

Consolidation

Pizza Box design

- Goal in the course is:
 - To understand what people do
 - To identify breakdowns
 - To come up with new designs that solve problems while preserving what's good about past systems
- <http://www.swiss-miss.com/2010/09/building-a-better-pizza-box.html>

Breakdowns



Consolidation

Consolidation

- Goal is to see whole picture of a group of users work
 - Opportunity for better design
 - Opportunity for niche applications
 - Think MS Office:
 - “There are millions of users and they all use the product differently. There is no one Office user.”
 - But the document tasks of computer users do have cohesion
 - Think accounting software:
 - Is home-based business different or same as small business?
 - Is it appropriate to have a single application for home and school use for school-age children?
- People want to be different
 - Often say “I don’t do things exactly the same as everyone else.”
 - BUT, they do frequently have common pattern and structure to work
- Consolidation let’s you see this common pattern and structure

Consolidation

- To develop a sense of whole user community from a set of instances
- Instances
 - Interviews + models
- Goal of consolidation
 - To show how instances of patterns define the whole population
 - To create concrete representations of those patterns
- Inductive reasoning
 - From the specific to the general

IMPORTANT

- **THIS** is where generalization begins to happen
- Up to this point, everything should be specific and concrete
 - Exactly what was done
 - Exactly what intent was
- **Now**
 - Understand overall patterns to work that generalize across users, and why those patterns exist
 - *Actions + intents*

Caveats

- Intents are ***not*** based on rational arguments
 - Consider IT support staff
 - What is their goal?
 - What do they do when someone's computer is not working?
 - Why do they do that?

External Representations

- External representations are used in consolidation
 - Affinity diagrams
 - Consolidated models
- External representations serve three purposes
 - Manage complexity of the data
 - Single digit versus six digit multiplication
 - Externalizes the data so that it is collectively owned
 - Model focuses interaction around data
 - Breaks the initial ethnographic process of seeing data “in the small”
 - Need to design systems that generalize across a user community
- To accomplish this, start with affinity diagram to look for themes
 - Then move to consolidations of specific models built

Affinity diagram

- Organizes notes captured during interviews and interpretation sessions
- Goal is to combine all data in one place
 - Issues noted
 - Worries and comments of users
 - Key elements of work practice relevant to project focus
 - System requirements
 - Reliability, performance, hardware support
- Information is combined as a hierarchy
 - All data relevant to a theme is shown together

Affinity diagram

- Affinity diagram is a diagram built from post-it notes
 - You will do this
- Affinity is built bottom-up
- No starting categories, instead start with individual notes
 - A quote, an idea, a work process, a requirement, a need
 - Put up one note
 - Look for notes that go with it
 - Anyone can add a note
 - No justifying why a note goes with another
- The affinities you look for are notes that focus on similar intents, problems, or issues
- The data for notes can be sourced from any location
 - interview notes, post-its from an interpretation session, quote from transcripts (if available) or from memory (check with audio record).

Constructing Affinity Diagrams

- When a group of notes gets large enough, add a label to the group
- Try to express affinities in language of users
 - Sourcing fresh vegetables is essential – catering chefs
 - Parents care about details – school teachers
- Also form groupings of groups
 - Post-its allow frequent repositioning, which is essential to effective affinities
- Discuss placement and differing ideas, but don't over-focus on justifying combinations
- Police each others notes
- When misunderstandings occur, go back to data
- Try to put aside sufficient time to complete affinity
 - May take a day

Consolidated Models

- Flow, sequence, artifact, cultural and physical models can all be consolidated
- Purpose is to partially abstract from specific models
 - Two real estate agents, one with home office, one in traditional office
 - However, similarities (and differences) in flow, sequence, artifact, cultural and physical models
 - Consolidating helps designer see across user community
 - What is common to real estate agents regardless of office environments?

Consolidating Flow Models

- Depicts who customers are and what they do
- Reveals all different structures that underlie how group of users does job
- Does this by focusing on roles
 - Collections of responsibilities that accomplish a coherent part of the work, a specific intent
 - To be coherent, must include all responsibilities that accomplish that specific intent
 - Start with primary job function of your users, then add necessary additional responsibilities

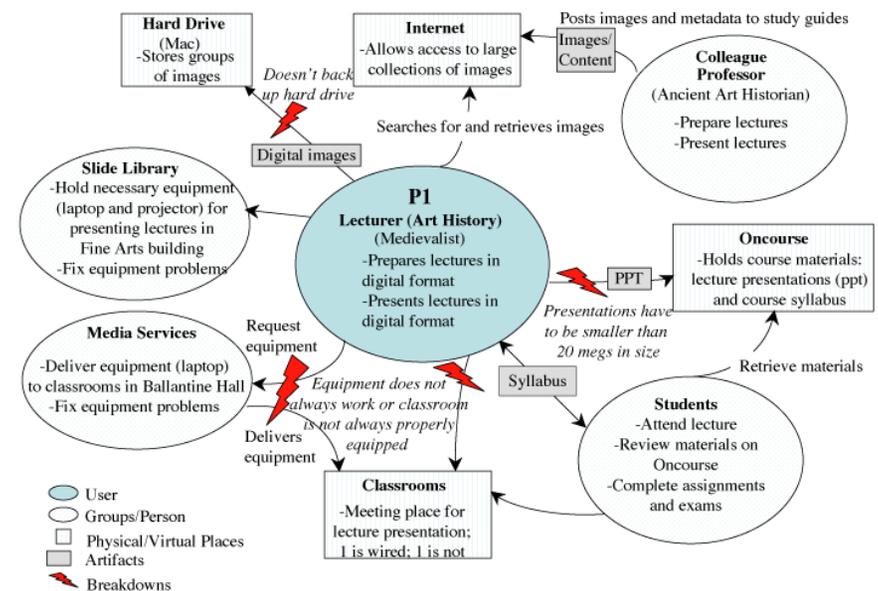
Consolidating Flow Models

- While roles are preserved, mapping to individuals is much more idiosyncratic
 - Real estate agents
 - In an office, an admin might serve as call screener and greeting walk-ins
 - In a home office, call display and call waiting might serve as call screener, and agent might handle walk-ins
- Don't worry about including all responsibilities of a particular user
 - Think of it like a job advertisement
 - You want to combine similar roles across individuals and separate different roles that one individual may serve

Consolidating Flow Models

- After roles, add in artifacts and communications
 - Represent interaction between roles
- Artifacts may need to have a general term assigned
 - e.g. calendaring tool
 - Electronic file storage

NOT a Consolidated Model



Work Flow Model, "Reviving DIDO", DLF Spring 2004, Michelle Dalmau, Indiana University

Consolidating Sequence Models

- Many instances of users trying to accomplish the same task
- People typically only use a few strategies to perform a task
 - Stage managers
 - School teachers
 - Small restaurant owners
 - Videographers

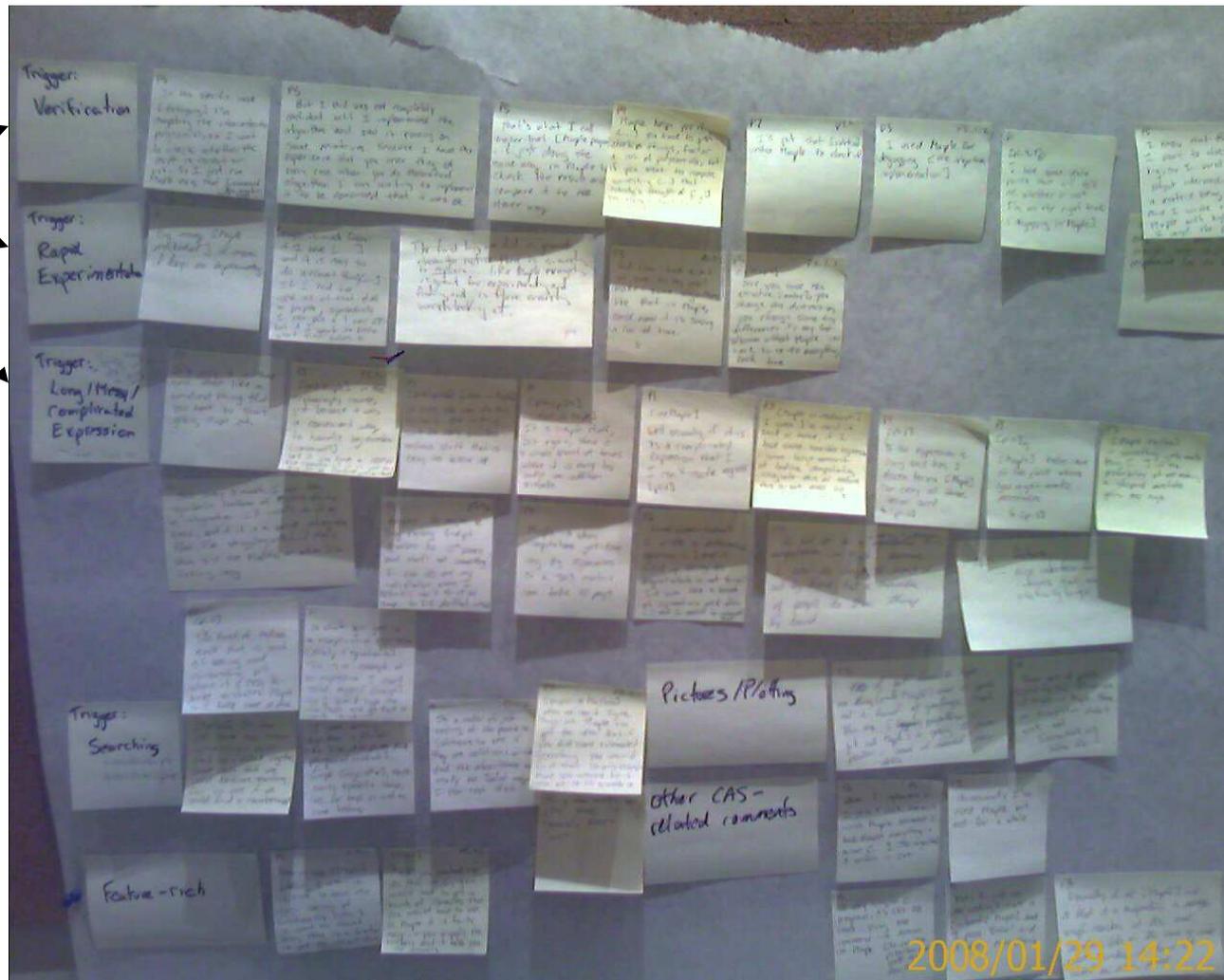
Intent: Needs to prepare 4 lectures for A214: Life and Art of Ancient Rome – Roman Religion	
	Trigger: Class meets tomorrow afternoon, need to have first lecture ready
Note: In progress: PPT, Netscape 4.x and file Finder windows open before we arrived. Loyal MAC (OS 9.x) user.	Prompted by syllabus – topic for this week, Roman Religion
Intent: Recycle PPT – use a base PPT rather than start from scratch	Find existing PowerPoint (PPT) lecture on similar topic
Note: Keeps all the existing images/PPT slides	Copies (Saves As) PPT as A214 for Roman Religion Lecture
Intent: Colleague normally teaches this class (A214)	Goes to Classical Art Historian’s course web page (A210) – Bookmarked
Intent: Colleagues usually has good images (from DIDO)	Browses “Roman Gods” link (see Artifact A210 home page)
Note: Image quality assessment is automatic and very subjective	Identifies desired image /assesses quality
Intent: Expand lecture with reliable resource	*Downloads image (CTRL+Click) to “Download Image to Disk”
Note: Knows keyboard shortcuts	
Intent: Dynamically builds own image collection	*Saves image to “Roman Art” folder
	<i>No sub-folders – many, many unique images in one folder</i>
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	*Renames image (long, descriptive names)
	*Copy and Paste image into PPT slide
	*Resizes/Positions image in PPT

Consolidating Sequence Models

- Consolidation process:
 - Consolidate triggers for tasks with similar intents
 - Abstract trigger
 - Describe steps in general terms that abstract the specifics
 - Intents can help with this
- Often not necessary to consolidate everything
 - Consolidate those sequences that represent a good design opportunity in your area

Consolidating Sequence Models

Note Triggers

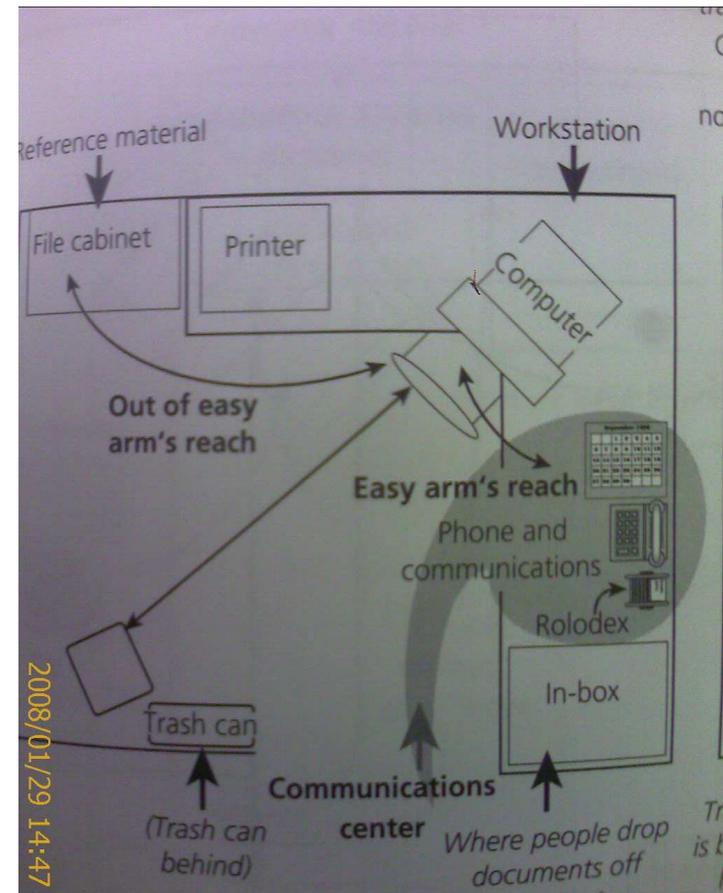


Consolidating Artifact Models

- Artifacts are very unique to different users
- Consolidated artifact is a 'typical' artifact that incorporates details of the original set of artifacts
- Process
 - Group artifacts that have same intent or usage in work
 - Identify common parts of different artifacts
 - Identify structure, intent, usage of each part
 - Note breakdowns
 - Especially when structure violated
 - Build a 'typical artifact' showing all parts with usages, intents, and any breakdowns

Consolidating Physical Models

- Aspects of work space repeat
 - Think real estate agents, restaurant owners, school teachers
 - Office has common structure
 - Try to show this common structure across users



Consolidating Physical Models

- Steps to create:
 - Group physical models by type of place
 - Walk each model and identify places
 - Identify common logical structure
 - e.g. phone is always near computer in CS prof offices
 - Look at movement on each of the models and show movement within space
 - Document any insights about work
- Fairly easy with only two or three subjects

Consolidating Cultural Models

- Although cultural model is a depiction of a specific subject's cultural perceptions, there are common characteristics across subjects
 - Are managers highly mobile?
 - Are salespeople closely monitored?
 - Is the industry closely regulated by government?

Consolidating Cultural Models

- First find all influencers from individual models
- Group influencers who constrain work in same way
 - Could even be same group
- Look at influences from individual models and group by pairs they go between
- Eliminate any duplicate or similar influences
- Copy over any breakdowns

Approaching Consolidation

- Goal is to collect data points that are similar across interviewees and build them into groups
 - Having more than one subject will always create applications that are more general
- Interviewees **intent** for each sequence and artifact is most critical to draw from consolidated models
 - As long as your new design supports the intent, it will be useful for your subjects
- Note that individual strategies will have commonalities and differences
 - Consolidated models allow you to highlight common intents behind strategies, and to build common strategies into anything you design

Approaching Consolidation

- Consolidation is very difficult when number of subjects gets large and heterogeneous
- Can often short circuit the entire process
 - Review models that have been created
 - Typically start with flow models, then sequence, and use artifact, physical, and cultural models to augment sequences
 - Look for common breakdowns across your interviewees
 - Use your affinity diagrams, and add post-its using additional details
 - If you feel you don't know enough, expand your observations
 - Select two or three that you think might be worthy of intervention and create consolidated models around these

So What Do I Do?

- In this course, project has more in common with attributes of rapid contextual design
- Rapid CD works well for:
 - Usability fixes, low-hanging fruit, quick-fixes
 - Market or population characterization for new systems
 - Web site redesign
 - Next gen system
 - One coherent task
 - Reporting issues
 - Essentially anything where group/task is constrained or where data is very sparse at beginning.

So What Do I Do?

- Real world, start-ups, etc.
 - 2 people working full time for between 1 and 10 weeks
- Rarely consolidate everything

Rapid CD Process	Contextual Interviews + Interpretation	Work Models with Consolidation	Affinity Diagrams
Lightning Fast 1 – 4 weeks	~4 - 12 Participants 1 – 3 days 1 or 2 re-interviews		Interpret via affinity
Minimalist 4 – 8 weeks	6 – 12 Participants 1 – 2 weeks 3 or 4 re-interviews	During/after affinity, consolidation as needed	Do affinity, build models as needed
Focused 6 – 10 weeks	8 – 12 Participants 2 – 3 weeks Re-interview as needed	Models then affinity, then back to consolidation	

So What Do I Do?

- Our lab:
 - Interviews by student + affinity by student
 - “Walks” with faculty to introduce collective ownership
 - Faculty challenge interpretations in data or ask for justification from data
 - Collaborative to look for themes in the data
 - Back to models when stuck – faculty suggest models to build

Affinity Diagram and Consolidation

- What to look for:
 - Interpretations of events, use of artifacts, problems and opportunities
 - Important characteristics of work
 - Attitudes and constraints, i.e. cultural influences
 - Open questions for future interviews
 - Neat or insightful quotes, organized into above categories
 - Design ideas (but flag these!)
- Don't include:
 - Demographics
 - Information already captured on work models

Contextual Design: Stages

- Interviews and observations
 - Done this
- Work modeling
 - Done this
- Consolidation
 - Part-way through this
- Work redesign
- User environment design
- Prototypes
- Evaluation
- Implementation

Plan Forward

- Looked at consolidation
- Need more information on interpreting data
 - Coding exercise next day