

"Preserving Brand-New Buildings"

FACADE

Future-proofing Architectural Computer-Aided Design

William Reilly - Technical Projects Manager, Tech. R&D, MIT Libraries

http://facade.mit.edu/presentations/REILLY_DLFFall2008_MIT_FACADE.ppt.htm

- **MacKenzie Smith**

Associate Director for Technology, MIT Libraries
Principal Investigator, FACADE Project

- **Ann Whiteside**

Head, Rotch Library of Art and Architecture
MIT Libraries

In conjunction with:



Contents of Talk

- Project Scope
 - Problem, Goals
 - Audiences, Use Cases
 - Datasets We're Working With
- 3D CAD
 - Data Formats; Standards; CAD Tools
 - Preservation Strategies
- Ontology
 - Project Information Model, Workflow
 - Metadata, "Curators Workbench"
 - DSpace Archive
- User Interface

Project Scope

Problem, Goals

- Current architectural data is being lost.
 - Firms, libraries, museums, archives face challenge

- Develop Long-Term Archiving strategy for digital architecture data
 - Especially 3D CAD models

- Demonstrate in DSpace digital archive
 - Using SIMILE's Longwell faceted browser

Audiences

- ☐ Practice (Architects, Designers, Engineers)
- ☐ Research (Historians, Scholars)
- ☐ Teaching (Instructors, Students)
- ☐ General (Public, Casual)

Use Cases

Blue signifies *future* use cases

- Practice (Architects, Designers, Engineers)
 - (Internal) Perform current work; re-use recent work
 - (External) Data interoperation with partner firms
 - ("Read Only") Consult own work
- Research (Historians, Scholars)
 - (Design) Study history of design, "design intent"
 - (Business) Study process, techniques, economics
- Teaching (Instructors, Students)
 - (Design) Study history of design, "design intent"
 - (Practice) Study models to learn, extend CAD
 - (Computation) Capabilities, constraints, on design
- General (Public, Casual, Educational)
 - Study architectural history; view buildings, designs

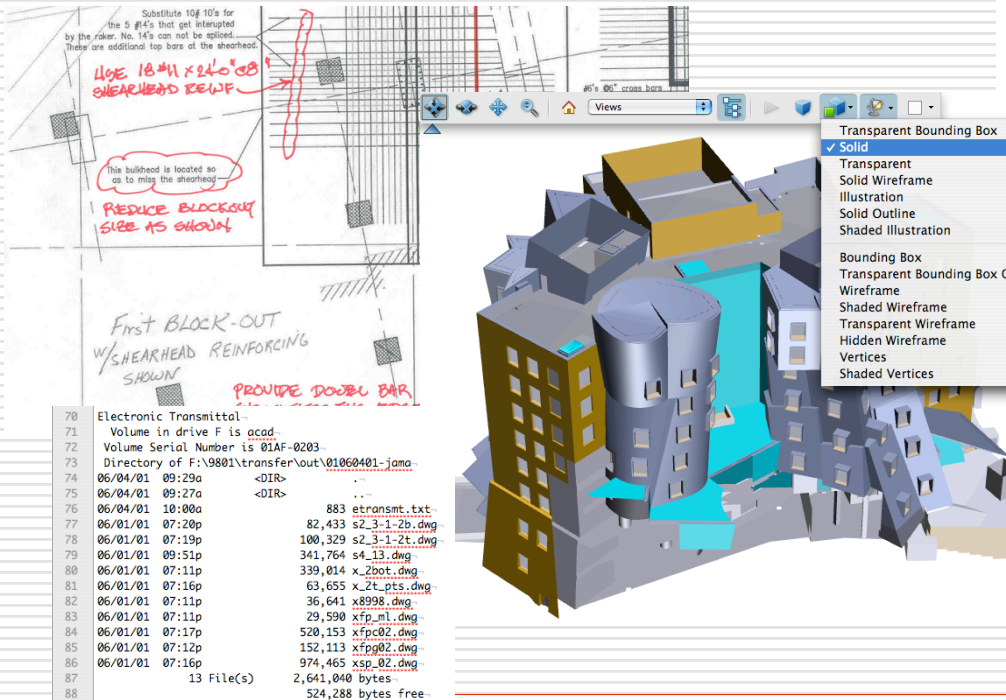
Datasets We're Working With

- Frank Gehry, MIT Stata Center
 - Cambridge, Mass. (2004)
 - CATIA
- Moshe Safdie, U.S. Institute of Peace
 - Washington, D.C. (2009)
 - Revit
- Thom Mayne, Caltrans
 - Los Angeles, Calif. (2004)
 - Microstation



"Meta" Data

- ☐ 10Ks of files
- ☐ 10s of Gbs
- ☐ 100+ file formats
- ☐ File system
- ☐ Almost no metadata
- ☐ *Collab. systems*



Substitute 10g 10's for the S 10's that get interrupted by the shear. No 10's can not be applied. There are additional top bars at the shearhead.

110E 18" x 11" x 24" x 24" SHEARHEAD REINFORCING

REDUCE BLOCK-OUT SIZE AS SHOWN

First BLOCK-OUT w/ SHEARHEAD REINFORCING SHOWN

PROVIDE DOUBLE BAR

Electronic Transmittal -
Volume in drive F is acad-
Volume Serial Number is 01AF-0203
Directory of F:\9801\transfer\out\01060401-jama-
06/04/01 09:29a <DIR>
06/04/01 09:27a <DIR>
06/04/01 10:00a 883 etransmt.txt
06/01/01 07:20p 82,433 s2_3-1-2b.dwg
06/01/01 07:19p 100,329 s2_3-1-2t.dwg
06/01/01 07:51p 341,764 s4_13.dwg
06/01/01 07:11p 339,014 x_2bot.dwg
06/01/01 07:16p 63,655 x_2t_pts.dwg
06/01/01 07:11p 36,641 x8998.dwg
06/01/01 07:11p 29,590 xfp_m1.dwg
06/01/01 07:17p 520,153 xfp02.dwg
06/01/01 07:12p 152,113 xfp02.dwg
06/01/01 07:16p 974,465 xsp_02.dwg
13 File(s) 2,641,040 bytes
524,288 bytes free



REQUEST FOR INFORMATION

REF CODE:
This RFI form is prepared by the Contractor Documents, or to notify the architect of conditions

AREA REF:

RFI #: 7 REV #:

SUBS RFI #:

SUB:

FOR: Leblanc, Claude

uest

Provide a response to the following

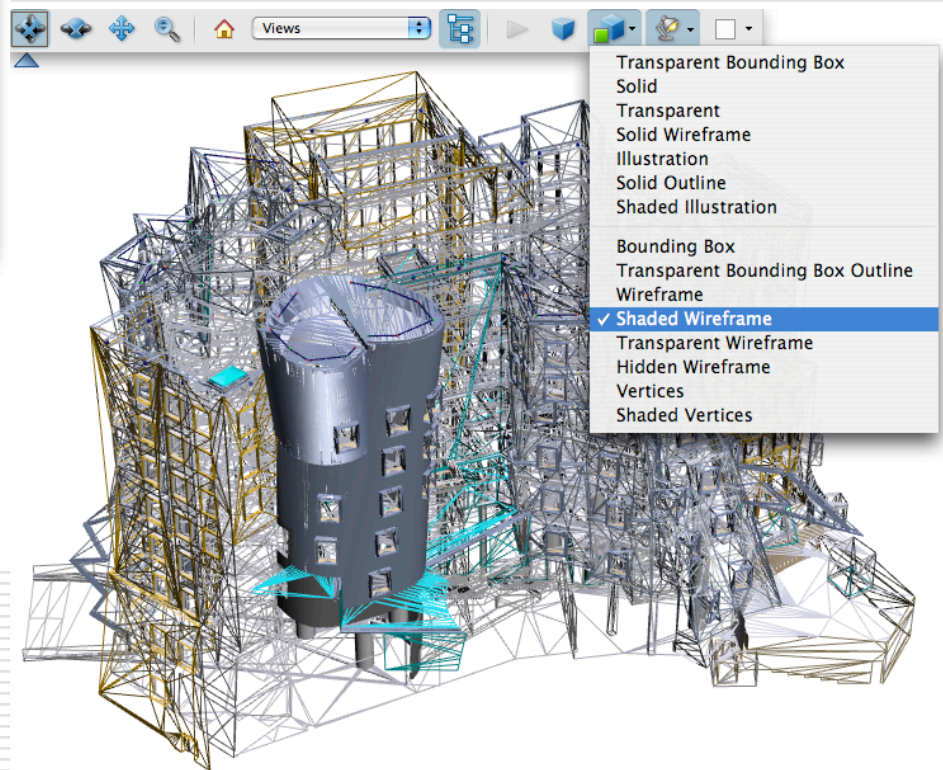
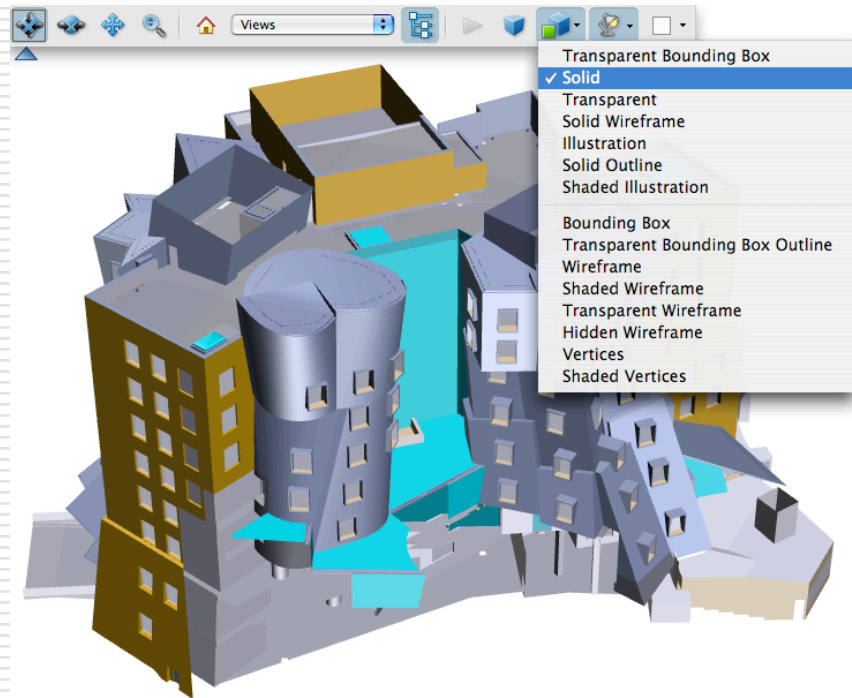
CONFIRMATION needed by

current_master_model_list.xls

	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
	ISSUE DATES																			
S.I. 201	11.12.01																			
S.I. 186	9.17.02																			
S.I. 176	9.17.02																			
S.I. 175	8.13.02																			
S.I. 122																				
S.I. 89 & Issue #10																				
Addendum 1 3.18.02																				
Structure Refresh 3.15.02																				
Issue #10 01.21.02																				
S.I. 41 01.21.02																				
PR 12 12.19.01																				
S.I. 41 12.05.01																				
S.I. 37 10.25.01																				
S.I. 24 10.18.01																				
Addendum #3 (To Issue #6) 08.27.01																				
S.I. 18 01.18.21																				
Addendum #2 (To Issue #6) 07.30.01																				
Addendum #1 (To Issue #6) 07.02.01																				
Issue 8 Shell & Core (Part 1-4) Construction & Permit Set 04-30-01																				
Issue #8 Shell & Core (Part 4) For construction																				
ISSUE #6.1 Construction Set - Part 2 03-05-01																				

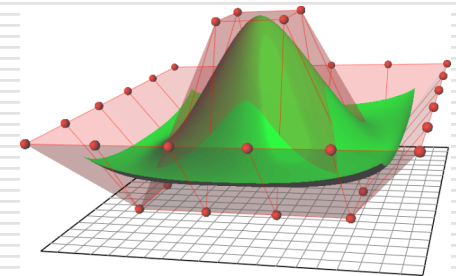
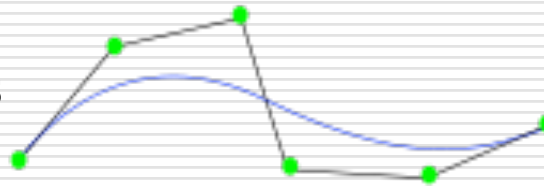
3D CAD

3D PDF: Quick Look



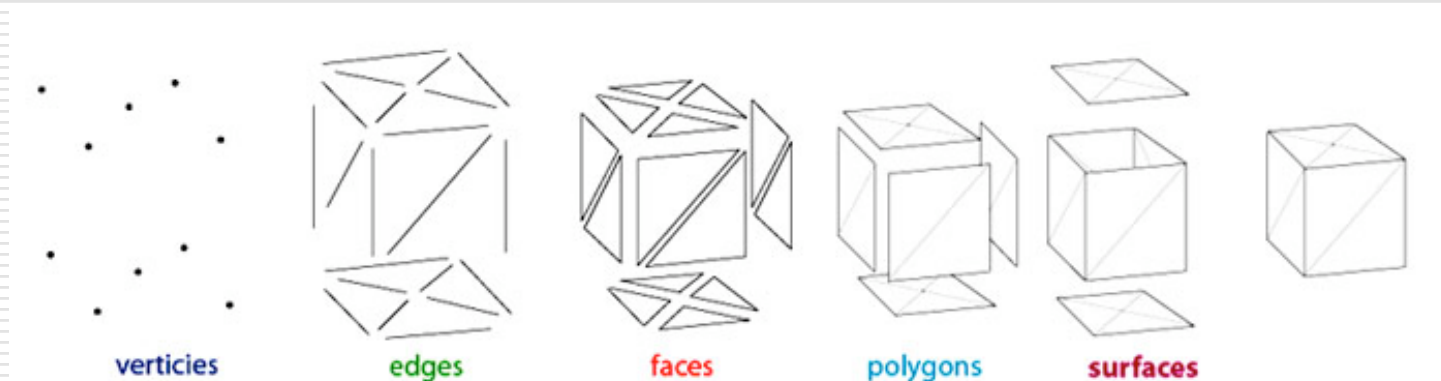
Terminology: Geometry

□ **NURBS** “Non-Uniform Rational Basis Splines”
Freeform curves, surfaces. Weighted points



□ **Mesh** Collection of vertices, edges and faces

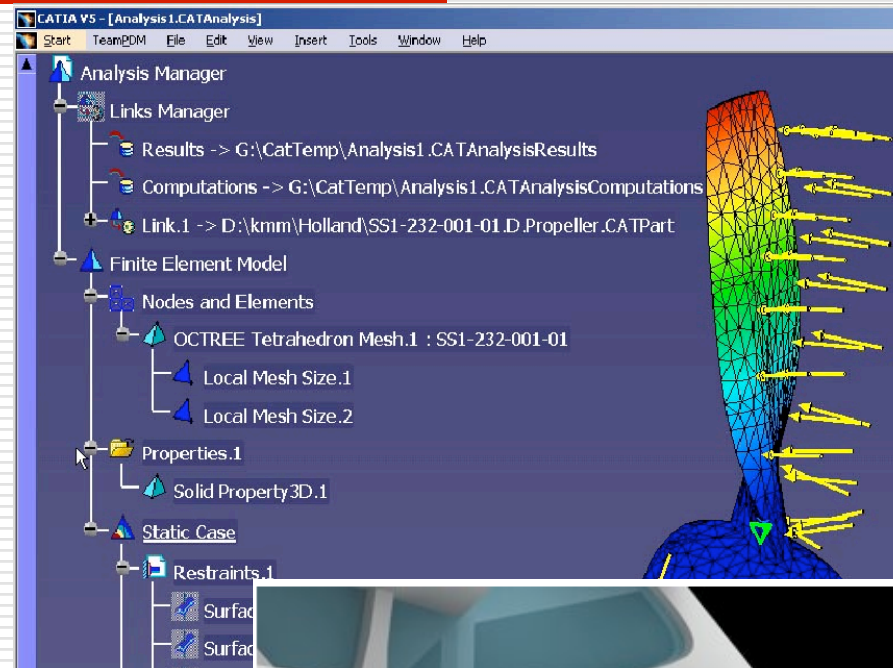
<http://en.wikipedia.org/wiki/Nurbs>
http://en.wikipedia.org/wiki/Polygon_mesh



Terminology: Parametric

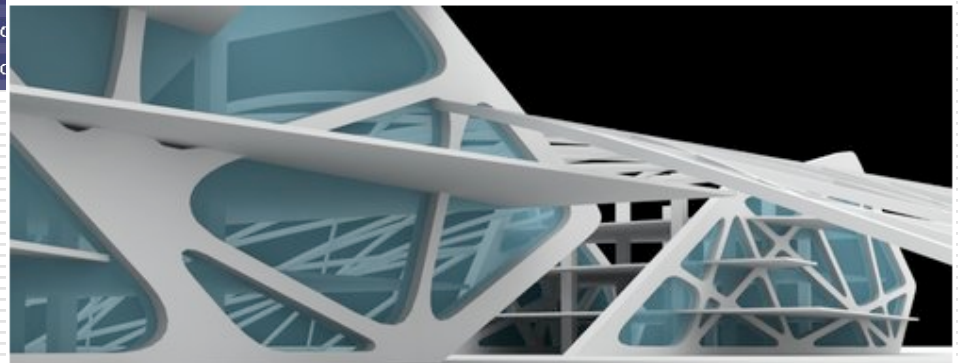
- Parametric
 - CATIA
 - Revit
 - Microstation

- Non-Parametric
 - Rhino
 - Maya



“Features”
vs. just
underlying
geometry

Freeform
surface
modeller...



3D CAD Systems in Architecture

- ❑ Dassault Systemes' **CATIA** (Stata Center)
- ❑ Autodesk's **Revit** (U.S. Inst. Peace)
- ❑ Bentley's **MicroStation** (Caltrans)

- ❑ Vary in [parametric](#) modeling v. inert geometry support
- ❑ Vary in complex ([NURBS](#)) v. simple geometry ([Mesh](#)) support

How CAD products encode geometric and parametric models is unique and proprietary

- ❑ Project deliverable: format representation information

Data Exchange Formats

- Open, Standards-Based

- Model Information

- **STEP (ISO 10303)**

- **IFC (ISO 16739)**

- Geometry Information

- **IGES**

- VRML

- STL

- Display formats (generally available)

- **3D PDF**

- Flash

Blue signifies formats under study

- *Various Industry Data Exchange Solutions*

- *Navisworks*

- *Collada*

- *DXF / DWF*

- *DWG / DGN*

- *Viewers*

- *...*

3D CAD Preservation

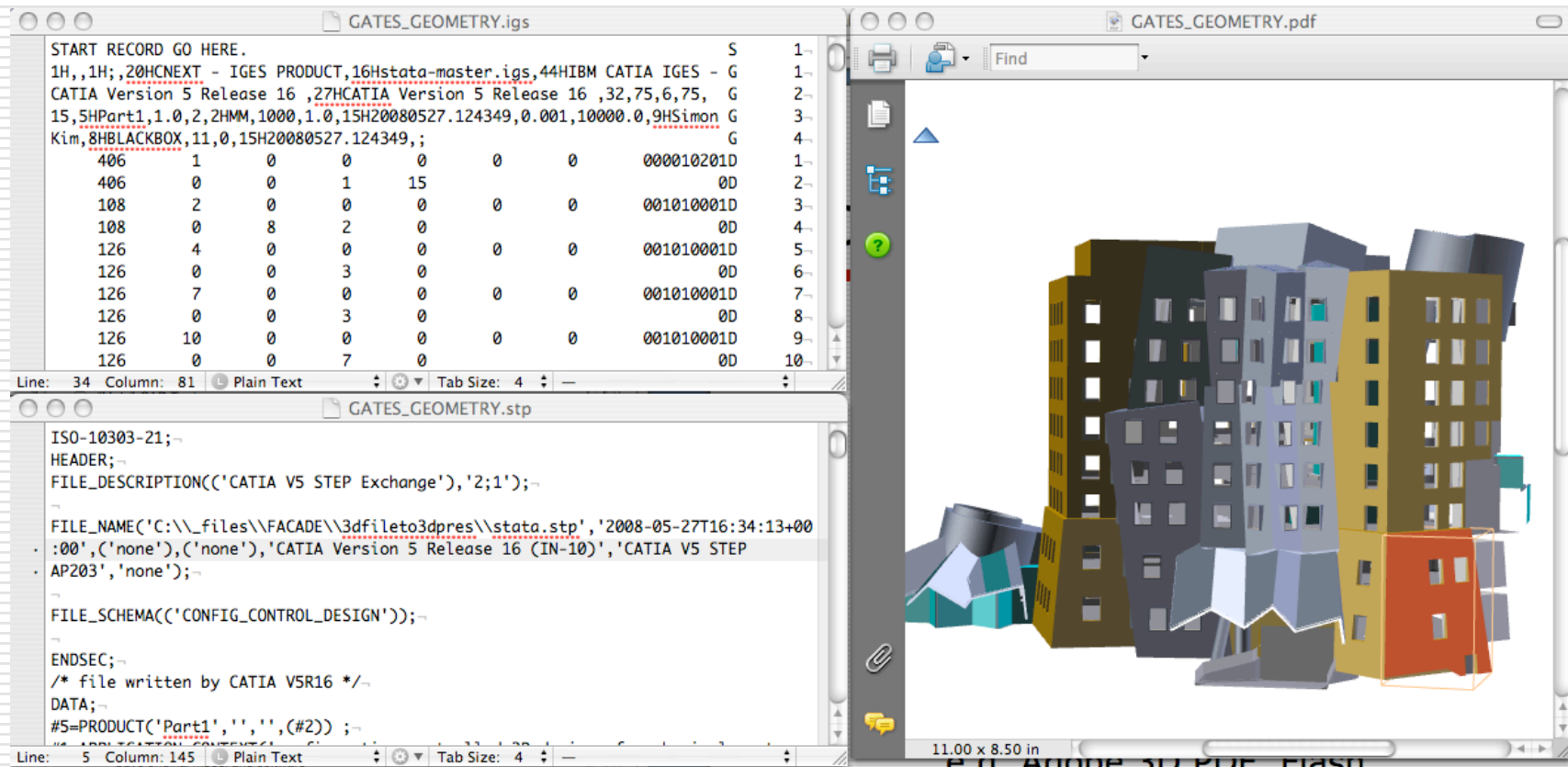
- ☐ Original as Received:

- 0. Save **original** model and software
 - ☐ e.g. CATIA, Revit, DWG

- ☐ Derivatives:

- 1. Export to **rich** standards-based 3D CAD model format
 - ☐ IFC best ("Coordination" Model View)
 - ☐ Otherwise STEP (AP203 and other parts)
 - 2. Export to **dessicated** standards-based shape file format for pure geometry
 - ☐ e.g. IGES, VRML
 - 3. Export to a Web-based **display** format
 - ☐ e.g. Adobe 3D PDF, Flash

3 Derivative Formats: IGES, STEP, 3D-PDF



3D Model Interactivity

If CAD software only exports *inert geometry*,
the original parametric model is lost – i.e.
the preservable artifact is not authentic

Does that matter? probably not...

- Doesn't fully represent design intent
- Can recreate a parametric model later
- Can manipulate the model view (e.g. 3D PDF)

Preserving Other Data

- Adopt existing best practices
 - 2D drawings, other documents in **PDF/A**
 - Images in **TIFF**
 - Video in **MPEG-4**
 - **ASCII (mbox)** for email archives

- But what about project management system data??
 - e.g. Buzzsaw, Constructware, Newforma

Ontology

PIM - Project Information Model

Entire architecture/design ***project***

- Initial sketches
- 3D CAD models, 2D CAD drawings
- Formal outputs (e.g. client presentations)
- Correspondence, RFIs, ASIs, etc.
- Contracts and surveys
- Images, video, other media files
- Every client issuance

Linked together in a ***relationship map***

F.A.C.A.D.E.

Project Information Model / ONTOLOGIES

the Project Information Model

_sort and classify all the available data - 2d, 3d and construction administration (RFI's, change orders) - and map their relations. Model this as an ontology that can be called in an environment such as DSpace or the semantic web.

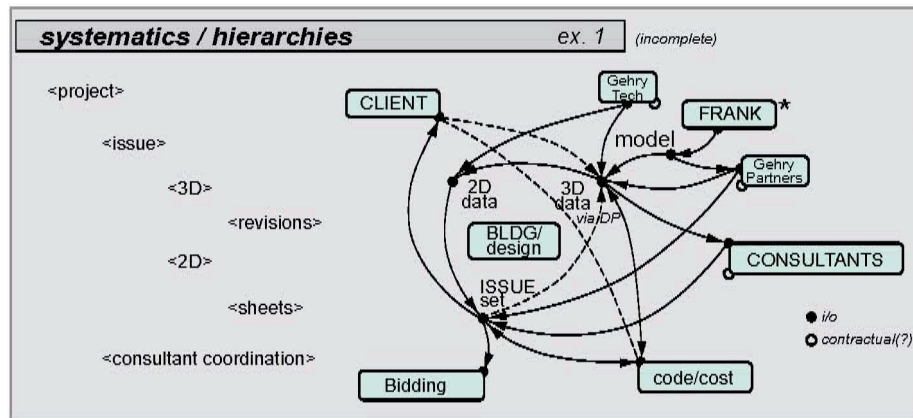
_this formalization of building components is required so that they can be linked/represented in a predictable structure. In this manner, a reasoning methodology can be applied to other works.



Moshe Safdie Associates, Institute of Peace

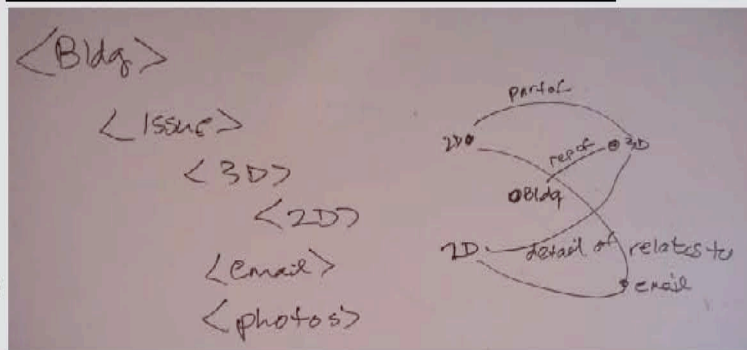


Gehry Partners, Stata Center



* F. Gehry establishes and maintains his own contract separate from Gehry Partners

PIM representations

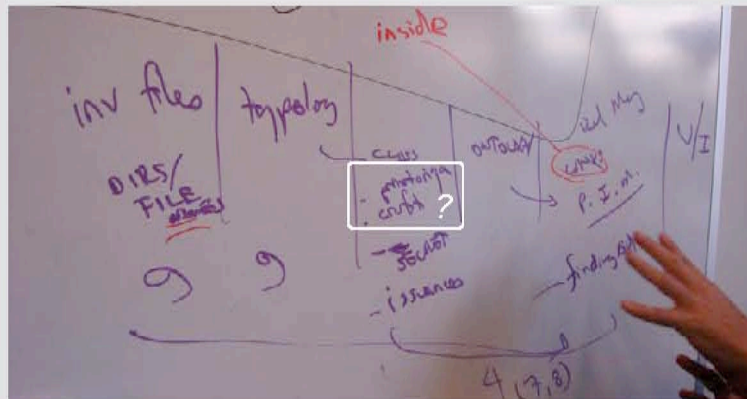


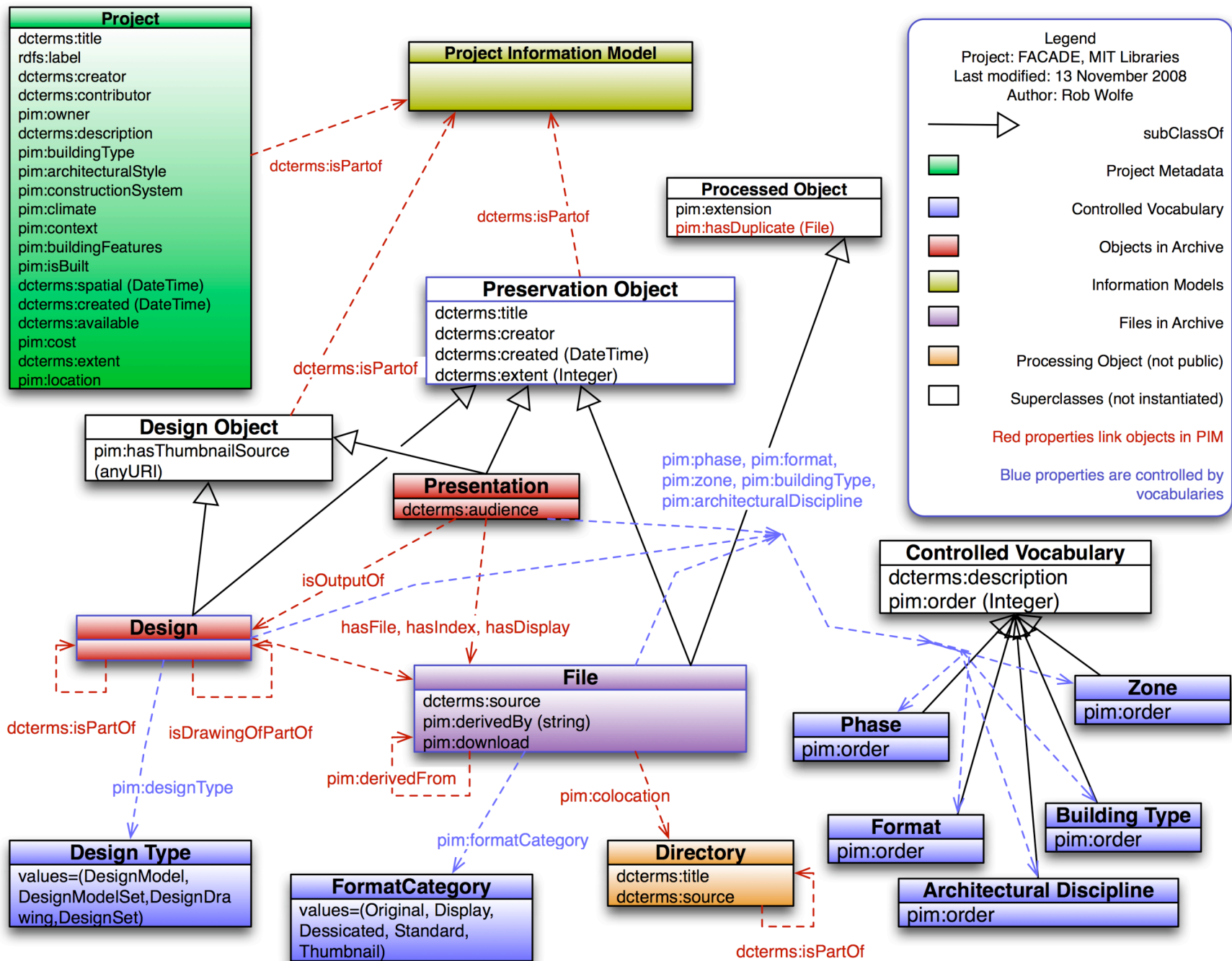
workflow

hierarchies	example	ontology	mapping
directories	architectural _ (3d, 2d, renderings) consultants _ (struct, mech, etc) minutes	_element _instance _class	_office building _admin suite _senior, executive, support,...
files	3d model _ exterior cladding	_attributes	_arch'l, struct., mech, energy efficiency,...
data	reference files _ steel profiles _ assemblies _ mat'l specs _ cost spreadsheet	_relations	_issue sets
		_events	_evaluation (client review, code compliance cost analysis)

PIM
Project
Information
Model

organization modules





Properties on Objects [1 of 2]

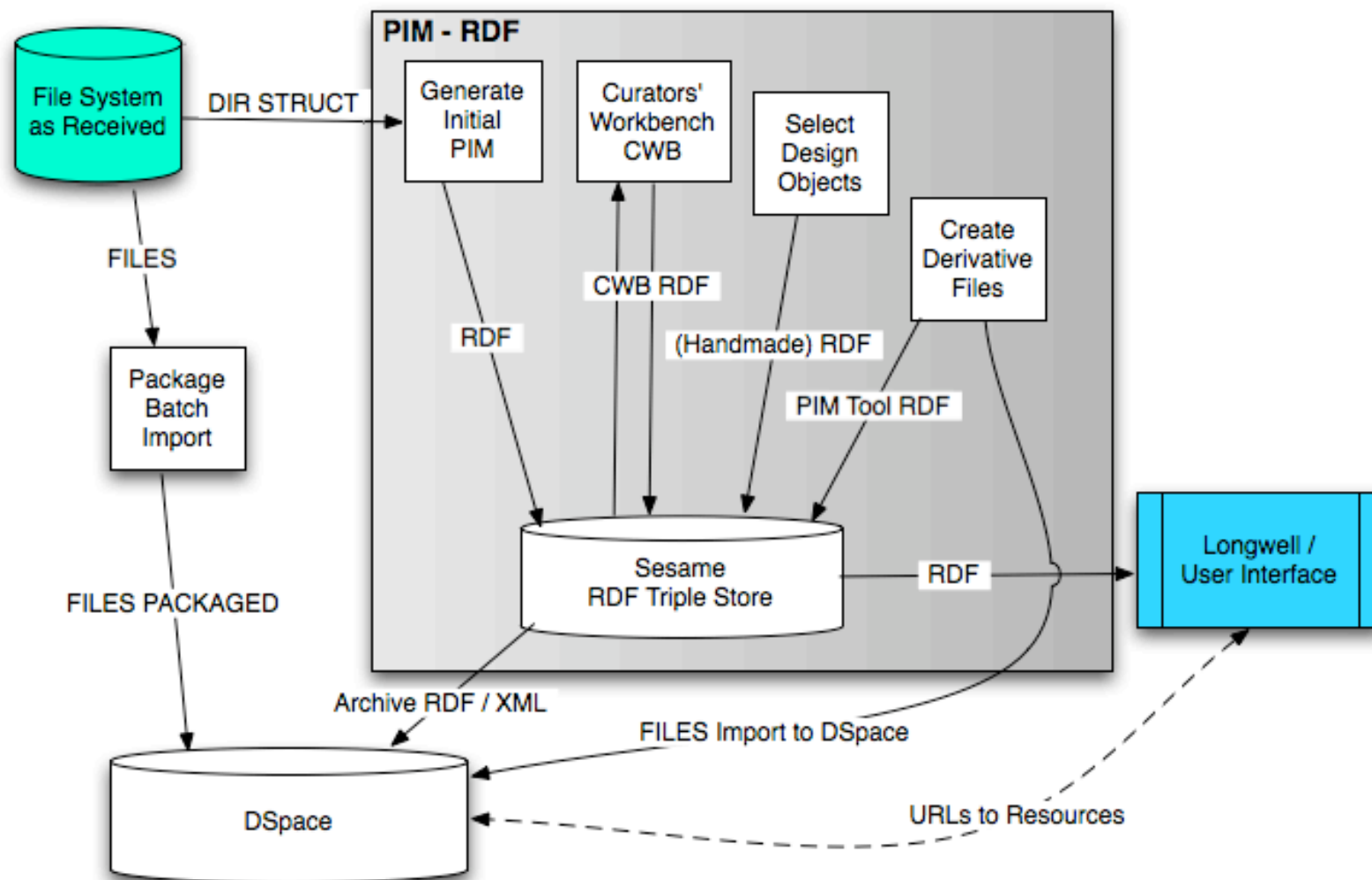
□ Every *File* gets five properties

- Project Phase
e.g. concept, design, construction, etc.
- Building Zone/System
e.g. Stata Center, Gates Tower, 4th floor
- Architectural Discipline
e.g. architectural, electrical, mechanical, structural
- Document Type
e.g. presentation, drawing, communication
- File Format
e.g. CATIA, AutoCAD, Word, PDF

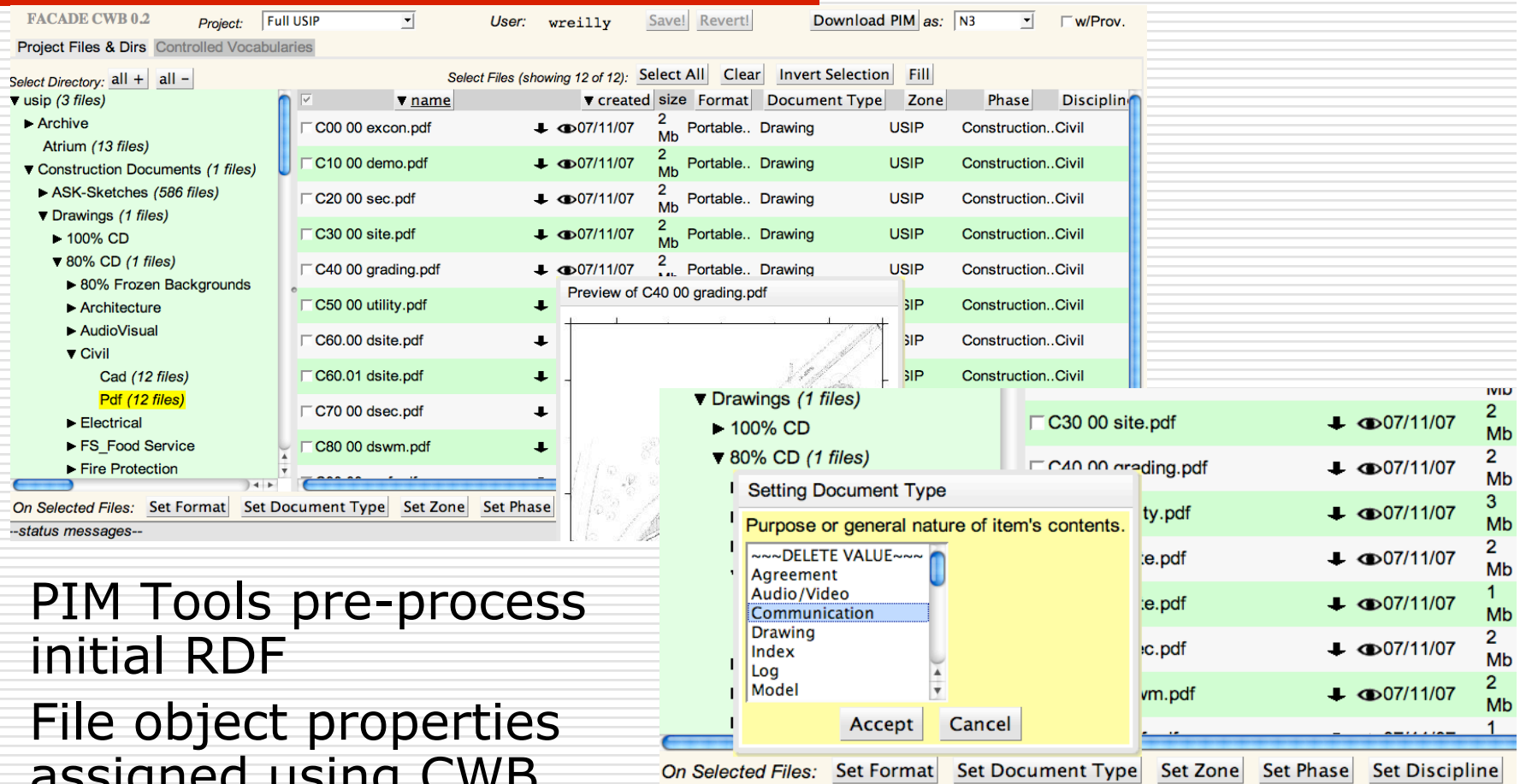
Properties on Objects [2 of 2]

- *Important files* further tagged
 - Hand-selected “Design Objects”
 - Client presentations, etc.
 - 3D models and 2D drawing sets
 - Privileged access in user interface

Preliminary Workflow



Curators' Workbench (CWB)



The screenshot shows the FACADE CWB 0.2 interface. The top bar includes fields for Project (Full USIP), User (wreilly), and Download PIM as (N3). The main area displays a list of files with columns for name, created, size, format, document type, zone, phase, and discipline. A dialog box titled 'Setting Document Type' is open, showing a list of document types with 'Communication' selected. The dialog also includes a 'Purpose or general nature of item's contents' field and 'Accept' and 'Cancel' buttons.

On Selected Files: Set Format Set Document Type Set Zone Set Phase

--status messages--

On Selected Files: Set Format Set Document Type Set Zone Set Phase Set Discipline

- ❑ PIM Tools pre-process initial RDF
- ❑ File object properties assigned using CWB

DSpace Archive

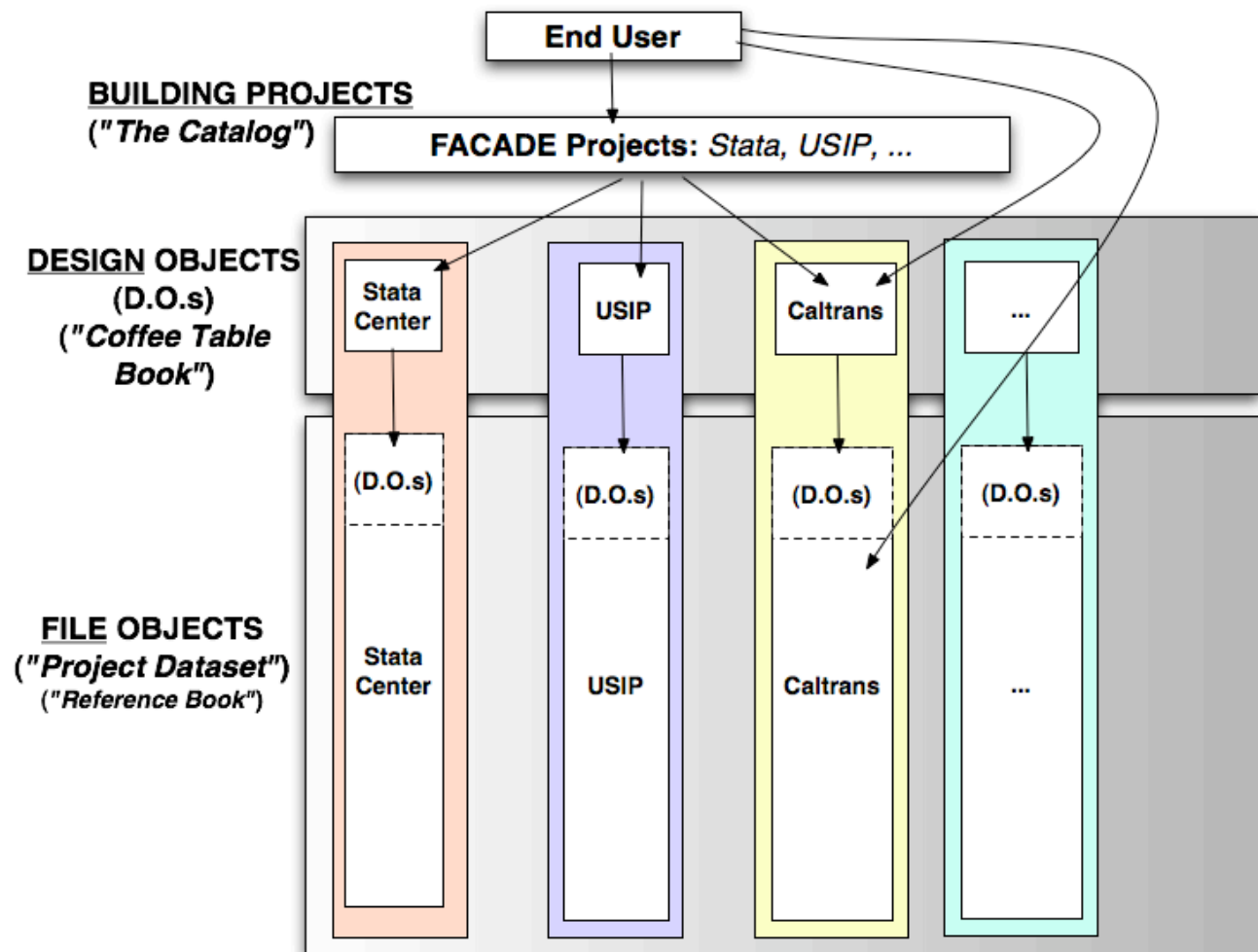
- ☐ Preservation and dissemination
- ☐ UI external to DSpace
- ☐ Bulk ingest tools (e.g. Curators' Workbench; DSpace "packager" importer)
- ☐ Format registry integration for technical curation (GDFR, PRONOM, DSpace internal)



User Interface

End User Path to Datasets

- ❑ Different faceted browse tools
- ❑ Different scaling issues
- ❑ Different audience needs
- ❑ Some navigation, linking, indexing challenges



What We're Going to See

- ☐ Exhibit for FACADE Projects
 - Exhibit / Longwell for "Coffee Table Book"
- ☐ Longwell for USIP "Reference Book"
 - Design Objects (slides)
 - ☐ Client Presentation (.PPT)
 - ☐ Design Model (.RVT), then Derivative File (.IFC)
 - ☐ Design Set, Index (.DOC), Drawing (.DWG)
 - Files (demo)
 - ☐ Arch. Discipline: Landscape
 - ☐ Phase: Schematic Design
 - ☐ Doc. Type: Sketch, Specification

FACADE projects - Mozilla Firefox

File Edit View History Bookmarks Tools Help

FACADE PROJECTS

9 Projects

ITEMS • MAP • TIMELINE • CAROUSEL

sorted by: labels; then by... • grouped as sorted



CALTRANS DISTRICT 7 HEADQUARTERS

The new Caltrans District 7 Headquarters covers an entire city block downtown Los Angeles, directly opposite City Hall, in the midst of an increasingly revived area. The building is the first to be commissioned under the State of California's Design Excellence Program. Roughly L-shaped in plan the building is composed of two main volumes. The 13 story larger volume stretches along the entire block between 1st and 2nd Streets and is set back 155 feet from Main Street. The smaller four story volume, extends from the larger volume to Main Street and occupies approximately one-half the length of the site, from mid-block to 2nd Street. Enrobed in a constantly changing mechanical skin that is alternately open or closed depending on the conditions of outside temperature and sunlight, the building's fundamental property is that of transformation. At dusk the building is transparent, textured and windowed everywhere to invite the voyeur, while at mid-day it is buttoned up against the sun, appearing to be devoid of windows entirely.

Building Features: skin, skip-stop elevators, public exhibition gallery.

Cost: \$190,000,000

Building Administrative Type: Government Facility

Contributor: The Clark Construction Group, Inc.

Location Los Angeles, CA, U.S.A.

Architectural Interactive Style: Alternative Caltrans names: Extent 1,050,000 sq. ft.

Is built? true

Climate: Dry-Summer Subtropical Zone

Creator: Morphosis

Construction Structural steel System: framing, steel moment frames, steel reinforced concrete slabs, perforated aluminium panels, and glass.

Context: Urban

Start Date: 2002

End Date: 2004



COOPER UNION NEW ACADEMIC BUILDING

Designed largely to house Cooper Union's Albert Nerken School of Engineering, one of the top three specialized engineering schools in the nation, the building will also provide institutional space for the Humanities and Social Sciences, the Irwin S. Chanin School of Architecture and the School of Art. The structure will function as both a space for study and

Search

Is Built?
false (3)
true (6)

Extent
1,050,000 sq. ft. (1)
111,000 square feet (1)
150,000 square feet (1)
18,000 sq. ft. (1)
200,000 sq. ft. (1)
258,333 sq. ft. (1)
6,000,000 square feet (1)
605,000 sq. ft. (1)
720,000 sq. ft. (1)

Creator
Gehry Partners, LLP (3)
Morphosis (3)
Moshe Safdie and Associates (3)

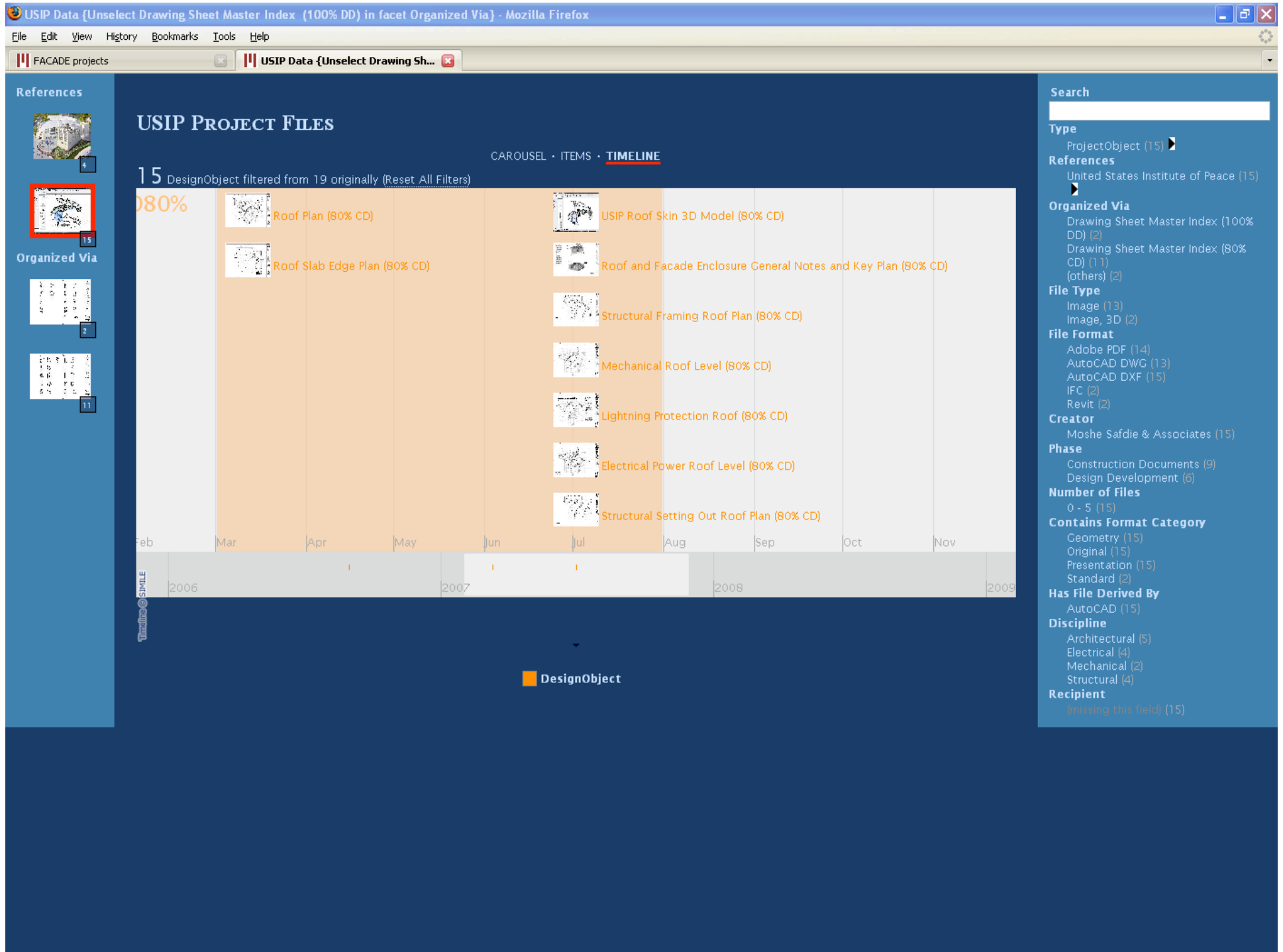
Context
Government Campus (1)
Small town (1)
Urban (4)
Urban University Campus (2)
Urban Waterfront (1)

Climate
Dry-Summer Subtropical Zone (2)
Humid Continental (2)
Humid Subtropical (2)
Mediterranean (1)
Oceanic (1)
Tropical rainforest (1)

Construction System
Custom perforated stainless steel panels attached to a tube steel frame bolted to concrete building frame. (1)
Poured-in-place concrete, custom steel frame, hand-set brick, custom metal cladding, glass curtainwall and aluminum framing. (1)
Skylit galleries over masonry and brick. (1)
Stainless steel panels on steel frame (1)
Steel and Concrete. (2)
Steel, concrete and glass (1)
Structural steel framing, steel moment frames, steel reinforced concrete slabs, perforated aluminium panels, and glass. (1)
Titanium panels on steel frame. (1)

Architectural Style
Deconstructivist (1)
Expressionist (3)
High Tech (1)
Interactive (2)
Neo-Vernacular (1)
Postmodern (1)

Contributor
Beacon Skanska Inc. (1)
F.J. Sciam Construction Co., Inc (1)
M.A. Mortenson (1)
Merritt Construction (1)



Stata Data {select Carousel view} - Mozilla Firefox

File Edit View History Bookmarks Tools Help

FACADE projects Stata Data {select Carousel view}

References

1

1

1

2

4

2

1

1

2

2

STATA PROJECT FILES

CAROUSEL • ITEMS • TIMELINE

PDF

Adobe

GATES GEOMETRY (3D MODEL)

Design Object

3D Model of Gates Wing of Stata Center.

Discipline: Architectural

Creator: Gehry Partners, LLP.

Phase: Construction

Date: 2002-12-03

Referenced by:

Organized Via:

4 file(s)

A4-2.18 Element 8 Giraffe, Element 21 Lucky

Gates Patt

Search

Type

Organization (2)

ProjectObject (9)

References

Gates Geometry 3D Model (1)

Gates Pattern 3D Model (1)

MIT Stata Center (7)

RFI 1244 (1)

(others) (4)

Organized Via

Catia Master Model Issue List (2)

Stata Center Drawing Sheet Master Index (2)

(others) (7)

File Type

Image (2)

Image, 3D (2)

Other (2)

Presentation (2)

Text (3)

File Format

Adobe PDF (6)

AutoCAD DWG (2)

AutoCAD DXF (2)

AVI Video (1)

CATIA 4 Model (3)

ICES (2)

JPEG (1)

Microsoft Excel (3)

Microsoft Powerpoint (1)

STEP (2)

Text (1)

Creator

Beacon Skanska (1)

Bonet, Frances (1)

Gehry Partners, LLP. (9)

Phase

Construction (8)

Design Development (1)

Issue #8 Construction/Permit Set (2)

Number of Files

0 - 5 (10)

5 - 10 (1)

Contains Format Category

(missing this field) (4)

Geometry (4)

Original (7)

Presentation (4)

Standard (2)

Has File Derived By

(missing this field) (7)

AutoCAD (2)

CATIA v5 (2)

Discipline

(missing this field) (7)

Architectural (4)

Recipient

(missing this field) (6)

Longwell, “Starting Points”



FACADE

Future-proofing Architectural Computer-Aided DDesign // Data-set: CWB Complete (Oct 27)

🔍 Type here to search

Phases

- [\(missing\)](#) 23119
- [Construction Documents](#) 19142
- [Design Development](#) 6968
- [Schematic Design](#) 1183
- [Unknown](#) 512
- [Does Not Apply](#) 1

Document Types

- [\(missing\)](#) 23144
- [Drawing](#) 22539
- [Specification](#) 1296
- [Sketch](#) 775
- [Photograph](#) 684
- [Model](#) 649
- [Rendering](#) 541
- [Presentation](#) 326
- [Other](#) 259
- [Study](#) 258
- [Index](#) 178
- [Product Brochure](#) 116
- [Work File](#) 42
- [Communication](#) 40
- [Audio/Video](#) 27
- [Project Book](#) 22
- [Unknown](#) 18

Zones

- [USIP](#) 23758
- [\(missing\)](#) 23110
- [Roof](#) 3599
- [Navy Buildings](#) 375
- [Unknown](#) 82
- [Does Not Apply](#) 1

File Formats

- [Portable Document Format](#) 13091
- [AutoCAD Drawing](#) 11339
- [JPEG File Interchange Format](#) 5554
- [\(missing\)](#) 3559
- [Revit artifact](#) 3211
- [OLE2 Compound Document Format](#) 3014
- [ASCII Text](#) 2718
- [ESRI MapInfo Data File](#) 1955
- [Portable Document Format - Archival](#) 1420
- [Exchangeable Image File Format \(Compressed\)](#) 1010
- [CATIA 5 model](#) 622
- [ZIP Format](#) 491
- [Unknown](#) 423
- [Rhinoceros/OpenNURBS 3D model](#) 418
- [Adobe Photoshop](#) 209
- [Tagged Image File Format](#) 193
- [Binary Interchange File Format \(BIFF\) Workbook](#) 182
- [Microsoft Word for Windows](#) 171

Architectural Discipline

- [\(missing\)](#) 23113
- [Structural](#) 10373
- [Architecture](#) 9302
- [Interiors](#) 1441
- [Mechanical](#) 1400
- [Electrical](#) 1300
- [Landscape](#) 1156
- [Security](#) 838
- [Plumbing](#) 663
- [Civil](#) 352
- [Lighting](#) 277
- [Info Tech](#) 250
- [Audiovisual](#) 204
- [Food Service](#) 147
- [Signage](#) 73
- [Geotechnical](#) 22
- [Unknown](#) 13
- [Does Not Apply](#) 1

Longwell, Table w. Popup

http://libaxis2.mit.edu:8082 - SIMILE Longwell

CWB Recent cha... Longwell SIMILE Lon... SIMILE Long... SIMILE Long... FACADE pr... Stata Data {... USIP Data USIP Data {s...

FACADE

Future-proofing Architectural Computer-Aided Design // Data-set: CWB Complete (Oct 27)

[Add View](#) | [Start New Search](#)

18 items. << 1 next >>

auto-pick columns | add column...

label	source	phase	zone	extent
1. FILE-18206	Images/071031_Landscape Images 2 Flags/071031_Aerial_11.jpg	Design Development	USIP	9831322
2003-10-21 11:10:34				
71031_phase 1.jpg		Design Development	USIP	11203126
71031_phase2-phase 2.jpg		Design Development	USIP	9363140
ring/LandscapePlanting1.jpg		Construction Documents	USIP	842955
ring/LandscapePlanting2.jpg		Construction Documents	USIP	837038
ring/LandscapePlanting3.jpg		Construction Documents	USIP	9975422
ring/montage.jpg		Construction Documents	USIP	3611911
.jpg		Schematic Design	USIP	421761
.jpg		Schematic Design	USIP	561453
10. FILE-37812	in/sd/images from balmori/schemeA.model3.jpg	Schematic Design	USIP	442613
11. FILE-37813	in/sd/images from balmori/schemeA.plan.jpg	Schematic Design	USIP	1113753
12. FILE-37814	in/sd/images from balmori/schemeB.model1.jpg	Schematic Design	USIP	769786
13. FILE-37815	in/sd/images from balmori/schemeB.model2.jpg	Schematic Design	USIP	657236
14. FILE-37816	in/sd/images from balmori/schemeB.model3.jpg	Schematic Design	USIP	548356

DOWNLOAD:



[\[external link\]](#)

Text Search

Attribute Filters

architecturalDiscipline 1

50 ☐ Architecture

41 ☐ Structural

18 ☒ Landscape

colocation

created

derivedBy

derivedFrom

documentType 1

extension

extent

format 1

79 ☐ Exchangeable Image File Format (Compres

18 ☒ JPEG File Interchange Format

2 ☐ OLE2 Compound Document Format

2 ☐ Adobe Photoshop

1 ☐ Portable Document Format

"Presentation" 0008 (.PPT)

FACADE [Link to This Page](#)

Future-p **Open presentation1.ppt** **Open presentation1.ppt**

Add View

presentation1.ppt

Architectural Discipline:
[Architecture](#)

Document Type:
[Presentation](#)

Source:
Interiors/Schematic_Design/PRESENTATIONS/030405

Format:
[Microsoft Powerpoint Presentation](#)

Zone:

TABLE

add column...

Project File Directory

United States Institute of Peace

Instruction Documents Schedule September 21, 2006

Schematic Design Program Areas

5. Output-O0007 FILE-38713 2005-05-17 United States Institute of Peace Presentation

6. Output-O0008 FILE-38752 2005-03-02 Buro Happold Roof Skin Analysis

7. Output-O0009 FILE-38773 2005-03-21 Site Plan, Price

append 10 more items | 20 more

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You have chosen to open

presentation1.ppt
which is a: PowerPoint Presentation
from: <https://rotarran.mit.edu:8443>

What should Firefox do with this file?

☐ Open with Choose...

☒ Save to Disk

☐ Do this automatically for files like this from now on.

Text Search

Q

Attribute Filters

architecturalDiscipline

audience

created

creator

documentType

hasIndex

phase 1

title

pe 1

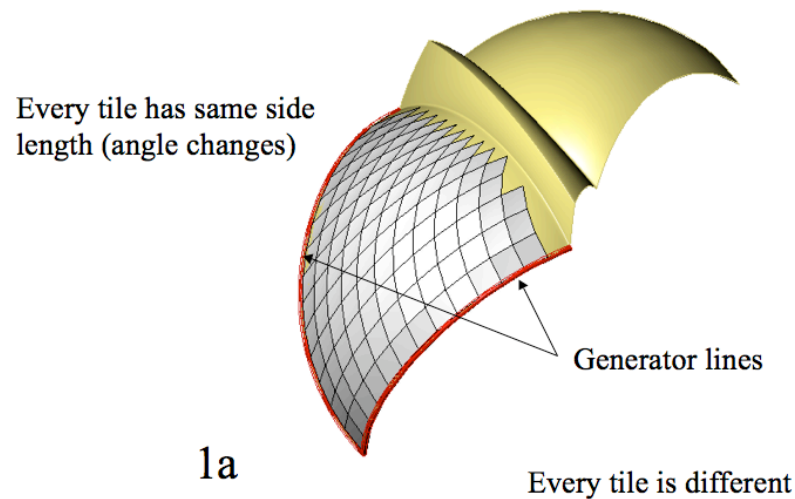
1176 File

7 Output

Client Presentation Design

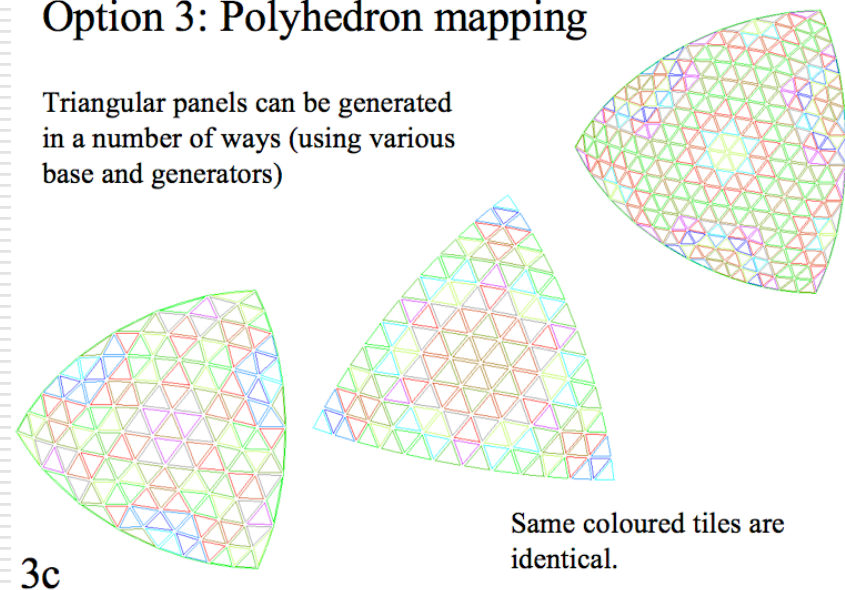
Object O-0008 (.PPT)

Option 1: 'Draped net'



Option 3: Polyhedron mapping

Triangular panels can be generated in a number of ways (using various base and generators)



Moshe Safdie Assoc. presentation1.ppt

Mall, Washington DC



Moshe Safdie Assoc. NCPC_03_06.ppt

View, without USIP Building...



Moshe Safdie Assoc. NCPC_03_06.ppt

A: View from West Potomac Park, South of USIP adjacent to Lincoln Memorial

without USIP Building
November 14, 2008

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DLF Fall Forum

39

There it is!



Moshe Safdie Assoc. NCPC_03_06.ppt

A: View from West Potomac Park, South of USIP adjacent to Lincoln Memorial

November 14, 2008

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Design Model (d00003)

FACADE

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4 items.

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Sort by ☒ ascending

LIST 

1. Design-d0003

architecturalDiscipline	Architecture
created	2006-09-01
creator	Moshe Safdie & Associates
designType	DesignModel
hasFile	FILE-50729 FILE-50730
hasIndex	FILE-22046
phase	Design Development
title	USIP 3D Model 100% Design Development
type	Design

Text Search



Attribute Filters

architecturalDiscipline

created

creator

designType

13 ☐ DesignDrawing

4 ☒ DesignModel

2 ☐ DesignSet

hasFile

hasIndex

Derivative File .IFC (50729)

FACADE

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9 items. < 1 next >

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label	source
1. FILE-50725	Design Development/Drawings/revit/Roof_skin_only.ifc
2. FILE-50726	Design Development/Drawings/revit/50% DD revit file/USIP-50 DD file.ifc
3. FILE-50727	Design Development/Drawings/revit/50% DD revit file/USIP-50DDfile-3DView-{3D}.dwg
4. FILE-50729	Design Development/100% DD - 2006-09-04/REVIT model/USIP_100%DD.ifc

USIP_100%DD.ifc

Architectural Discipline:

[Architecture](#)

Document Type:

[Model](#)

Source:

Design Development/100% DD - 2006-09-04/REVIT model/USIP_100%DD.ifc

Format:

[ASCII Text](#)

Zone:

0% DD - 2006-09-04/REVIT model/USIP_100%DD-3DView-{3D}.dwg
awings/revit/Roof_skin_only.pdf
0% DD - 2006-09-04/REVIT model/USIP_100%DD.pdf
awings/revit/50% DD revit file/USIP-50 DD file.pdf
awings/revit/50% DD revit file/USIP-50DDfile-3DView-{3D}.pdf

[10 more items](#) | [20 more](#) | [50 more](#)

< 1 next >

TABLE



Text Search

Attribute Filters

[architecturalDiscipline](#)

[colocation](#)

[created](#)

[derivedBy](#)

6959 ☐ (missing)

5 ☒ Revit

4 ☒ Acrobat 9 Pro Extended

[derivedFrom](#)

[documentType](#)

[extension](#)

[extent](#)

[format](#)

[formatCategory](#)

Design Set (d0014)

FACADE

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1 item. << 1 next >>

TABLE

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label	hasIndex	hasFile	title
1. Design-d0014	FILE-21314	FILE-21967 • FILE-21762 • FILE-21532 • FILE-21329 • FILE-21489	80% Construction Documents Drawing Set

Design-d0014

architecturalDiscipline	Architecture
created	2006-09-12
creator	Moshe Safdie & Associates
designType	DesignSet
hasFile	FILE-21329 FILE-21489 FILE-21532 FILE-21762 FILE-21967
hasIndex	FILE-21314

[Load 10 more items](#) | [20 more](#) | [50 more](#)

<< < 1 next > >>

Text Search

Attribute Filters

architecturalDiscipline

created

creator

hasIndex

phase

1 ☐ Construction Document

1 ☒ Design Development

title

type

zone

1 ☒ USIP

Index File to Design Set (21314)

FACADE

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4 items. < < 1 next > >

TABLE

[auto-pick columns](#) | [add column...](#)

label	source	created
1. FILE-21314	Design Development/100% DD - 2006-09-04/USIP-DD Drawing List.doc	2006-09-12T20:42:46
	ork/yb/Drawing Lists/USIP Civil Drawing	2007-03-12T16:17:42
	ork/yb/Drawing Lists/USIP Security Drawing	2007-03-12T15:00:32
	ork/yb/Drawing Lists/USIP Security Drawing	2007-02-28T18:50:38

USIP-DD Drawing List.doc

Architectural Discipline:
[Architecture](#)

Document Type:
[Index](#)

Source:
Design Development/100% DD -
2006-09-04/USIP-DD Drawing List.doc

0 more items | 20 more | 50 more

< < 1 next > >

Text Search

☒ drawing list

Q drawing list

Attribute Filters

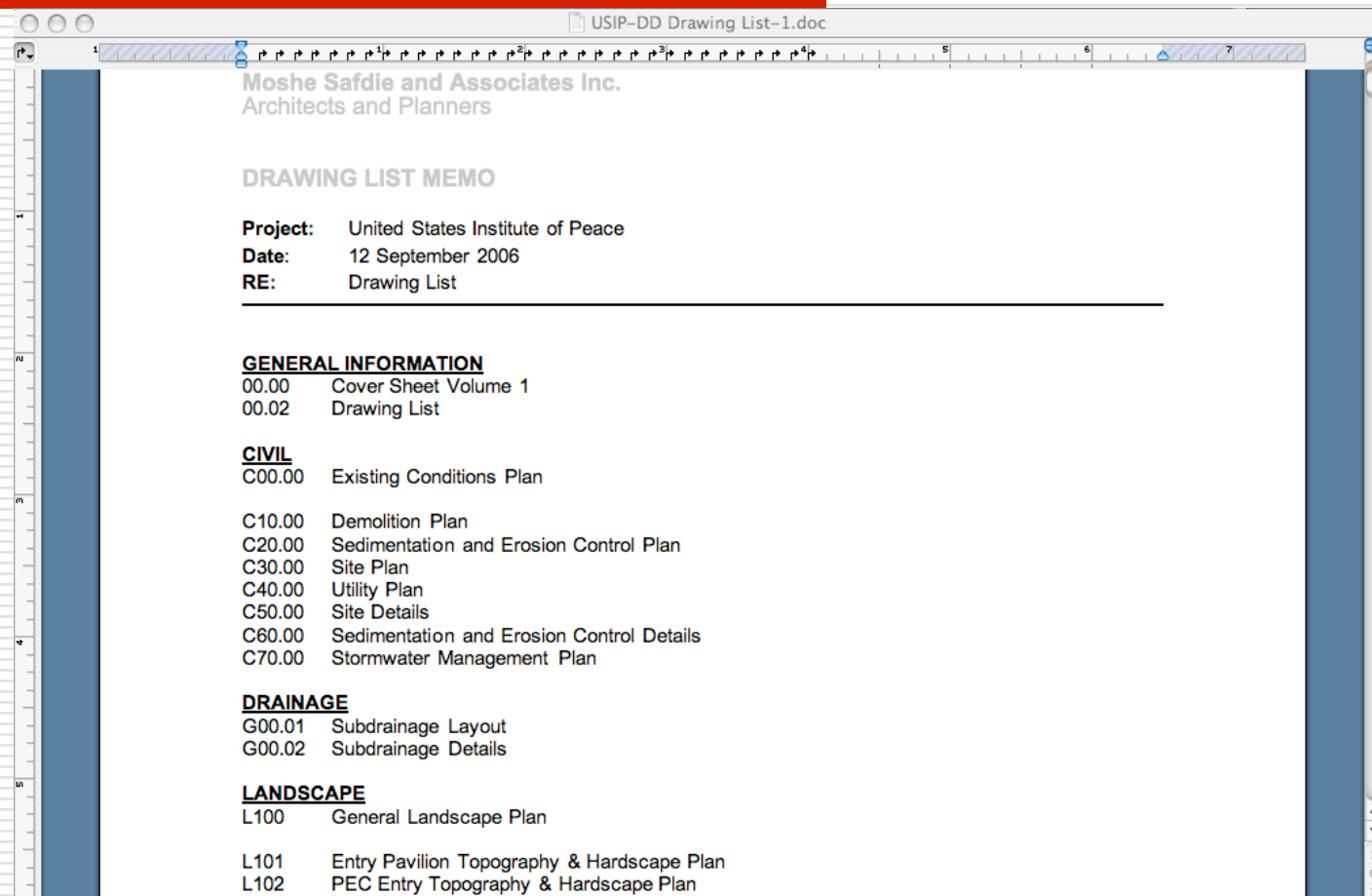
extension 1

- 1817 ☐ dwg ☒
- 605 ☐ txt
- 592 ☐ dat
- 588 ☐ rfa
- 514 ☐ pdf
- 385 ☐ catpart
- 139 ☐ rws
- 94 ☐ pcp
- 67 ☐ db
- 62 ☐ jpg
- 46 ☐ zip

phase 1

- 16 ☐ (missing) ☒
- 8 ☐ Construction Doc
- 4 ☒ Design Developme
- 2 ☐ Schematic Design

Word .DOC Index to .DWGs



DWG "L101," from Index (21693)

FACADE

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56 item(s) in 6 pages.

Sort by [requires](#) | ☒ ascending

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1.

[Complete](#) [Summary](#)

L101-00 - Entry Pavilion Topo-Hardscape.dwg

Architectural Discipline:
[Landscape](#)

Document Type:
[Drawing](#)

Source:
Design Development/100% DD - 2006-09-04/Drawings/Landscape/dwg/L101-00 - Entry Pavilion Topo-Hardscape.dwg

Format:
[AutoCAD Drawing](#)

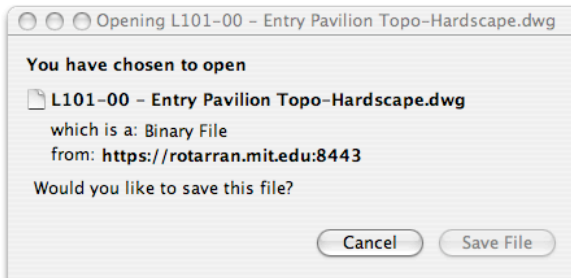
Zone:
[USIP](#)

Phase:
[Design Development](#)

Extension:
dwg

Created:
2006-09-05T15:06:20

DOWNLOAD:
[\[external link\]](#)



Text Search

[Entry Pavilion Topography & Hardscape Plan](#)

Q

Attribute Filters

[architecturalDiscipline](#)

[colocation](#)

[created](#)

[derivedBy](#)

[derivedFrom](#)

[documentType](#)

[extension](#)

36 ☒ dwg

11 ☒ pcp

5 ☒ pdf

1 ☒ psd

1 ☒ jpg

1 ☒ dwl

1 ☒ db

[extent](#)

[format](#)

[formatCategory](#)

[hasDuplicate](#)

What We're Going to See

- Longwell for USIP “Reference Book”
 - Design Objects (slides)
 - Client Presentation (.PPT)
 - Design Model (.RVT), then Derivative File (.IFC)
 - Design Set, Index (.DOC), Drawing (.DWG)
 - **Files (demo)**
 - **Arch. Discipline: Landscape**
 - **Phase: Schematic Design**
 - **Doc. Type: Sketch, Specification**

Contents of Talk *(review)*

- Project Scope
 - Problem, Goals
 - Audiences, Use Cases
 - Datasets We're Working With
- 3D CAD
 - Data Formats; Standards; CAD Tools
 - Preservation Strategies
- Ontology
 - Project Information Model, Workflow
 - Metadata, "Curators Workbench"
 - DSpace Archive
- User Interface

Outcomes, *forthcoming* ...

INSTITUTIONS:

- ☐ Open source, production quality software (repository; U/I)
- ☐ Format representation for 3D CAD
- ☐ Preservation strategy for 3D CAD
- ☐ Ontology, workflow for other materials
- ☐ Intellectual property issue

USERS:

- ☐ Avail. of materials
- ☐ Improvement over "File System" organization
- ☐ Some add'l. metadata

Acknowledgement



This project is made possible by a grant from the U.S. Institute of Museum and Library Services

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http://facade.mit.edu/presentations/REILLY_DLFFall2008_MIT_FACADE.ppt.htm