Reviving DIDO: Using Contextual Inquiry to Inform the Redesign of an Art Image Resource

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Artwork by Gunter Gerszo
Contextual Design: Overview

1. Contextual Inquiry
   • Qualitative information gathering technique

2. Interpretation / Work Modeling
   • Evaluate & structure data into models

3. Consolidation / Affinity Diagramming
   • Group universal & individual work practices

4. Work Redesign (envisioning new system)
   • Storyboarding

5. User Environment Design
   • Define system requirements

6. Prototypes and Feedback
   • Walkthroughs, lab testing, surveys, etc.

7. Implementation of Design
Contextual Design: Why?

- Establishes structure and focus for developing software/hardware with continual user input
- Provides tools to systematically organize and interpret qualitative data
- Useful approach when designing digital library resources with pedagogic and didactic applications
DIDO: Overview

• Created in 1996 for IU Fine Arts faculty and students to access art images over the web
• Low resolution images
• Inadequate discovery capabilities
  • OR Boolean default (irrelevant results)
  • Browsing not supported
  • Non-fielded searches
• Incomplete & inconsistent metadata
• Extended beyond supplementary resource to a primary resource for delivering digital content in classrooms
Towards a Better DIDO: Survey Findings

• Survey was distributed across Indiana University campuses in April 2003 (42 respondents)
  • Targeted at Humanities departments
• Some of the themes uncovered include:
  • Unawareness of licensed electronic image and cultural objects resources
  • Classroom technology capabilities (access, quality of projection, etc.)
  • Quality of digital versus 35mm slide images
  • Ability to learn new technologies
  • Ability to manipulate images for display (annotate, juxtapose, etc.)

• Used survey findings to define the focus for the Contextual Inquiry sessions
Contextual Inquiry: Principles

*Uncover tacit knowledge and work practices

• Context
  • Data gathering takes place where user’s work

• Partnership
  • User and investigator explore together work practices, issues, design alternatives

• Focus
  • Inquiry is based on a set of high level issues or concerns, not specific questions
Contextual Inquiry: Overview

- 10-20 sessions with diverse user group
  - 2-4 hours per session
  - 1 facilitator & 1 note taker
- Observe & encourage dialogue when in need of clarification or confirmation
- Capture information: notes & audio recording
- Share notes with users to verify current practices and explore solutions
- Collect and co-explore artifacts (lesson plans, syllabi, etc.)
Interpretation: Overview

- Contextual Inquiry (CI) sessions should be interpreted within 48 hours
- Build a shared understanding of each CI session with project team
- Models and design ideas should be sketched/documented during interpretation
Work Modeling: 5 Models

• Each model represents an aspect of work for each user
  • Flow Model
    • Captures how work is divided/shared among people and how they communicate
  • Sequence Model
    • Captures triggers, intents and steps involved in getting work done
  • Artifact Model
    • Captures tools created, used and modified by people to get their work done
  • Physical Model
    • Captures physical work environment
  • Cultural Model
    • Captures workplace values, expectations, policies, and attitudes
Flow Model: Users P1 & P2

User P1
Digital Images for Lectures

User P2
35 mm Slides for Lectures
Flow Model: P1 (Digital Image User)

**Hard Drive (Mac)**
- Stores groups of images

**Internet**
- Allows access to large collections of images
- Search for and retrieves images

**Slide Library**
- Hold necessary equipment (laptop and projector) for presenting lectures in Fine Arts building
- Fix equipment problems

**Digital Imagery**
- Request equipment
- Deliver equipment (laptop) to classrooms in Ballantine Hall
- Fix equipment problems

**P1 Lecturer (Art History) (Medievalist)**
- Prepares lectures in digital format
- Presents lectures in digital format

**Classrooms**
- Meeting place for lecture presentation
- Is wired

**Colleague Professor** (Ancient Art Historian)
- Prepare lectures
- Present lectures

**OnCourse**
- Holds course materials: lecture presentations (PPT) and course syllabus
- Presentations have to be smaller than 20 megabytes in size

**Students**
- Attend lecture
- Review materials on OnCourse
- Complete assignments and exams

**User**

**Groups/Person**

**Physical/Virtual Places**

**Artifacts**

**Breakdowns**

Work Flow Model, "Reviving DIDO", DLF Spring 2004, Michelle Dalmou, Indiana University
Flow Model: Users P1 & P2

User P1
Digital Images for Lectures
More complex work flow

User P2
35 mm Slides for Lectures
Less complex work flow
### Sequence Model: Users P1 & P2

<table>
<thead>
<tr>
<th>Intent</th>
<th>User P1: Digital Images for Lectures</th>
<th>User P2: 35 mm Slides for Lectures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Download image (CTRL+Click) to &quot;Download Image to Disk&quot;</td>
<td>Downloads image (CTRL+Click) to &quot;Download Image to Disk&quot;</td>
<td></td>
</tr>
<tr>
<td><em>Downloads image (CTRL+Click) to &quot;Download Image to Disk&quot;</em></td>
<td><em>Downloads image (CTRL+Click) to &quot;Download Image to Disk&quot;</em></td>
<td></td>
</tr>
<tr>
<td><em>Saves image to &quot;Roman Art&quot; folder</em></td>
<td><em>Saves image to &quot;Roman Art&quot; folder</em></td>
<td></td>
</tr>
<tr>
<td><em>No sub-folders — many, many unique images in one folder</em></td>
<td><em>No sub-folders — many, many unique images in one folder</em></td>
<td></td>
</tr>
<tr>
<td><em>Renames image (long, descriptive names)</em></td>
<td><em>Renames image (long, descriptive names)</em></td>
<td></td>
</tr>
<tr>
<td><em>Copy and Paste image into PPT slide</em></td>
<td><em>Copy and Paste image into PPT slide</em></td>
<td></td>
</tr>
<tr>
<td><em>Resizes/Positions image in PPT</em></td>
<td><em>Resizes/Positions image in PPT</em></td>
<td></td>
</tr>
<tr>
<td><em>Back to A210 website to copy image description</em></td>
<td><em>Back to A210 website to copy image description</em></td>
<td></td>
</tr>
<tr>
<td><em>Pastes description into PPT slide</em></td>
<td><em>Pastes description into PPT slide</em></td>
<td></td>
</tr>
<tr>
<td><em>Resizes/Positions description (20 pt font) in PPT</em></td>
<td><em>Resizes/Positions description (20 pt font) in PPT</em></td>
<td></td>
</tr>
<tr>
<td>Continues integrating images from colleague's view</td>
<td>Continues integrating images from colleague's view</td>
<td></td>
</tr>
</tbody>
</table>

### Breakdowns

<table>
<thead>
<tr>
<th>Intent: Trying to define an order</th>
<th>Then arranges by date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: No real procedure for slides with unknown dates — guesses or fits them in where they look good</td>
<td>Some slides not dated, guesses time period</td>
</tr>
<tr>
<td>Sets aside a couple of &quot;No&quot; slides</td>
<td></td>
</tr>
<tr>
<td>Trigger: Needs to represent a particular artist and region</td>
<td></td>
</tr>
<tr>
<td>Intent: Certain slides she wants to group by artist</td>
<td>Changes order to group certain slides by one artist together rather than over time</td>
</tr>
<tr>
<td>Changes order to group some slides by aesthetics rather than over time</td>
<td></td>
</tr>
<tr>
<td>Created exception in her ordering scheme</td>
<td></td>
</tr>
<tr>
<td>Reconsiders re-ordering as the slides by aesthetic</td>
<td></td>
</tr>
<tr>
<td>Not happy with order</td>
<td></td>
</tr>
<tr>
<td>Keeps current order while making grouping exceptions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intent: Feels aesthetic is jumping so certain slides are grouped by &quot;look&quot;</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Intent: Needs to figure out where this artist goes</th>
<th>Looks carefully through arranged slides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinarranges slides to make room for left-out slide</td>
<td></td>
</tr>
<tr>
<td>Disrupted the arrangement of near-complete structure</td>
<td></td>
</tr>
</tbody>
</table>
## Sequence Model: P1 (Digital Image User)

<table>
<thead>
<tr>
<th>Intent: Expand lecture with reliable resource</th>
<th>*Downloads image (CTRL+Click) to “Download Image to Disk”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: Knows keyboard shortcuts</td>
<td>*Saves image to “Roman Art” folder</td>
</tr>
<tr>
<td><strong>Intent:</strong> Dynamically builds own image collection</td>
<td>*Renames image (long, descriptive names)</td>
</tr>
<tr>
<td>Note: Steps identified with * are done fluidly and repetitively while preparing lecture. Steps will not be represented for every image found as such but in shorthand: Integrates image</td>
<td>*Copy and Paste image into PPT slide</td>
</tr>
<tr>
<td></td>
<td>*Resizes/Positions image in PPT</td>
</tr>
<tr>
<td></td>
<td>*Back to A210 web site to copy image description</td>
</tr>
<tr>
<td>Note: New system download image and metadata at once</td>
<td>Has to go back to the same web site twice to complete action for 1 image</td>
</tr>
<tr>
<td></td>
<td>*Pastes description into PPT slide</td>
</tr>
<tr>
<td></td>
<td>*Resizes/Positions description (20 pt font) in PPT slide</td>
</tr>
<tr>
<td></td>
<td>Repetitive process</td>
</tr>
<tr>
<td>Note: Happened to name an image</td>
<td>Continues integrating images from colleague’s web site</td>
</tr>
</tbody>
</table>
### Sequence Model: P2 (35mm Image User)

<table>
<thead>
<tr>
<th>Intent: Trying to define an order</th>
<th>Then arranges by date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: No real procedure for slides with unknown dates – guesses or fits them in where they look good</td>
<td>Some slides not dated, guesses time period</td>
</tr>
<tr>
<td></td>
<td>Sets aside a couple of “No” slides</td>
</tr>
</tbody>
</table>

**Trigger:** Needs to represent a particular artist and region

- *Looks for slides by artist (Alexander Calder)*
- Changes order to group certain slides by one artist together rather than over time
- *Created exceptions in her ordering scheme*

<table>
<thead>
<tr>
<th>Intent: Certain slides she wants to group by artist</th>
<th>Changes order to group some slides by aesthetics rather than over time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Created exceptions in her ordering scheme</em></td>
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<tr>
<td></td>
<td>Reconsiders re-ordering all the slides by aesthetic</td>
</tr>
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<td></td>
<td><em>Not happy with order</em></td>
</tr>
<tr>
<td></td>
<td>Keeps current order while making grouping exceptions</td>
</tr>
</tbody>
</table>

**Intent:** Feels aesthetic is jumping so certain slides are grouped by “look”

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<td></td>
</tr>
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</table>

**Intent:** Needs to figure out where this artist goes

<table>
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<tr>
<th>Intent: Needs to figure out where this artist goes</th>
<th>Looks carefully through arranged slides</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Rearranged slides to make room for left-out slide</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Disrupted the arrangement of near-complete structure</em></td>
</tr>
</tbody>
</table>
Physical Model: Users P1 & P2

User P1
Digital Images for Lectures

User P2
35 mm Slides for Lectures
Consolidation: Overview

- Seeing across users
  - Identify common patterns and key differences
- Consolidation models ground project team in assessing universal and unique work practices
  - Each of the 5 work models can be represented as a consolidated model
- Precursor to establishing system requirements

“The challenge is to design for a population, but meet the needs of individuals” (Beyer & Holtzblatt).
## Consolidated Model: Sequence

### Motivation: Prepare lecture for upcoming class

<table>
<thead>
<tr>
<th>Activity</th>
<th>Intent/Sub-Activities</th>
<th>Summary Steps</th>
<th>Breakdowns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify topic</td>
<td>• Focus lecture&lt;br&gt;• Encourage thought of how lecture will be organized</td>
<td>• Refer to syllabus/lecture notes while preparing lecture&lt;br&gt;• Incorporate key themes</td>
<td>Highly repetitive task of searching for image, saving image, inserting image into presentation. No easy way for importing a range of images at once to presentation software.</td>
</tr>
<tr>
<td>Prepare lecture</td>
<td>• Create lecture while simultaneously building personal collection of electronic images</td>
<td>• Entails finding images, text and inserting into presentation software</td>
<td>Checking slides out of the Slide Library is a repetitive process—several trips back and forth from light box to copy machine. Some PPT presentations are not backed up.</td>
</tr>
<tr>
<td></td>
<td>• Create lecture from analog slides held by the slide library</td>
<td>• Entails viewing slides on light box, and inserting them into a projector carousel</td>
<td></td>
</tr>
<tr>
<td>Preserve lecture</td>
<td>• Save preparation order for presentation</td>
<td>• Save PPT presentation to hard drive/CD/Zip disk</td>
<td>Slides may be incorrectly marked (red dot indicates position in carousel), and must be double checked in order to appear on screen correctly</td>
</tr>
<tr>
<td></td>
<td>• Create slide carousel(s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Reviving DIDO: Highlights (a few)

- **Resources Consulted**
  - Slide Library (35mm slides, digital projection equipment, etc.)
  - Web sites (Google Images, DIDO, etc.)
  - Hard drives (digital personal collection)
  - People (slide librarian, colleagues, etc.)

- **Presentation Formats**
  - 35 mm Slide Projector(s)
  - PowerPoint (PPT)
    - Up to 4 images juxtaposed
    - Supplement 35mm lecture as text-only (artist name, titles, etc.)

- **Study Guides**
  - PPT lectures uploaded to IU course management system
    - 20 MB maximum file size
  - PPT created to replicate 35 mm lecture
  - Text-only study guides (summary, definitions and pointers to images in books)
  - HTML study guides with images linked from DIDO
Reviving DIDO: Next Steps

• Arrange additional 10-15 contextual inquiries with faculty/instructors across the Humanities

• Interpret and evaluate complete data set
  • Build consolidated models
  • Explore emerging design by storyboarding

• Define system requirements

• Evaluate software solutions based on system requirements
Contextual Design/Inquiry: References

Books/Articles

Web sites
• Incontext -- Customer Centered Design: http://www.incent.com/
• Articles on Contextual Design: http://www.incent.com/pubs/pubs/pubs.html
• Presentation handouts: http://www.dlib.indiana.edu/~mdalmau/dlf2004/