feeds in DASe

http://www.laits.utexas.edu/dasebeta/tag/pkeane/ben_shahn.atom



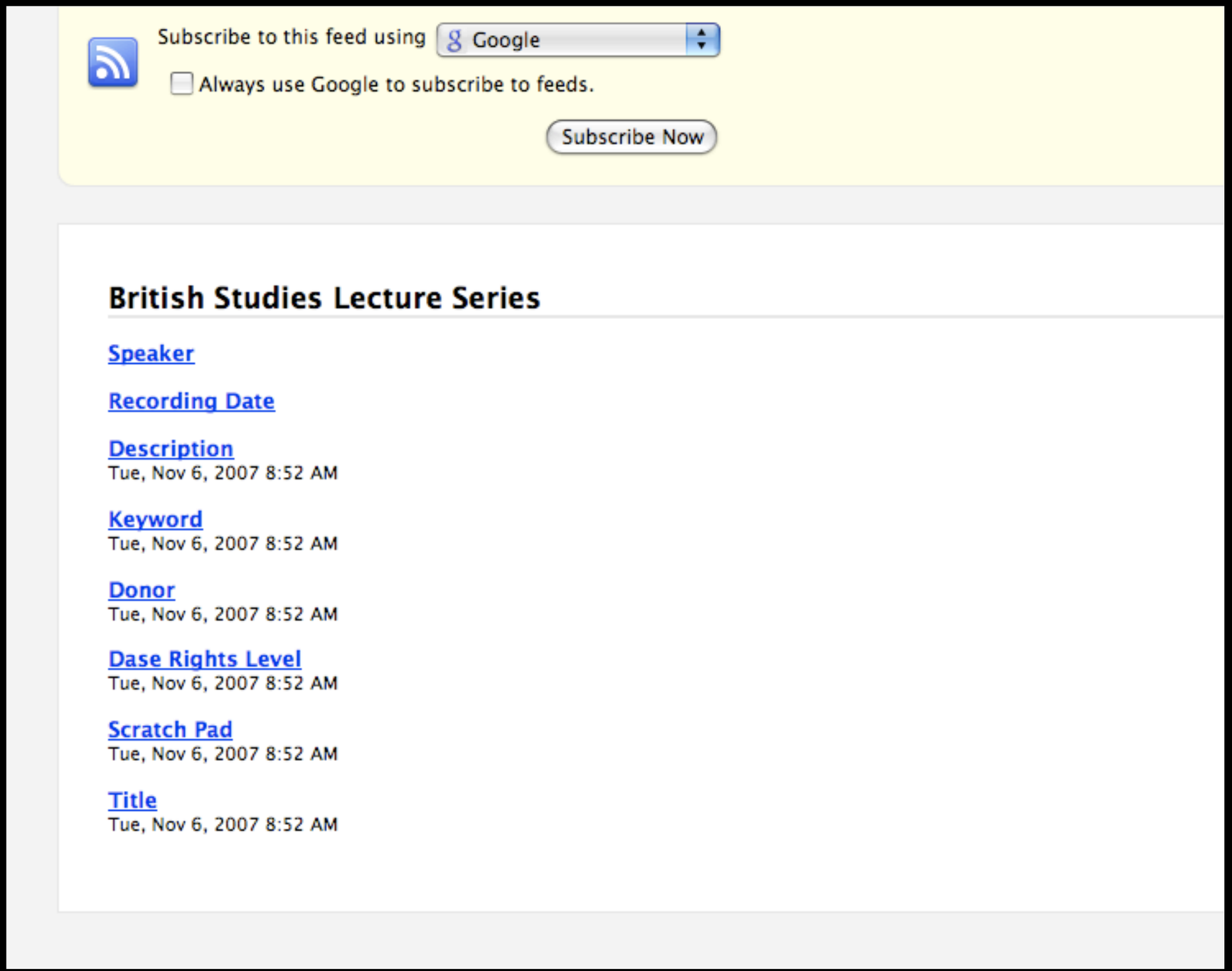
Feeds in DASe

http://www.laits.utexas.edu/dasebeta/user/pkeane/sets.atom



Feeds in DASe

http://www.laits.utexas.edu/dasebeta/collection/bsls/attributes.atom



- **WS-*/RPC/Service-Oriented Architecture**

vs

- **REST/Resource-Oriented Architecture**

try to build a better front door...

...or knock down the walls.

What is REST?

- Representational State Transfer
- Coined by Roy Fielding for his PhD thesis
- Describes the architecture of the web
- Is robust and scalable

Designing a RESTful Application

- Identify resources and representations
- Give them names (URIs)
- Define operations for each (GET, POST, PUT, DELETE)

URI Templates

```
'user/{eid}/sets' => 'sets',
'collection{collection_ascii_id}' => 'collection',
'collection{collection_ascii_id}/serial_numbers' => 'serial_numbers',
'collection{collection_ascii_id}/archive' => 'archive',
'collection{collection_ascii_id}/attributes' => 'attributes',
'collection{collection_ascii_id}/items/by/md5/{md5}' => 'items_by_md5',
```

DASe as REST framework

- name resources (URI template)
- provide per-format per-method actions:
  - getCollectionsAtom
  - putItem
  - postToMedia
  - deleteUser

Atom Publishing Protocol

- **The Atom Publishing Protocol is an application-level protocol for publishing and editing Web Resources using HTTP and XML.**

Atom Publishing Protocol

- **Collections**: Sets of Resources, which can be retrieved in whole or in part.
- Editing: **Creating**, **editing**, and **deleting** Resources.

Atom Publishing Protocol

- Follows the principles of RESTful architectural design
- Is widely used: Google GData, Microsoft Windows Live Writer, IBM Lotus Connectios, etc.

in Object-Oriented Terms...

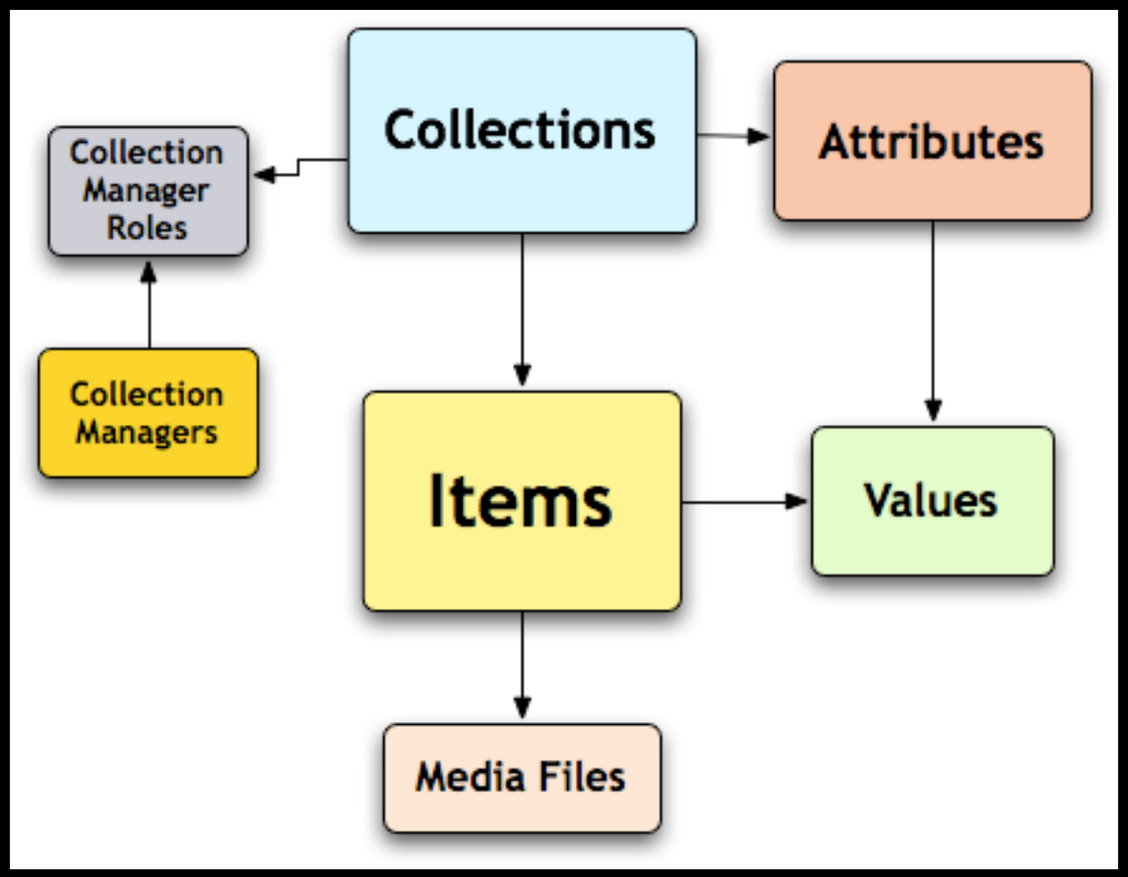
- REST as an “abstract interface” for the web
- Atom/AtomPub provides a concrete implementation
- Atom/AtomPub can be further subclassed for particular cases

SynOA: Syndication Oriented Architecture

- Feeds not only for sharing Information with the world
- Feeds for sharing data between parts of a system
- plus AtomPub: application becomes a set of small pieces loosely joined
- microcosm of the web

DASe & REST: five case studies

- DASe itself
- Simple Uploader
- eLucy.org
- Blackboard Integration
- Google Spreadsheet Interop


Collections
Collection Manager Roles
Attributes
Collection Managers
Items
Values
Media Files

URI Templates

```
'user/{eid}/sets' => 'sets',
'collection{collection_ascii_id}' => 'collection',
'collection{collection_ascii_id}/serial_numbers' => 'serial_numbers',
'collection{collection_ascii_id}/archive' => 'archive',
'collection{collection_ascii_id}/attributes' => 'attributes',
'collection{collection_ascii_id}/items/by/md5/{md5}' => 'items_by_md5',
```

Atom Inside

What Starts Here Changes The World
THE UNIVERSITY OF TEXAS AT AUSTIN
Digital Archive Services
DASe
Home/Search
My Cart (29)
My Sets
Search selected collection(s):
Search
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Germans From Russia (131)
Historic Images of Art & Architecture (Allan T. Kohl Collection) (351)

Atom Inside

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DASe Collections

American West Collection
Sun, Jan 1, 2006 1:00 AM

american_west

Archivision (Art and Architecture) Collection
Mon, Jul 21, 2008 1:28 PM

archivision

Art & Art History Visual Resources Collection
Sun, Jan 1, 2006 1:00 AM

vrc

Asian Studies Collection
Sun, Jan 1, 2006 1:00 AM

asian_studies

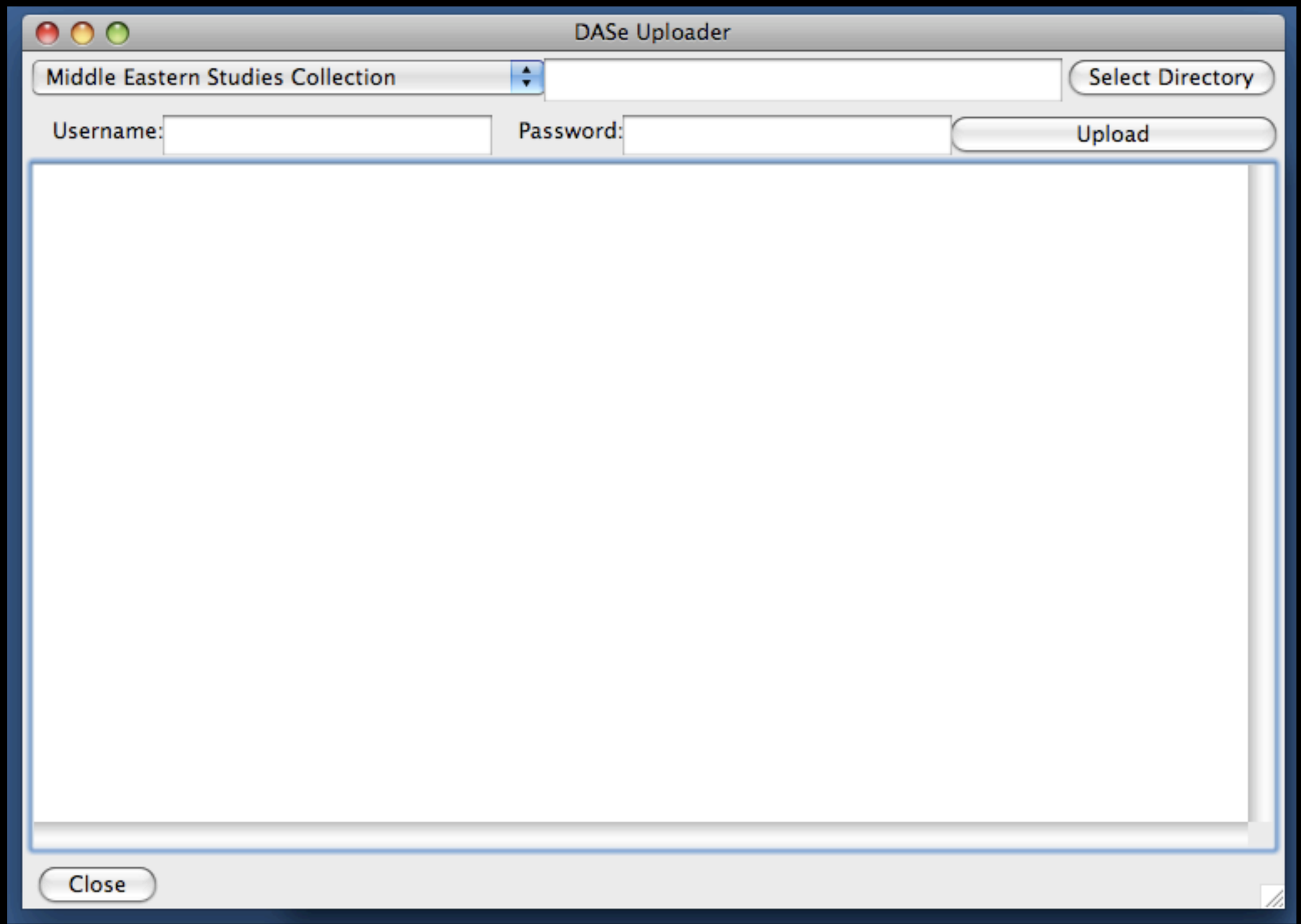
Blanton Museum Collection
Sun, Jan 1, 2006 1:00 AM

blanton

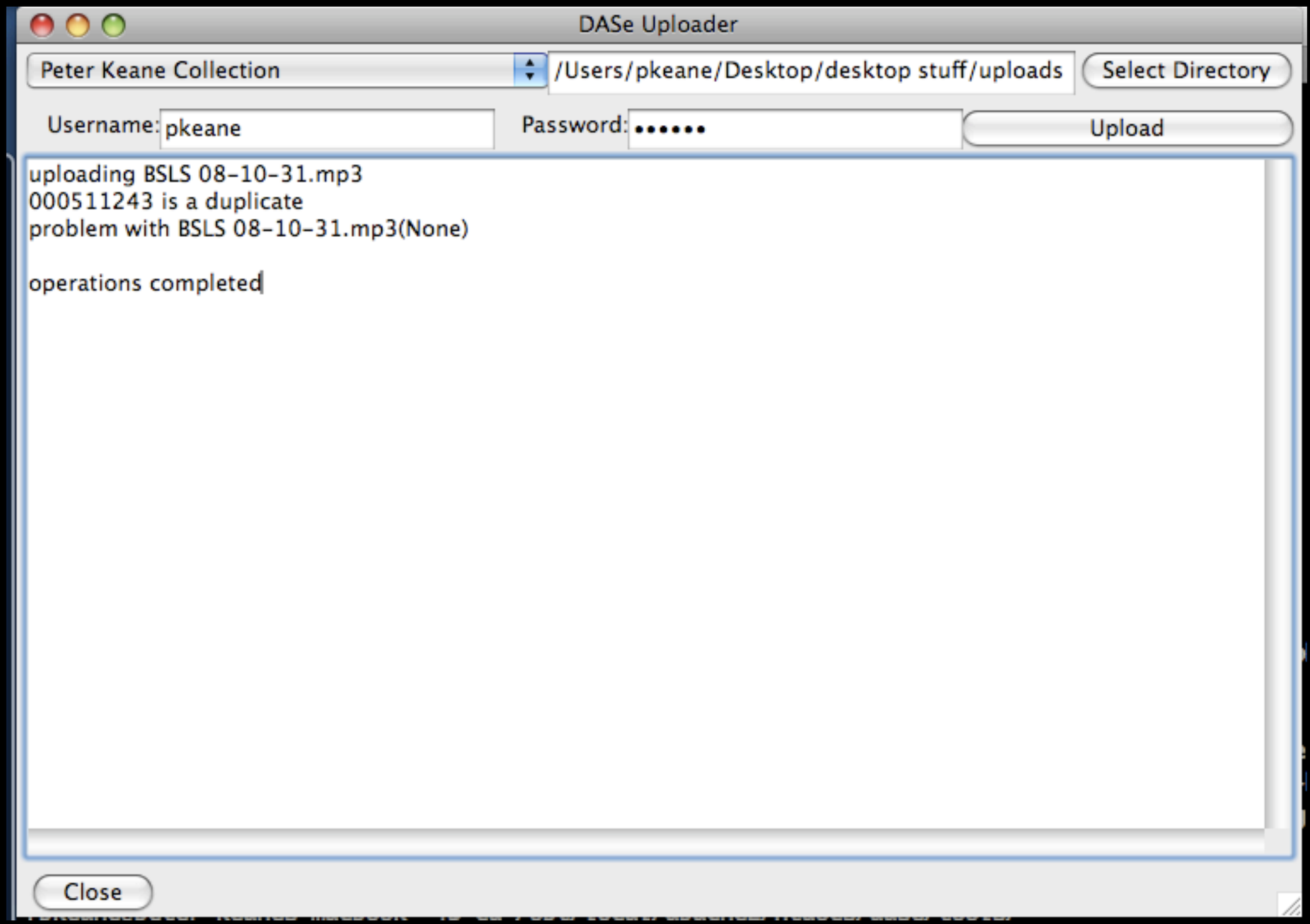
British Studies Lecture Series
Sun, Jan 1, 2006 1:00 AM

bsls

Simple Uploader



Simple Uploader



Simple Uploader

- get a list of collections
- authenticate user
- check for duplicate
- post file and return http code

Example: eLucy.org

THE UNIVERSITY OF TEXAS AT AUSTIN

DEPARTMENT OF ANTHROPOLOGY

eLucy

meet Lucy

eLucy is a website that will help you to learn about the world's most famous fossil, Lucy, a member of the species Australopithecus afarensis, who lived 3.2 million years ago. Lucy was discovered in 1974 in Ethiopia, and she is unique because over 40% of her skeleton was recovered, making her one of the most complete australopithecine fossils ever found. This website provides activities and lessons that will help you to learn about Lucy's place within the history of human evolution. Some activities are online, but others can be completed offline. After studying Lucy, you can investigate other aspects of human evolution at eFossils.org. You can learn more about the human and primate skeleton at eSkeletons.org.

Lucy began her 6-year public tour of the United Stated in 2007. Beginning on October 4, 2008, Lucy can be viewed in

TEACHERS > Lessons

This section is a collection of lessons and suggested activities that may be used to supplement science classes focusing on human evolution and human origins.

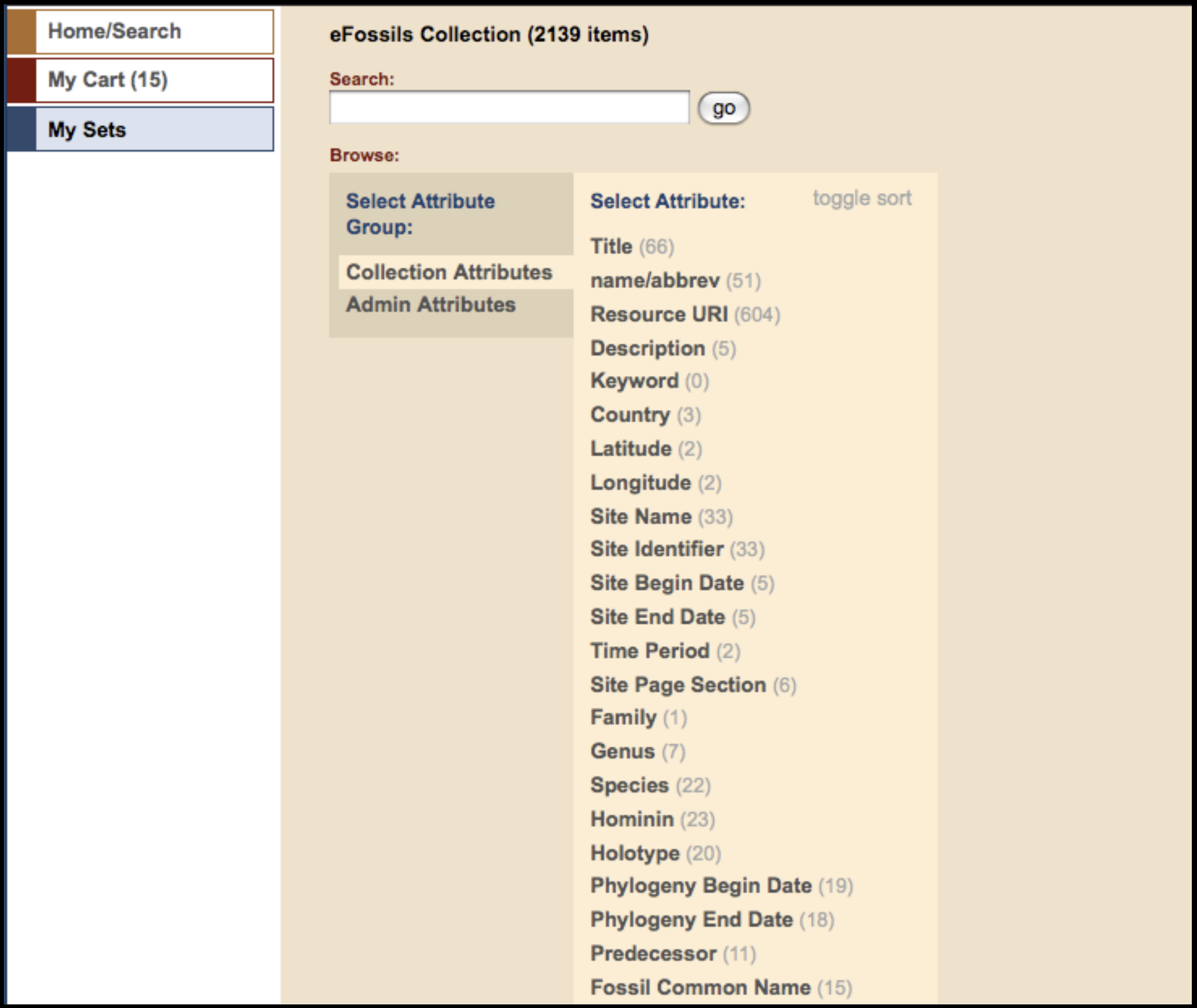
STUDENTS > Activities

This section contains crosswords, puzzles, life-size printouts and other activities to help students learn more about Lucy and human origins.

COMPARE LUCY

Visitors can view individual bones from Lucy and compare her bone morphology with the anatomy of chimpanzees and modern humans. Just select an element to get started.

Example: eLucy.org



Example: eLucy.org

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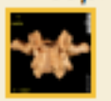
eLucy

COMPARE LUCY: Lumbar Vertebra - Dorsal / Posterior

Lumbar Vertebra | Dorsal / Posterior

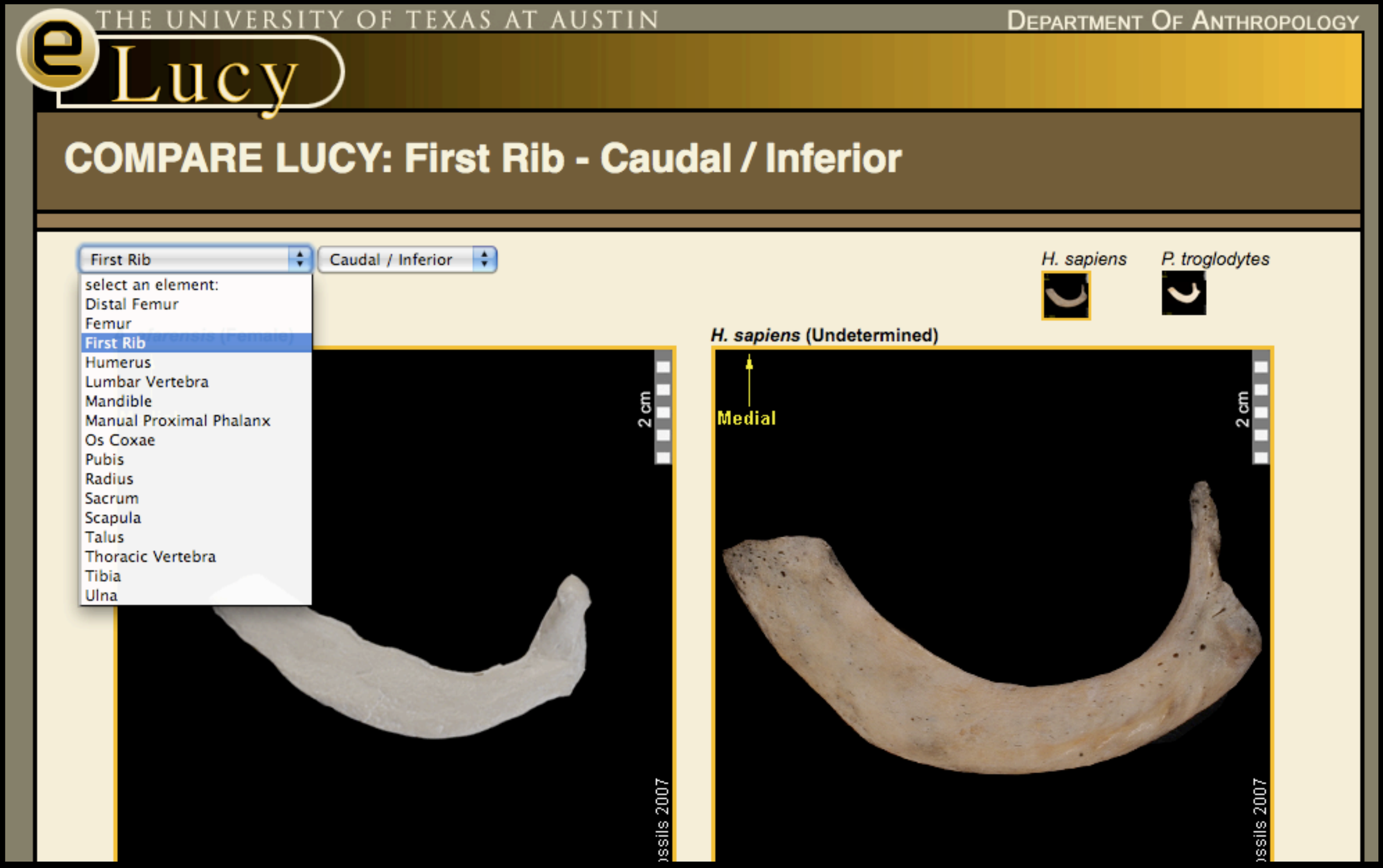
H. sapiens *P. troglodytes*



A. afarensis **(Female)**

H. sapiens **(Female)**

Example: eLucy.org



Example: eLucy.org

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DEPARTMENT OF ANTHROPOLOGY

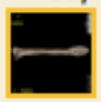
eLucy

COMPARE LUCY: First Rib - Medial

First Rib | Medial

select a view
Caudal / Inferior
Cranial / Superior
Dorsal / Posterior
Medial
select a view

H. sapiens *P. troglodytes*



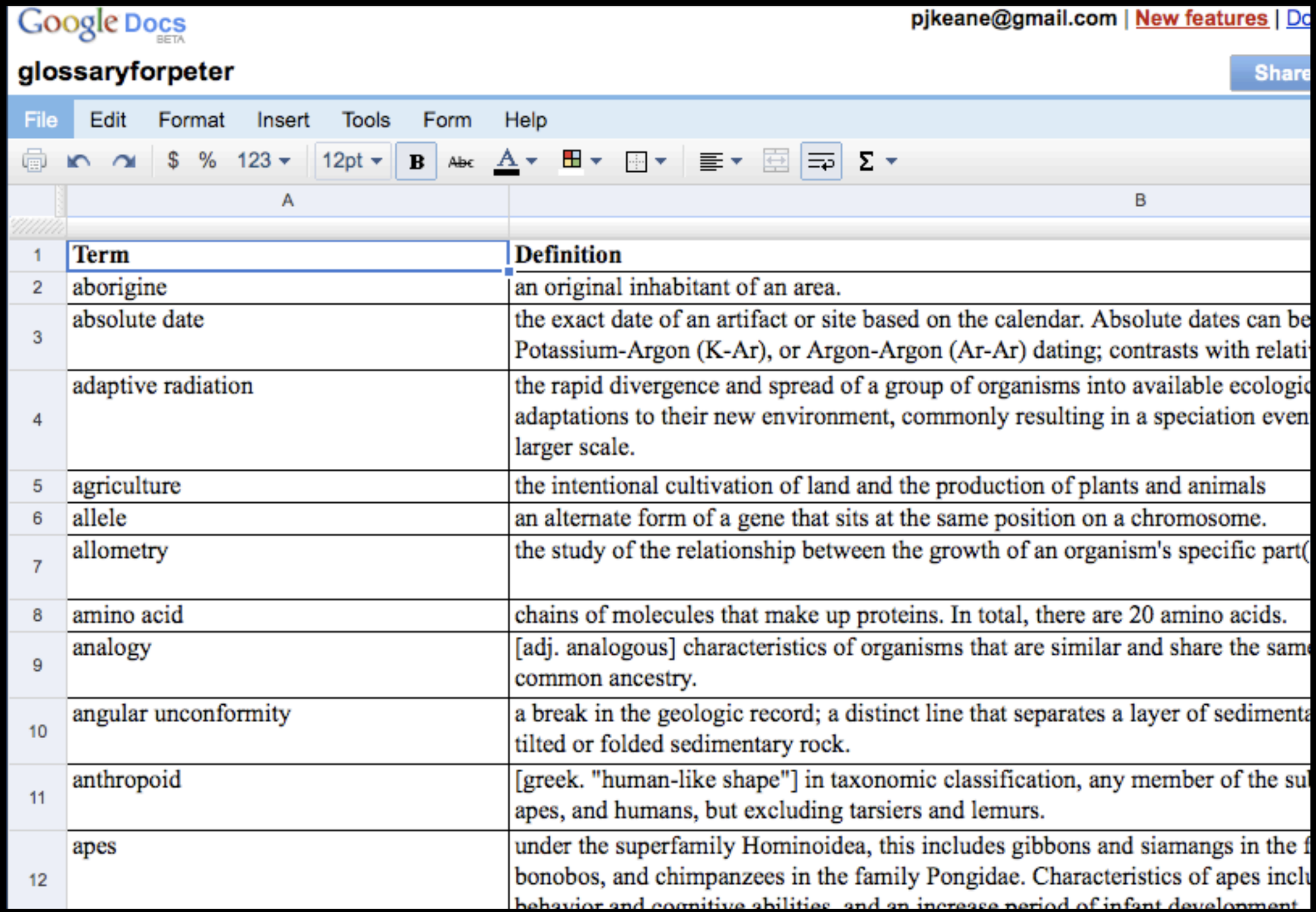
A. afarensis **(Female)**

H. sapiens **(Undetermined)**

DASe/Blackboard Integration

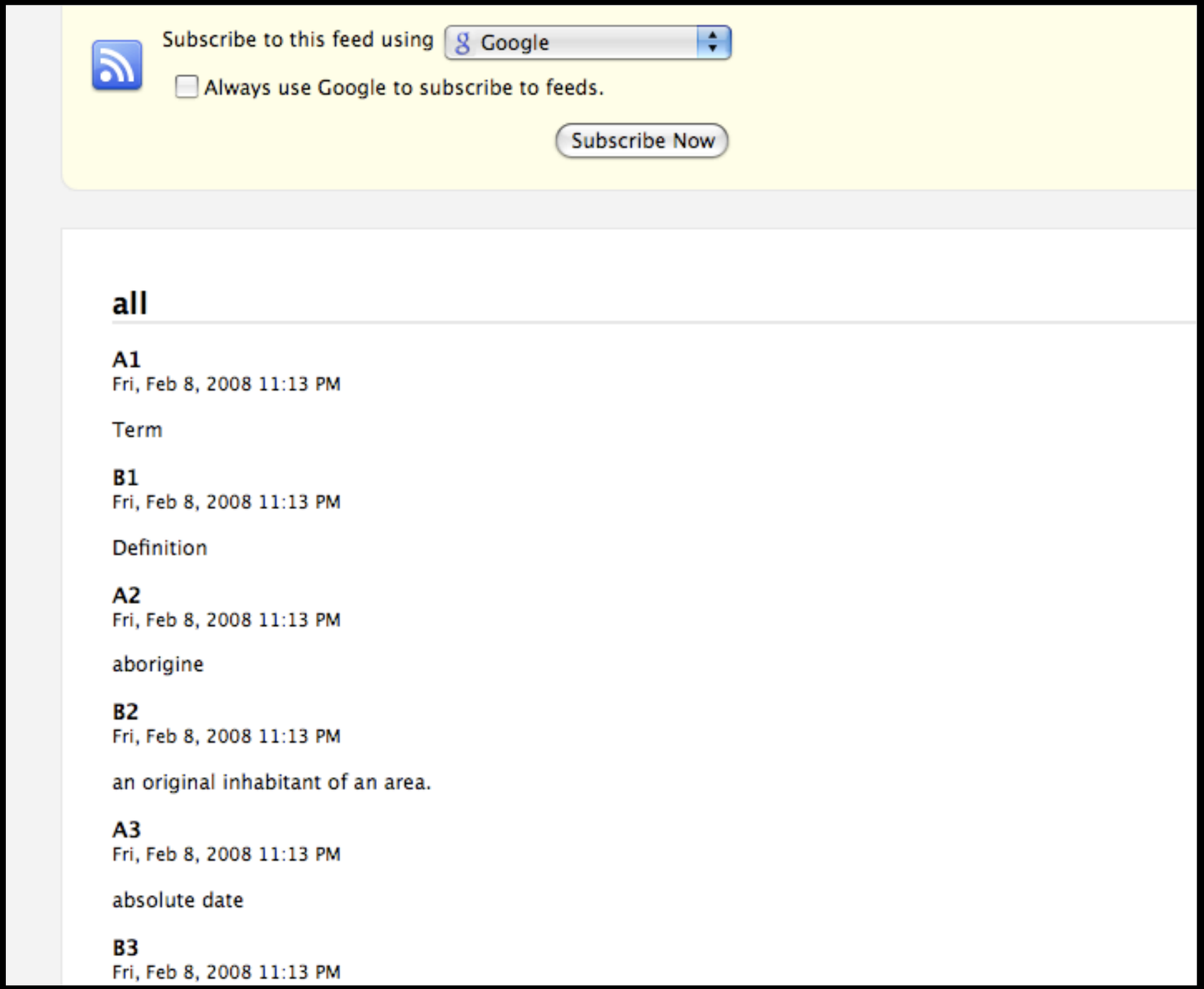
- OAuth - style authentication (interaction resuse!)
- Users view their own DASE “sets” in Blackboard
- Faculty “publish” a set to a course
- Students access course sets in Blackboard

Google Spreasheet Interop



	A	B
1	**Term**	**Definition**
2	aborigine	an original inhabitant of an area.
3	absolute date	the exact date of an artifact or site based on the calendar. Absolute dates can be Potassium-Argon (K-Ar), or Argon-Argon (Ar-Ar) dating; contrasts with relati
4	adaptive radiation	the rapid divergence and spread of a group of organisms into available ecologic adaptations to their new environment, commonly resulting in a speciation even larger scale.
5	agriculture	the intentional cultivation of land and the production of plants and animals
6	allele	an alternate form of a gene that sits at the same position on a chromosome.
7	allometry	the study of the relationship between the growth of an organism's specific part(
8	amino acid	chains of molecules that make up proteins. In total, there are 20 amino acids.
9	analogy	[adj. analogous] characteristics of organisms that are similar and share the same common ancestry.
10	angular unconformity	a break in the geologic record; a distinct line that separates a layer of sedimenta tilted or folded sedimentary rock.
11	anthropoid	[greek. "human-like shape"] in taxonomic classification, any member of the su apes, and humans, but excluding tarsiers and lemurs.
12	apes	under the superfamily Hominoidea, this includes gibbons and siamangs in the f bonobos, and chimpanzees in the family Pongidae. Characteristics of apes inclu behavior and cognitive abilities, and an increase period of infant development

Google Spreasheet Interop



OAI-ORE and Atom

- Atom is one possible serialization of a Resource Map OAI-ORE
- ORE/Atom is Atom and will be useful in an Atom-aware system
- ORE offers a valuable way to think about aggregated resources
- AtomPub can enable Resource Map creation

get the code:

dase.googlecode.com

Google Code

dase

a web-based digital assets management and presentation framework

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DASe Powered

What is DASe?

DASe (Digital Archive Services) is a lightweight digital asset repository. DASe provides a platform for users to store, catalog, aggregate, and share images, audio, video, and documents. End-users can search or browse items in DASe, and can create "sets" to save, share or present in a simple slideshow format. DASe also includes an administrative interface for creating new collections, uploading new items, and adding metadata to existing items.

In addition to the web interface, all of the DASe functionality is available through Atom/AtomPub? web services.

DASe was developed by Liberal Arts Instructional Technology Services at the University of Texas at Austin. The current installation at UT Austin includes over 4 million pieces of metadata about 300K+ audio, video, images, and document files. Public beta release is scheduled for Dec 2008.

What technologies does DASe use?

DASe is written in PHP and can use MySQL, PostgreSQL, or SQLite as a backend. The DASe code base also includes some client utilities written in Python (including a small GUI file uploader) written in Python.

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