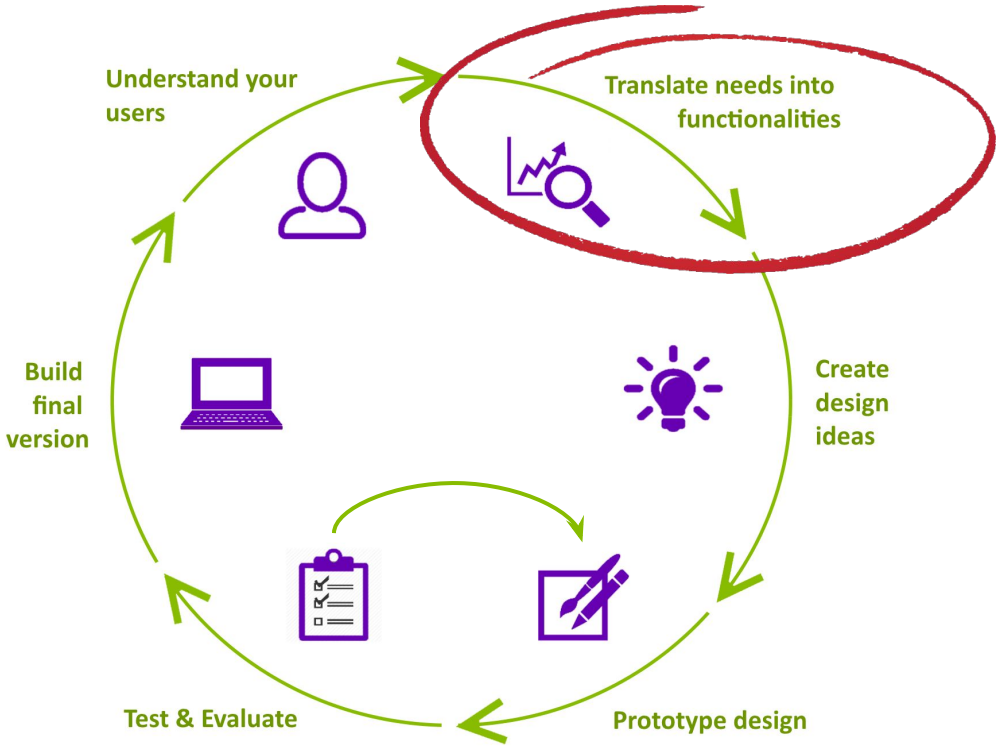
CS449/649:
Human-Computer Interaction

Spring 2017

Lecture V

Anastasia Kuzminykh


Understand your users
Translate needs into functionalities
Create design ideas
Prototype design
Test & Evaluate
Build final version

Understand Your Users: Exploratory Studies

Exploratory Study

Motivational system

- Goals and tasks (“need”)
- Desirability (“want”)
- Emotional charge (“fears”, frustration, pleasure, etc.)

Contextual knowledge & beliefs

Cognitive (Mental) model

- A cognitive representation (understanding) of how something works / organised
- Based on previous experience & believes; defines reasoning

Translating Needs Into Functionalities

- Make data actionable
- Identify right time and place
- Turn problems into tasks

Translating Needs Into Functionalities

Make data actionable

- Adjust personas
- Affinity diagrams
- Breakdowns
- Cultural model
- Artifact models

Identify right time and place

- Physical model
- Sequence model
- Flow model

Turn problems into tasks

- Thinking
- Memory
- Attention
- Motivations
- Habituation

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Make them more colorful and detailed based on the generalized characteristics of your participants you did not account for previously

(most likely there several)

Translating Needs Into Functionalities

Make data actionable

- Adjust personas
- **Affinity diagrams**
- Breakdowns
- Cultural model
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A sense-making tool for qualitative data

(see lecture IV)

Notes on cards → Review the cards → Sorting & grouping → Sub - groups → Themes in Data

Translating Needs Into Functionalities

Make data actionable

- Adjust personas
- **Affinity diagrams**
- Breakdowns
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https://jipinghe.com/2012/08/13/campuseye-capstone-project-with-panasonic-rd/

Translating Needs Into Functionalities

Make data actionable

- Adjust personas
- Affinity diagrams
- **Breakdowns**
- Cultural model
- Artifact models

Where and when things go wrong in individuals work practice

Points in time or space when individuals have a problem accomplishing the task that should otherwise be easy given the tools that they are using

Unpacking the tacit dimension for possible design solutions

Translating Needs Into Functionalities

Make data actionable

- **Adjust personas**
- **Affinity diagrams**
- **Breakdowns**
- **Cultural model**
- **Artifact models**

External influences - because:

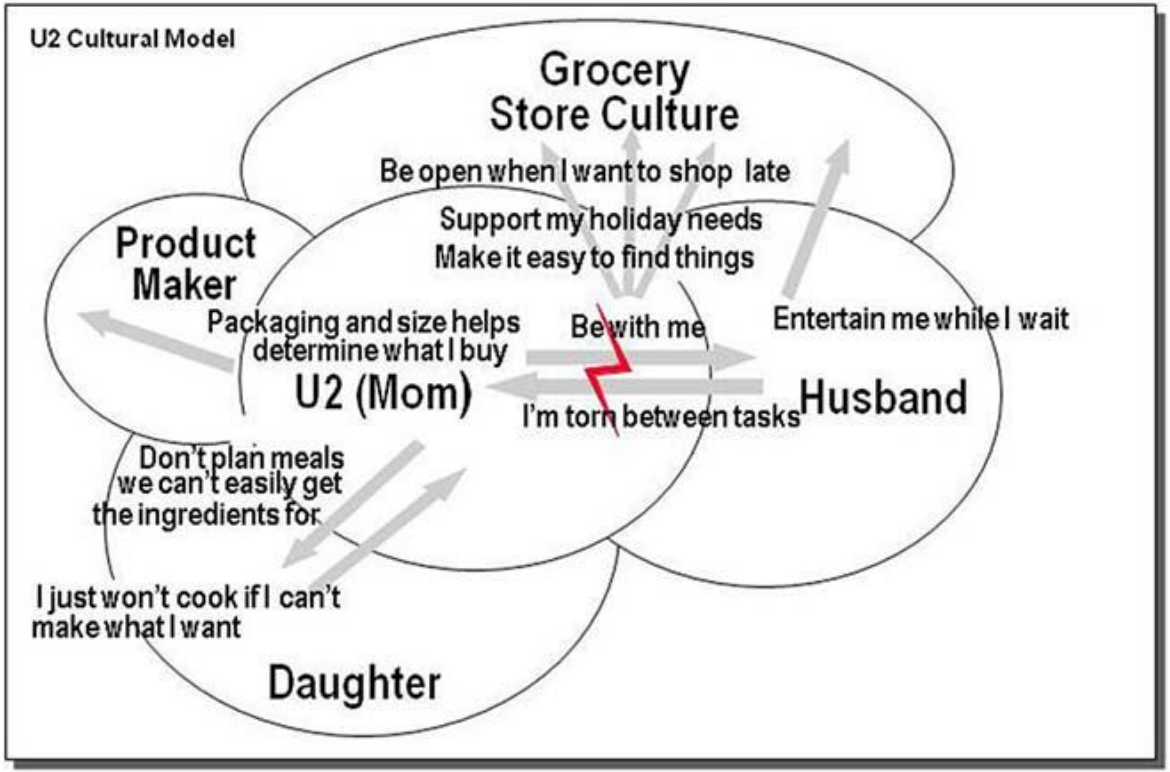
"Work takes place in a culture, which defines expectations, desires, policies, values, and the whole approach people take to work"

Beyer, Hugh, and Karen Holtzblatt.
***Contextual design: defining customer-centered systems*.**

Includes:

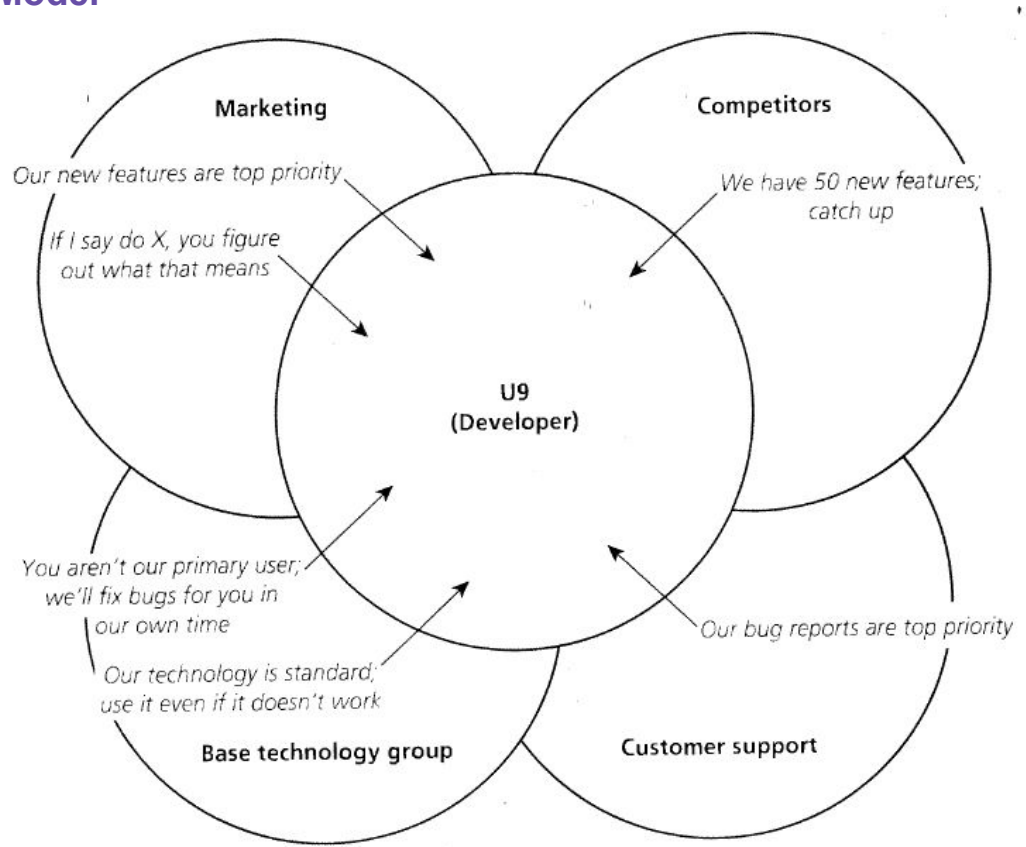
- Influencers (represented as bubbles)
- Extent of influence (overlap of bubbles)
- Influences (as arrows - mind direction)
- Breakdowns

Cultural Model



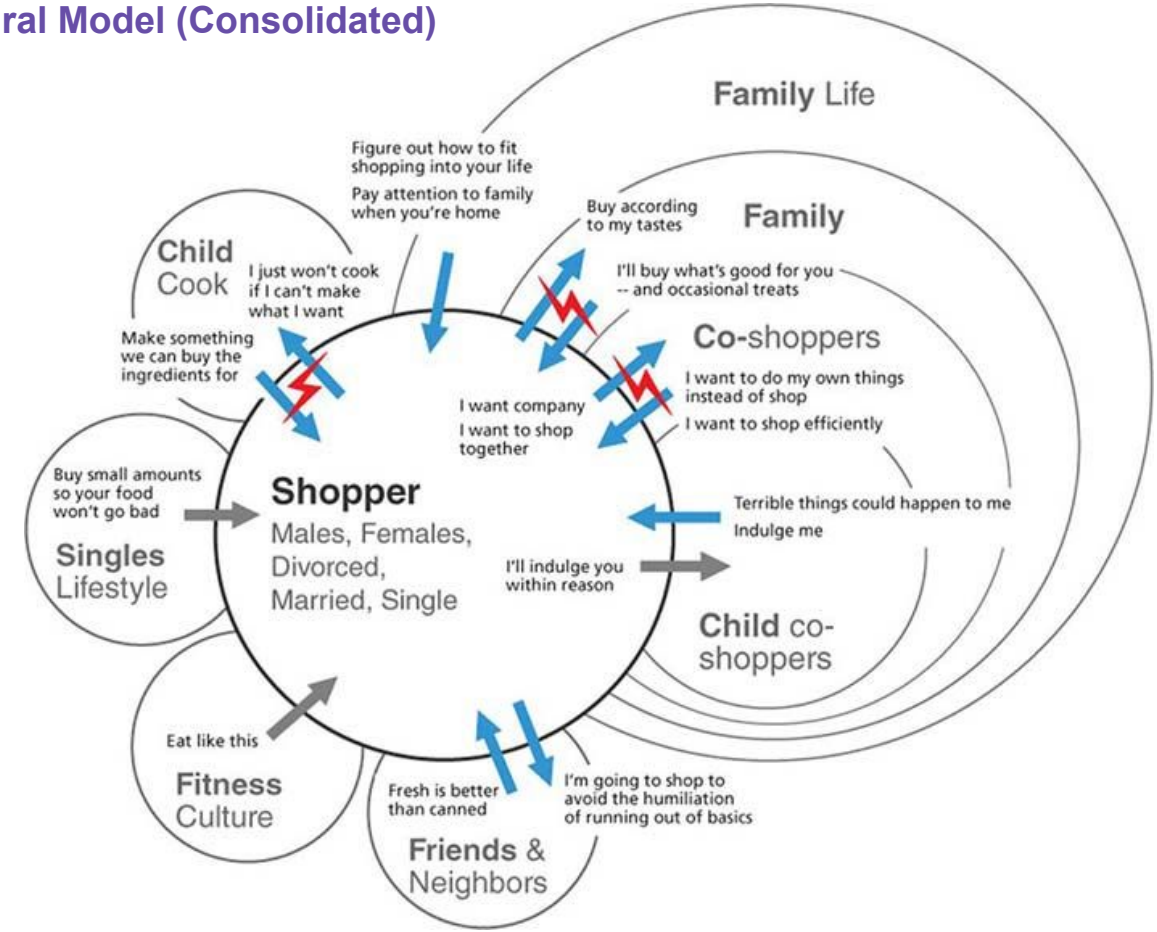
Beyer, Hugh, and Karen Holtzblatt. *Contextual design*.

Cultural Model



Beyer, Hugh, and Karen Holtzblatt.
Contextual design: defining customer-centered systems.

Cultural Model (Consolidated)



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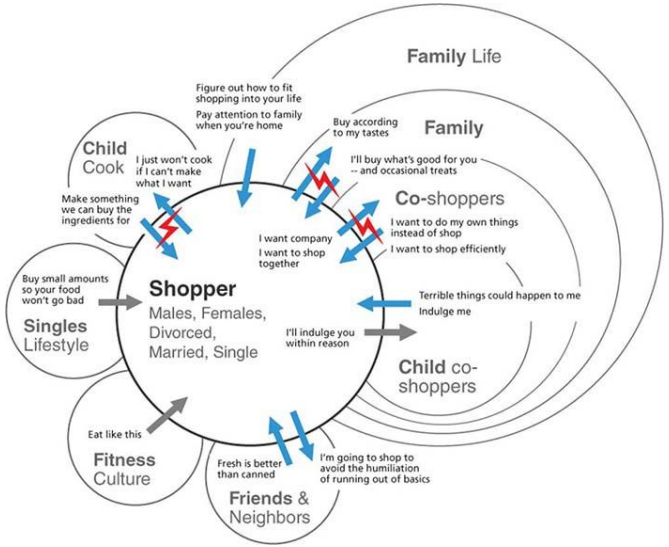

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Translating Needs Into Functionalities

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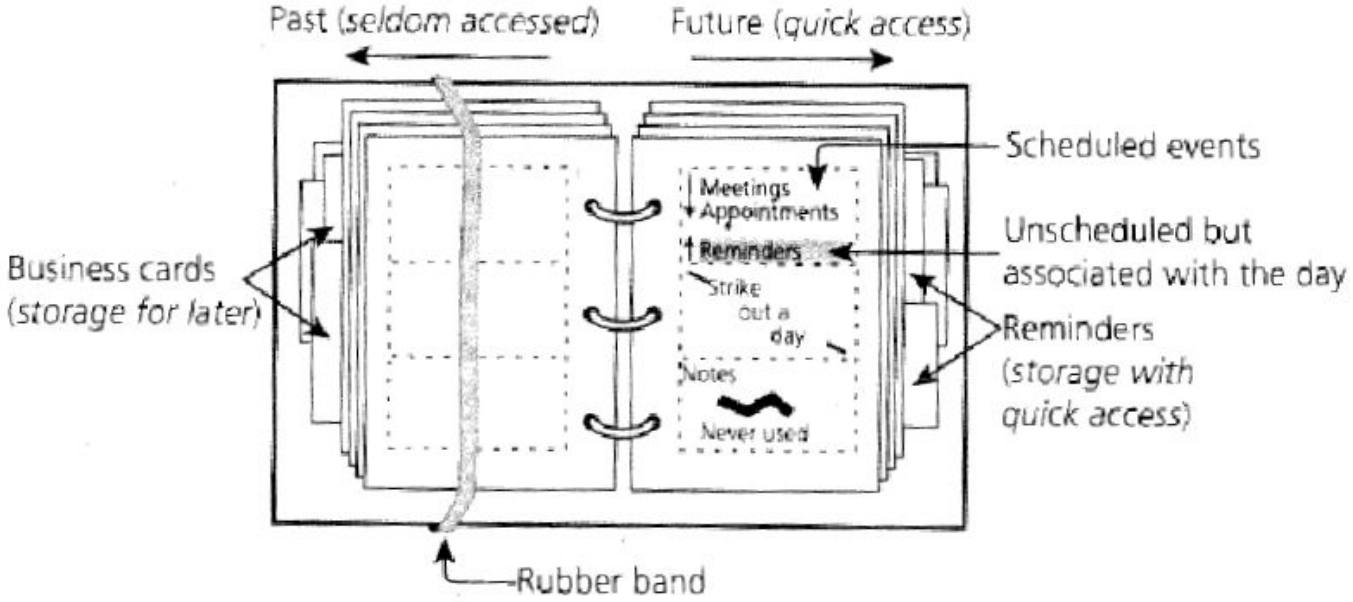
Physical objects that support the work (created and/or used in the process) - because you want to know what objects people need and interact with

Sketch or photo

Complete with comments and notes on:

- Structure
- Related purpose and tasks
- Functionality

Artifact Model



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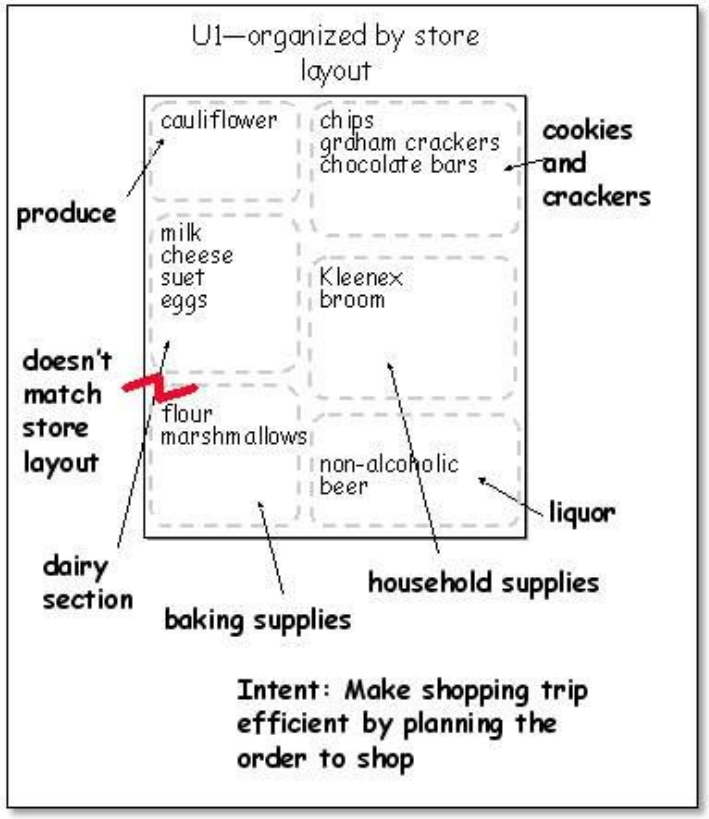
Contextual design: defining customer-centered systems.

Artifact Model



Beyer, Hugh, and Karen Holtzblatt. *Contextual design*.

Artifact Model (Consolidated)

Consolidated Shopping List

Family Shopping List

Usage:

- List is usually built over time
- Items are added together using available white space
- Items can be more detailed with brand name and quantity where needed
- Items are grouped by store name or store section (e.g. food or household goods)
- Head chef reviews the final list and decides what to buy

Intents:

- Capture needs for multiple family members
- Instruct shopper what to purchase for all family members when the shopper is not head chef
- Make sure to get healthy, quality items family members need and match their expectations

Personal Shopping List

Usage:

- Usually organized like the house, built just prior to shopping
- Items are added randomly, not grouped
- List is concise, usually only capturing generic name (e.g. toothbrush, lunch meat)
- List is often for one specific store

Intents:

- Create mental trigger to get item when you see it in store (without necessarily needing to look at list)
- Remind head chef to recall details about the item to buy when looking at list

Beyer, Hugh, and Karen Holtzblatt. *Contextual design*.

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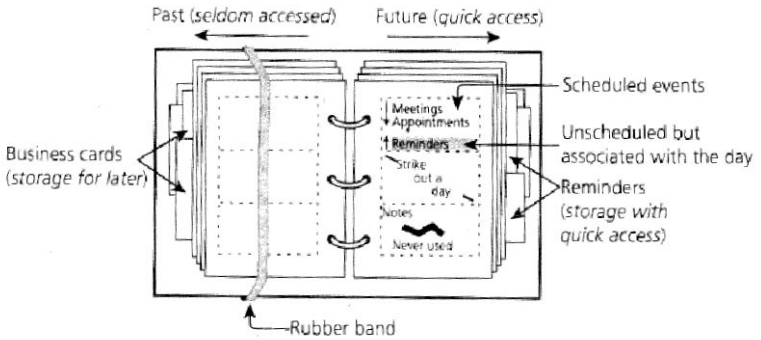

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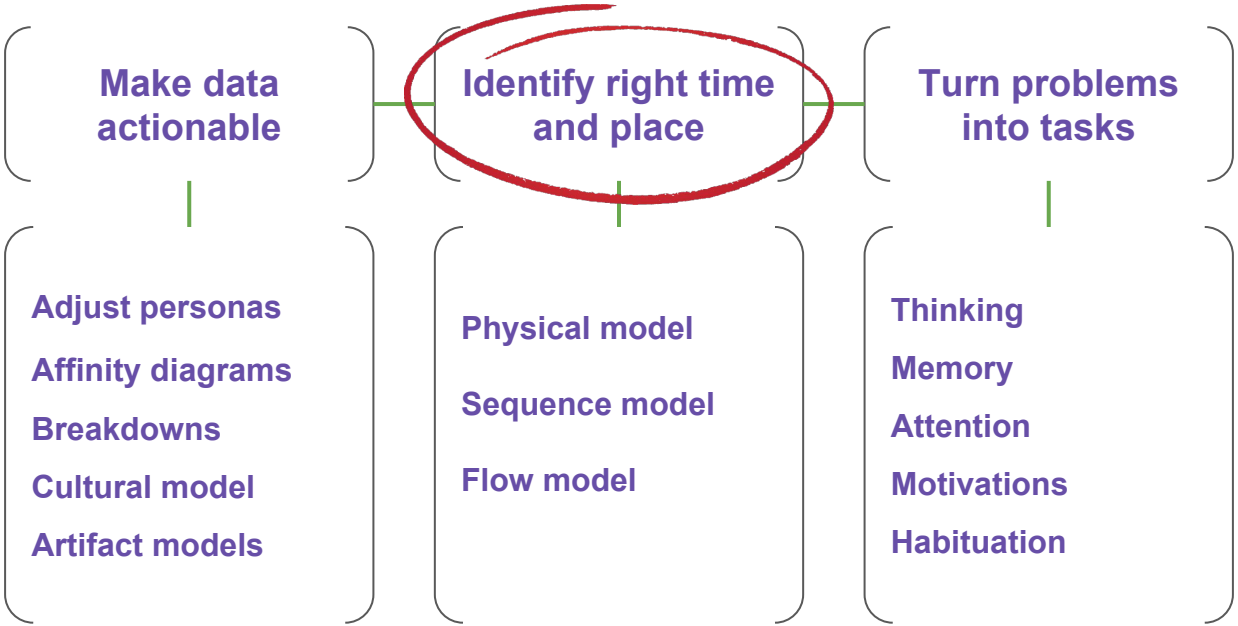
Translating Needs Into Functionalities



Translating Needs Into Functionalities

Identify right time and place

Physical model

Sequence model

Flow model

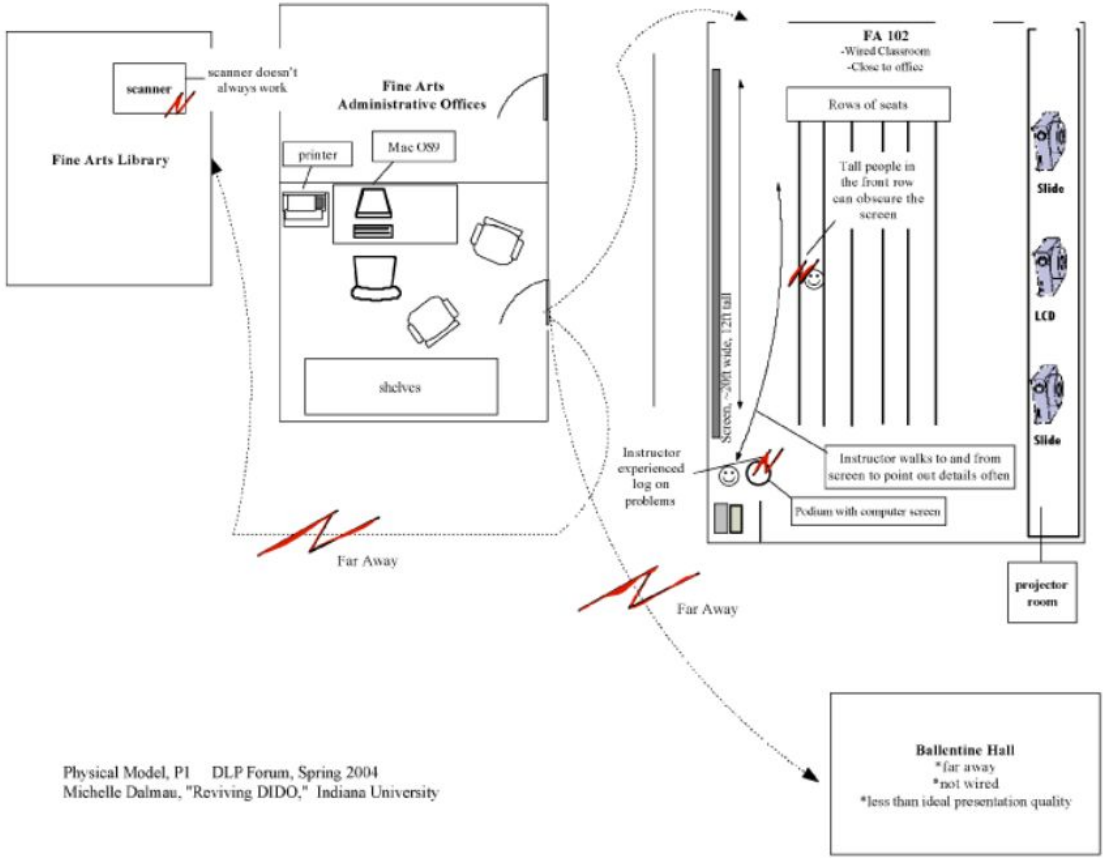
Physical work environment (plan) - because you want to know how people adapt their environment to accomplish work

Includes:

- Structures that limit and define space
- Walls, desks, file cabinets, etc.
- Hardware, software, communication tools
- Artifacts and their location in relation to each other

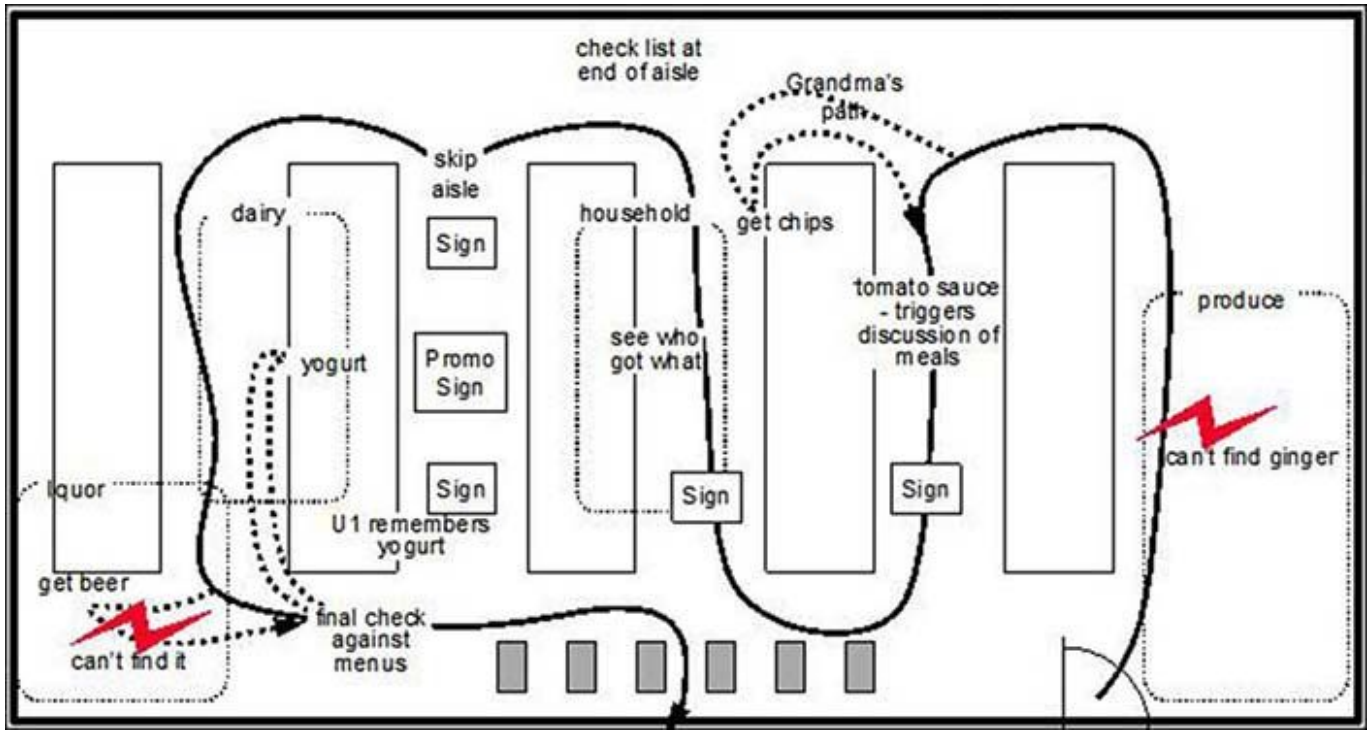
Complete with comments and notes

Physical Model



Physical Model, P1 DLP Forum, Spring 2004
Michelle Dalmau, "Reviving DIDO," Indiana University

Physical Model



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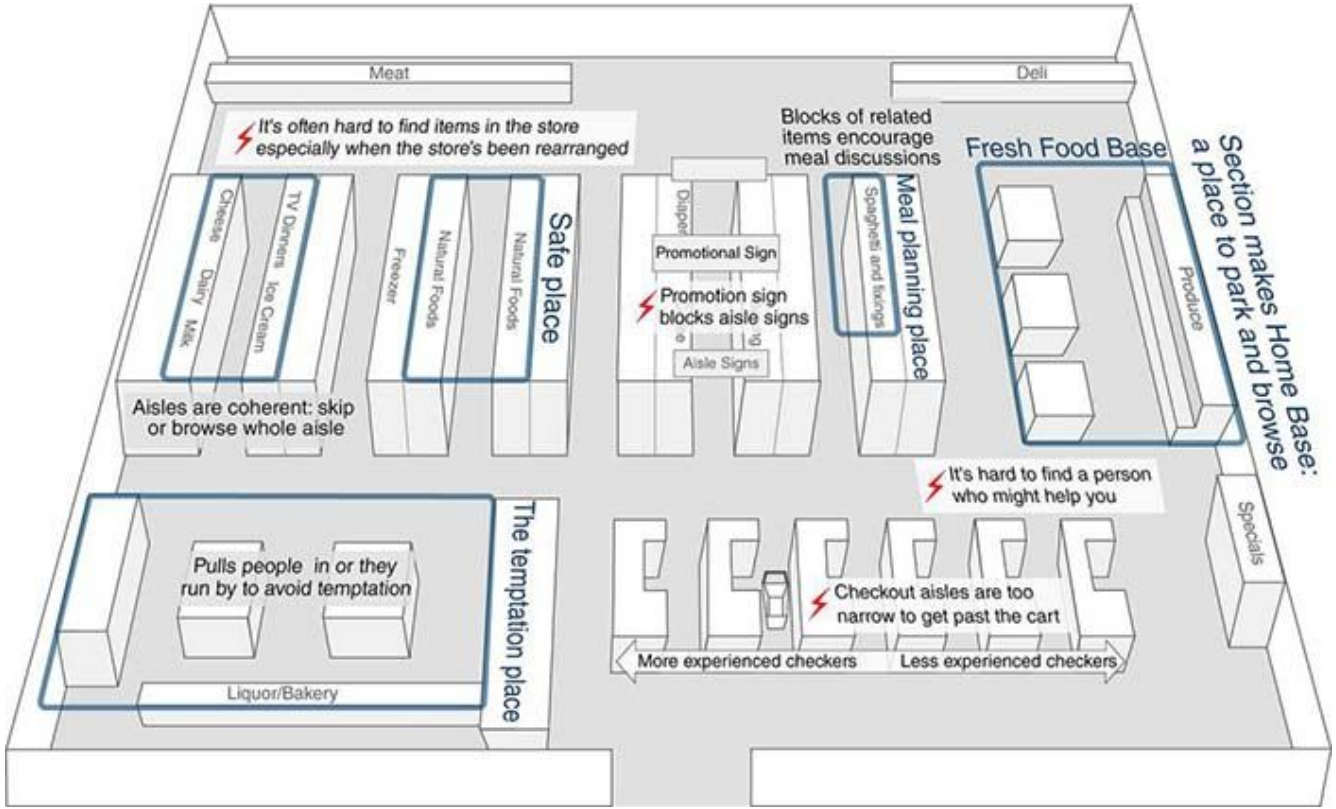
Physical Model (Consolidated)



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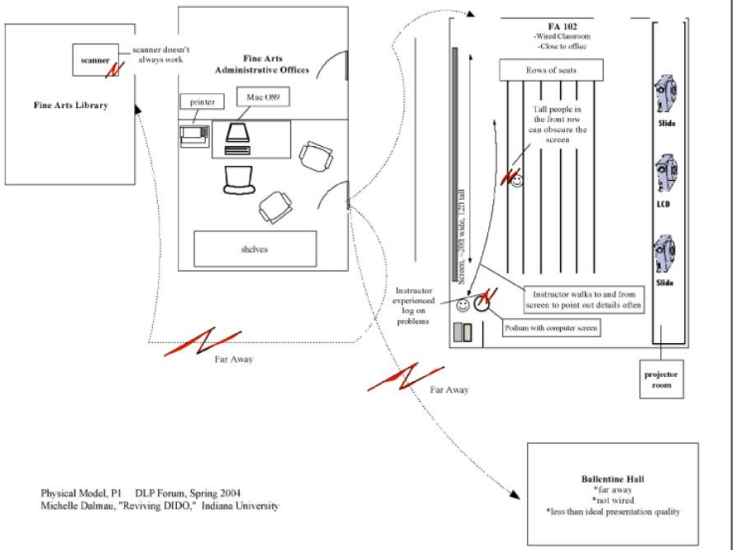


Translating Needs Into Functionalities

Identify right time and place

Physical model

Sequence model

Flow model

Sequence of work steps and the intention behind steps - because you want to know how work is organized in stages

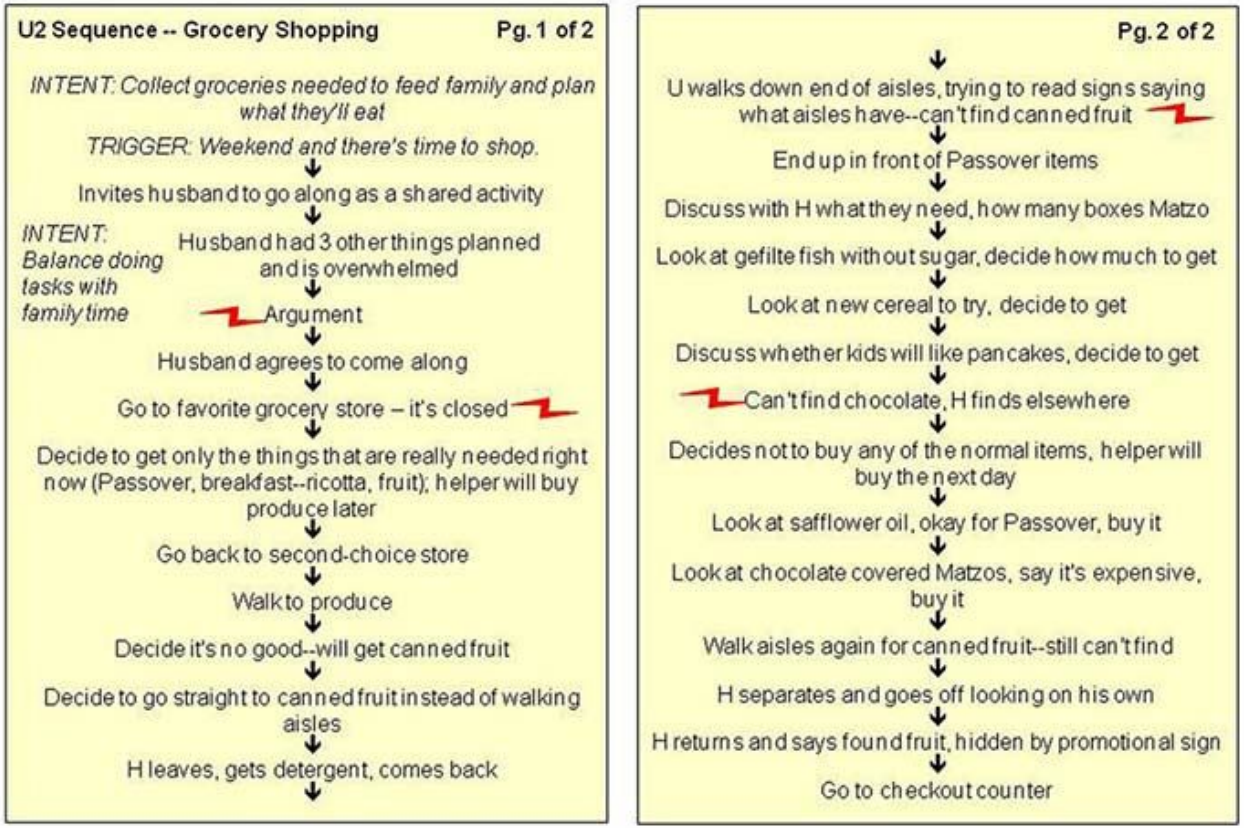
Includes:

- Intent behind step
- Triggers, that initiate sequence
- Steps, at a high level of details (actions, not movements)
- Loops and branches showing order and iteration
- Breakdowns (where things go wrong)

Sequence Model

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
	No sub-folders – many, many unique images in one folder
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

Sequence Model



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"Reviving DIDO", DLF Spring 2004,
Michelle Dalmau, Indiana University

Translating Needs Into Functionalities

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Sequence model

Flow model

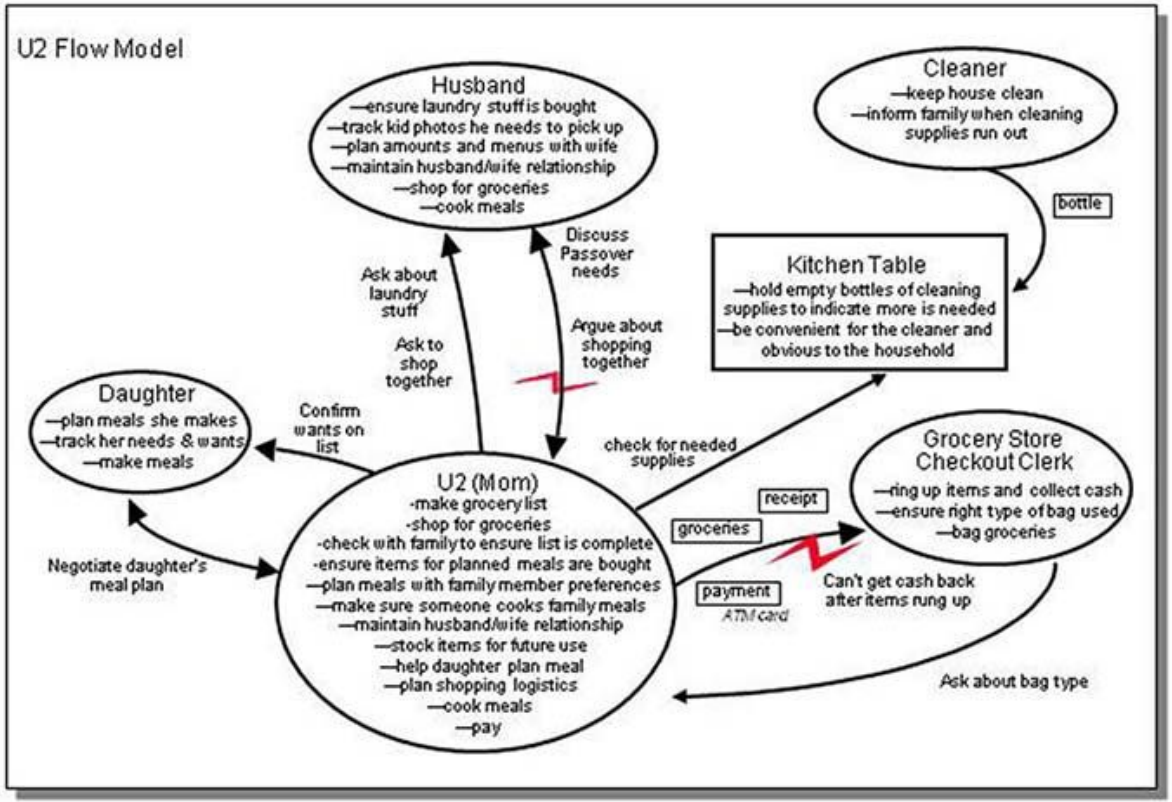
Directions of communication and coordination

Defines how work is broken up across people and how people coordinate

Includes:

- Interviewee (in the middle - circle)
- Other groups/people (circles)
- Physical/virtual places (usually rectangles)
- Artifacts as they pass between people
- Breakdowns (where things go wrong)

Flow Model



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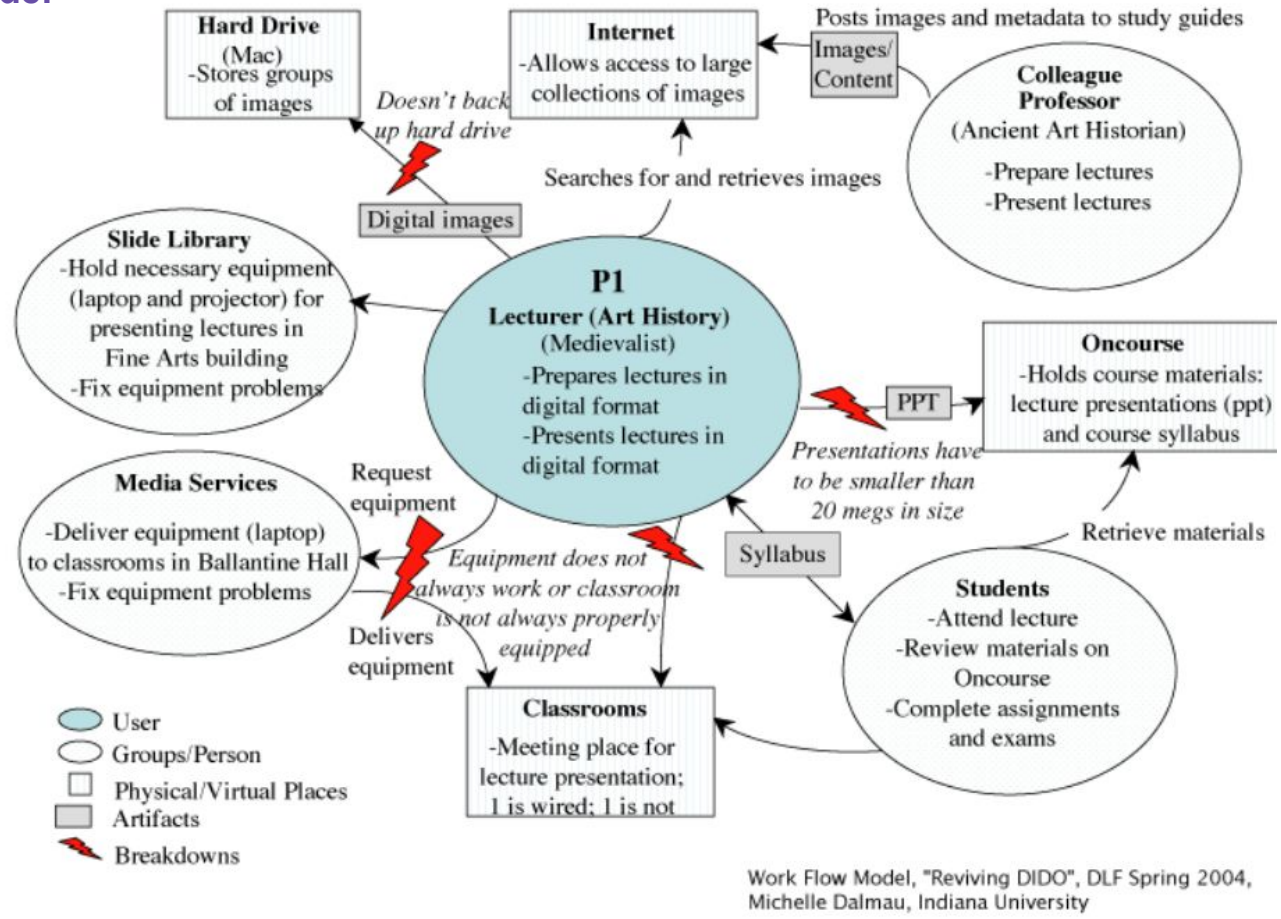
Flow Model



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

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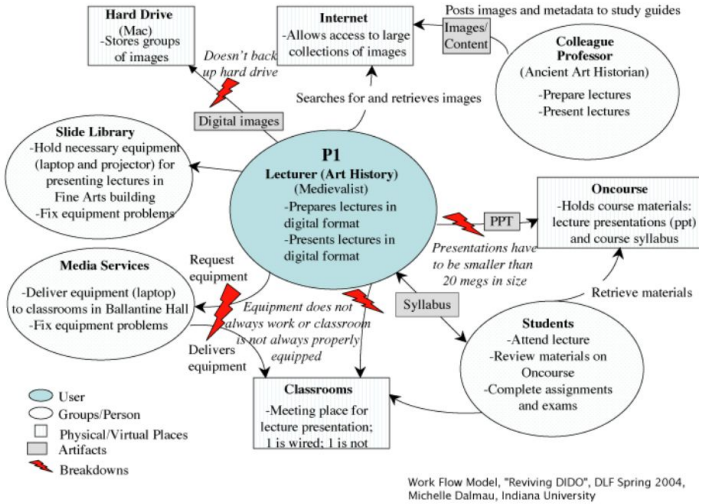

Translating Needs Into Functionalities: Preparation

Personas

Affinity Diagram

Cultural Model
(External influences)

Work Models

Physical Model
(Physical work environment)

Artifact Model
(Physical objects)

Sequence Model
(Work steps)

Flow Model
(communication and coordination)