

# Jesse's Tech Check

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Zoom: Speeding

Screen: Shared (with Audio?)

Host: TA'd

Panopto: Recording

AV Bridge: Connected

Slides: Projecting

Captions: Captioning

Mic: Amplifying

Clicker: Clicking

Beverages: Ready to be Drank

CSE 440:  
Introduction to HCI

# 07: Task Analysis

April 16, 2024

Jesse J. Martinez | Avery Mack | Simona Liao

# Project Status

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2c: Design Research Check-In due Yesterday

## Looking Forward

2d: Design Research Review due Thursday

2e: Task Review due Monday

2f: Design Check-In due Wednesday

# 2d: Design Research Review

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Core Components:

Eight Research Findings / Design Insights

Themes and High-Level Insights

Task Analysis Questions

EXP:

Conduct an “Uncommon Method” you proposed in 2b EXP

If you did not do 2b EXP:

Pick from Card Sorting OR Personal Inventory

Must include Methods Details / Rationale

# Design Research Reminders

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You are not doing science

You seek design insight,  
not knowledge, truth, or generality

Do the best design work you can

Follow design opportunities as they arise!

We designed the project sequence, but be flexible

Capture and keep your raw work products

Dedicate a note keeper, consider recording

Our collection is minimal, but you will want them

# Objectives

Be able to:

Describe how taking different perspectives on design research data can help to surface design insights.

Given design research data, be able to analyze that data in terms of people and their tasks.

Describe personas, their purpose, how and why we emphasize design research data in their creation.

Define and describe relationships between tasks, personas, and scenarios.

# The Homer

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# The Average User?

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“Classic” (read: BAD) design practice:

Design for the central 80% of the population,  
and handle the other 20% later

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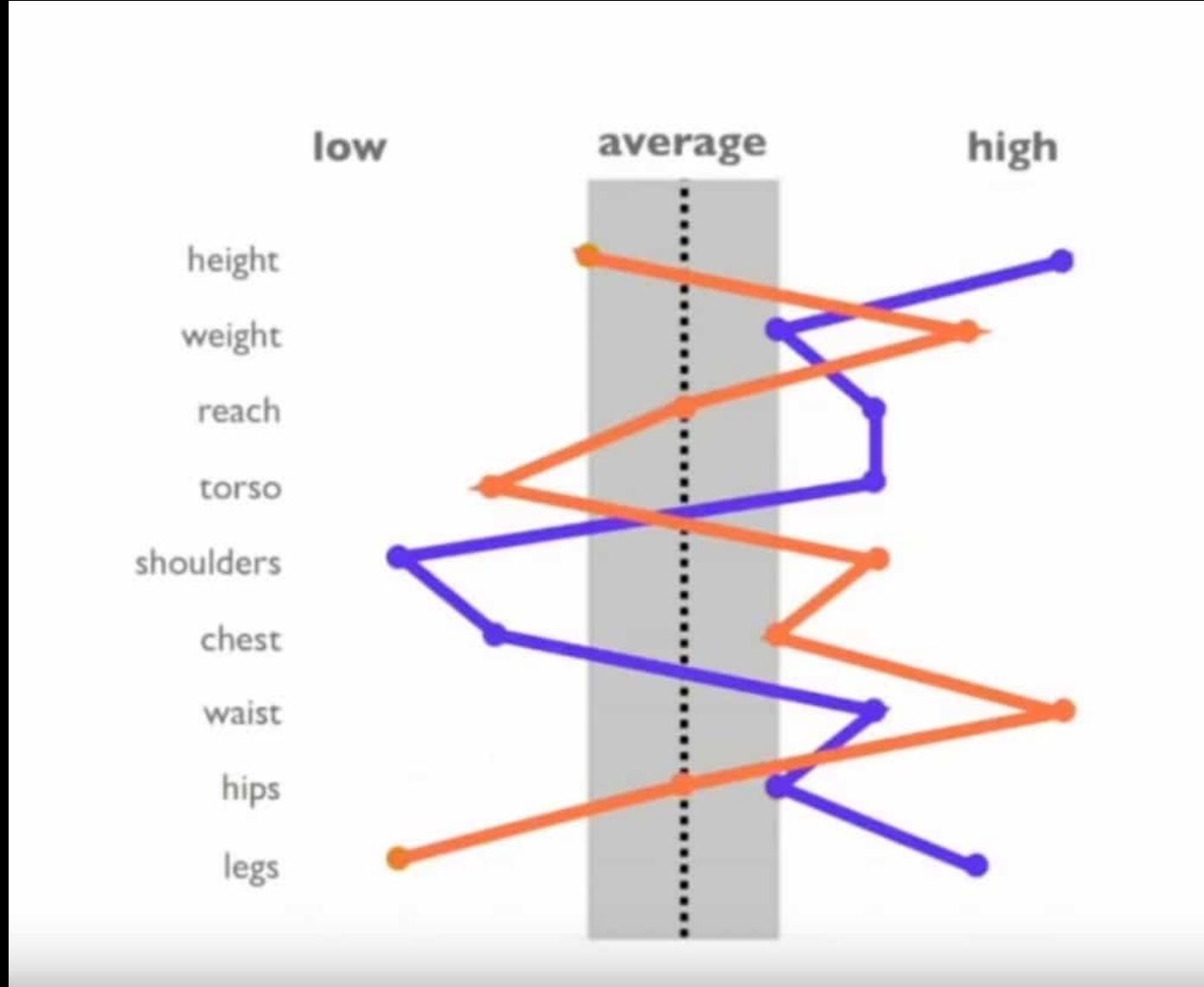
Don Norman:

*Some problems are not solved by adjustments or averages: Average a left-hander with a right-hander and what do you get?*

Andrew Robinson:

*When your head is in a refrigerator and your feet on a burner, the average temperature is okay. I am always cautious about averages.*

# The Average User?



Graph: WorldWarWings

# Turning Insights into Designs

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Not EVERY design insight can (or should!)  
make it into your final design

Which begs the question:

*How the hell do I figure out what to design for??*

# Affinity Diagrams

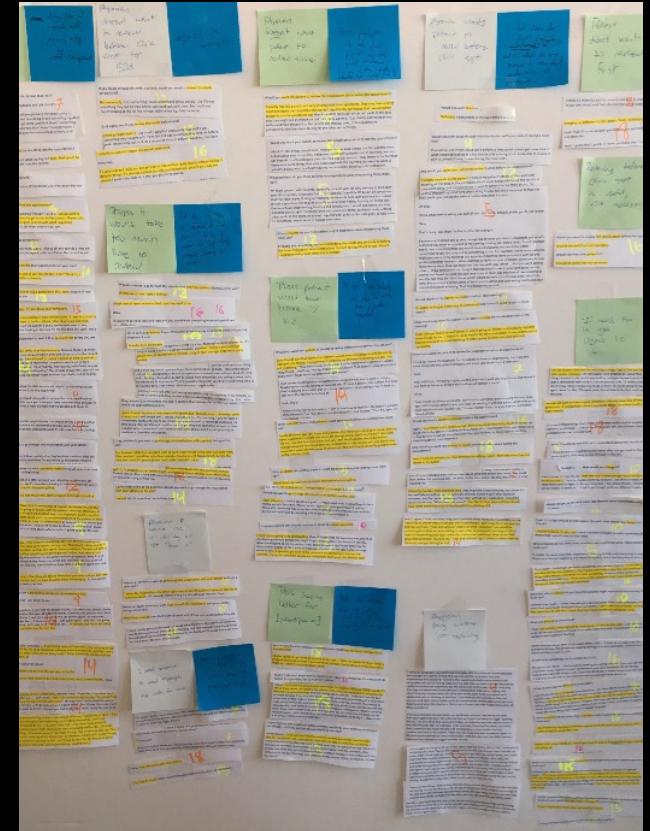
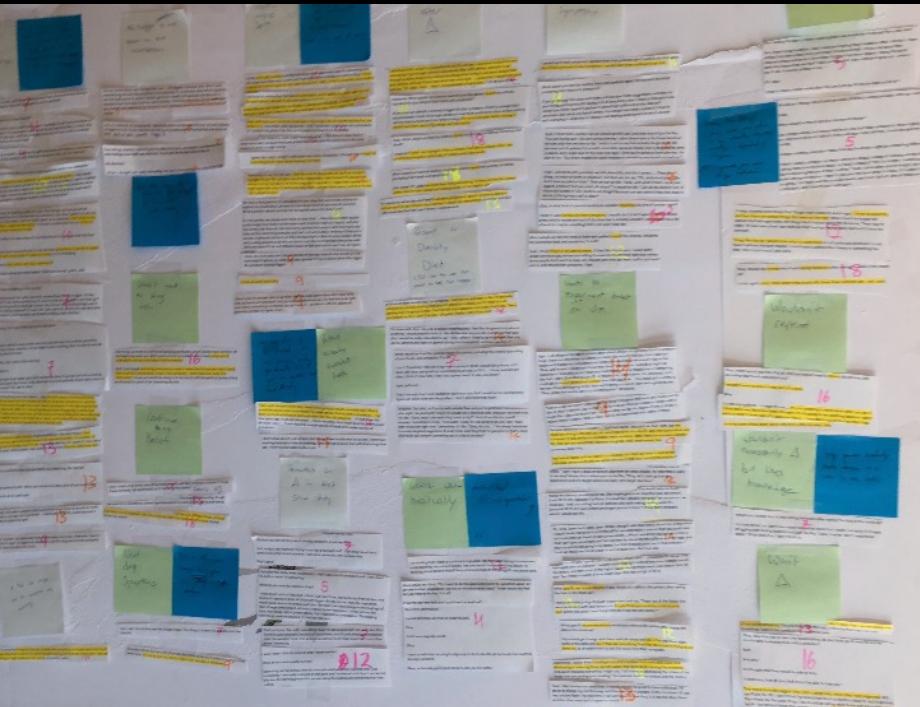
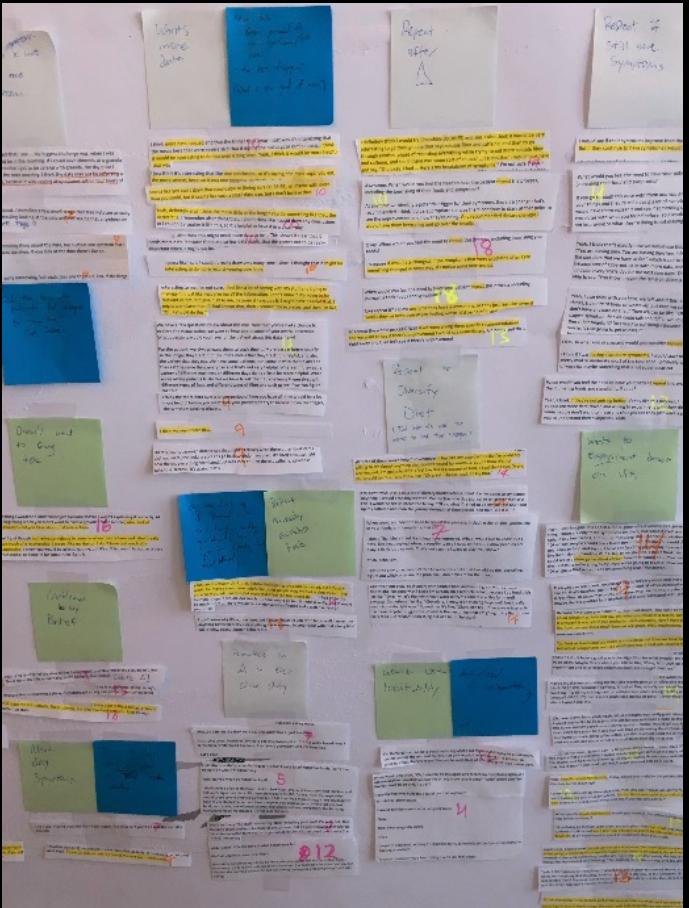
# Generated during group session

# Each observation, idea, note to a post-it

Notes are hierarchically organized into themes, based on project focus



# Affinity Diagrams



## Joint interview structure

# Developing Models

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Distilling models that summarize data

Highlights gaps in understanding, identify breakdowns

Many types of models

e.g., Flow, Sequence, Artifact, Cultural, Physical

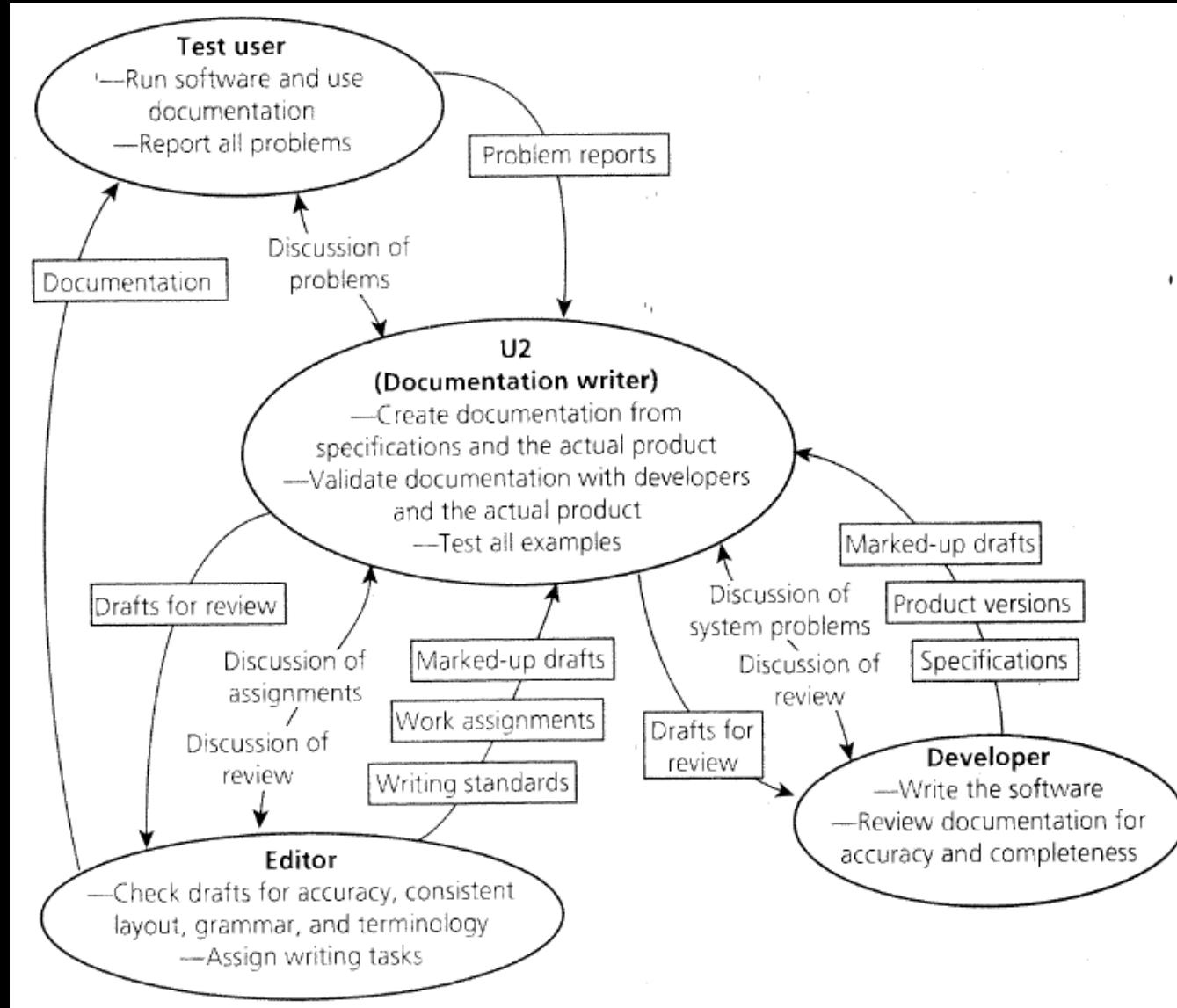
None is perfect, they highlight different things

No model is perfect or guarantees insight

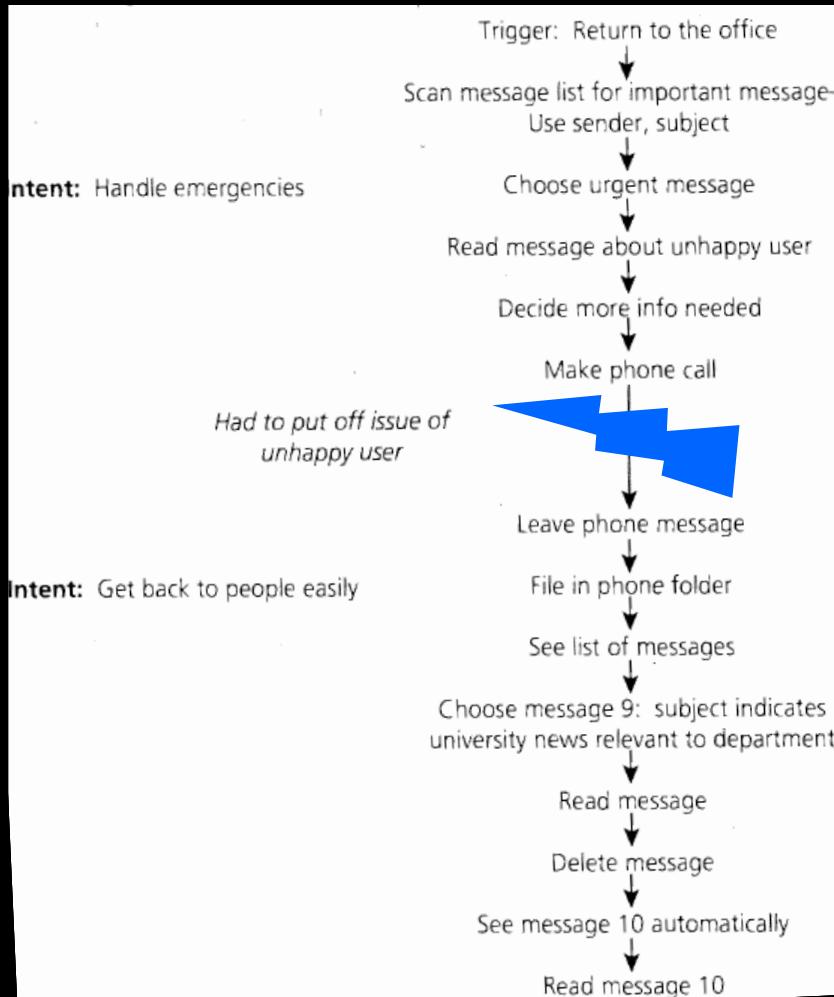
But each may surface a different perspective

Each model advances assumptions regarding what is important

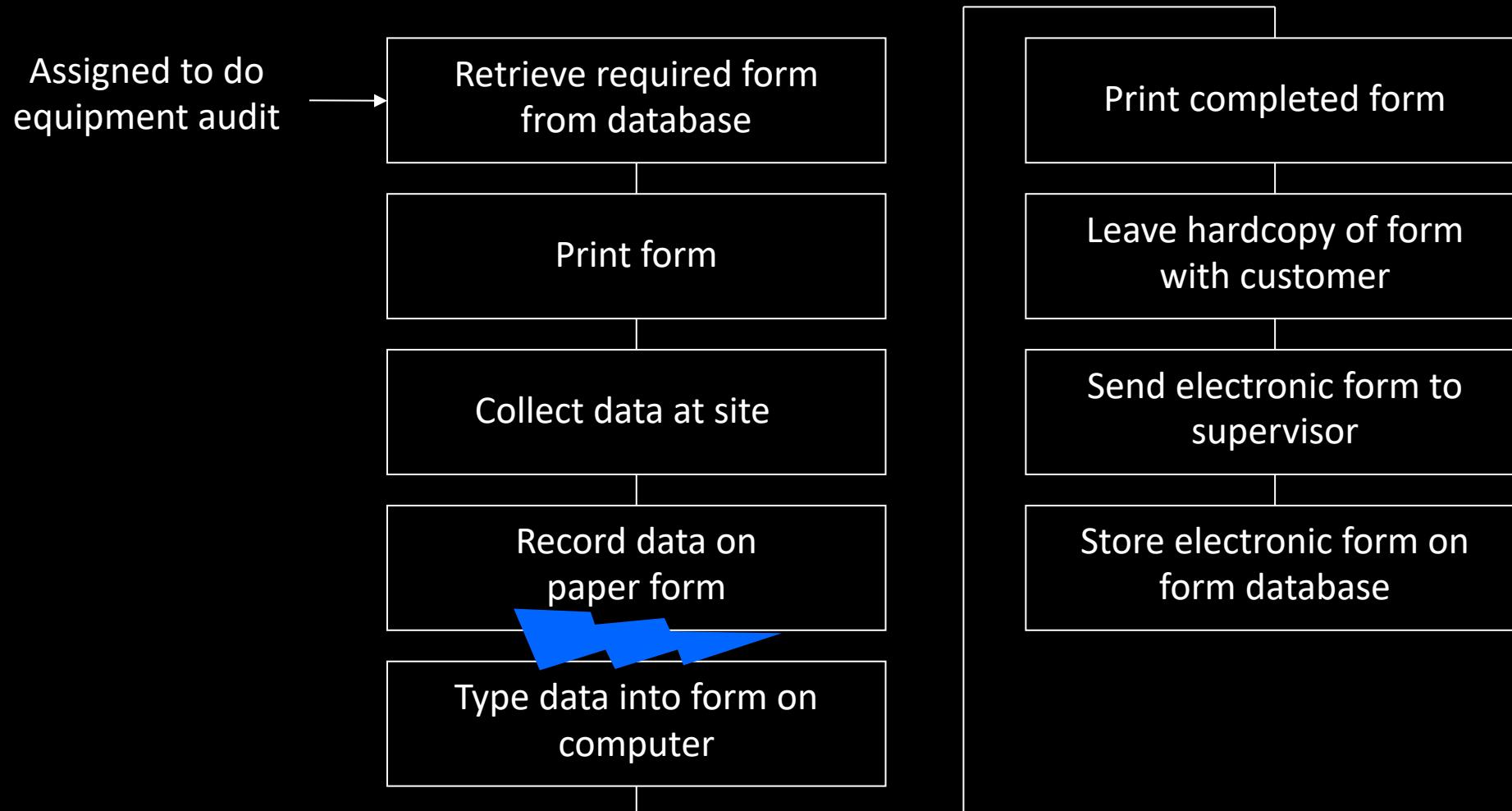
# Flow Model: Creative Work



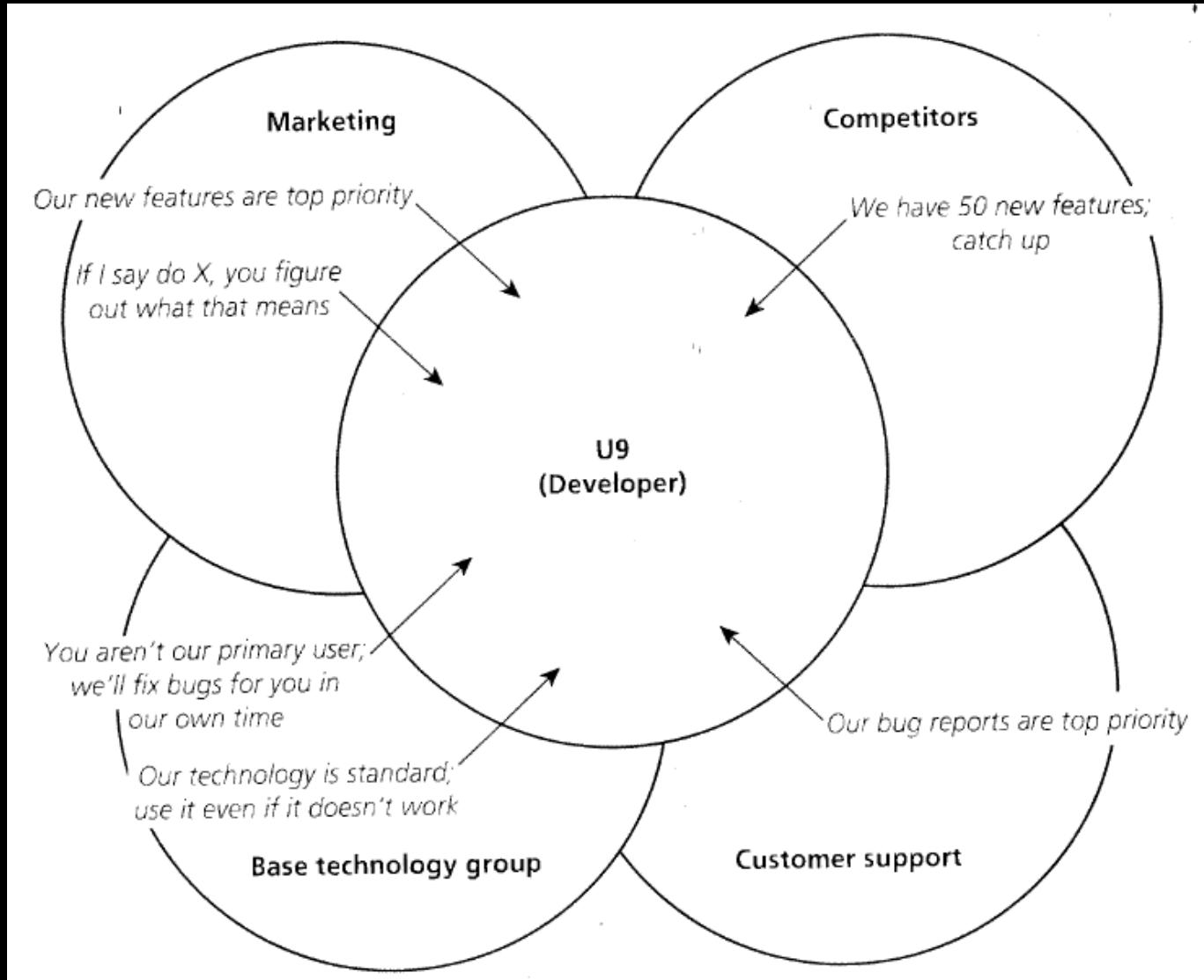
# Sequence Model: Doing Email



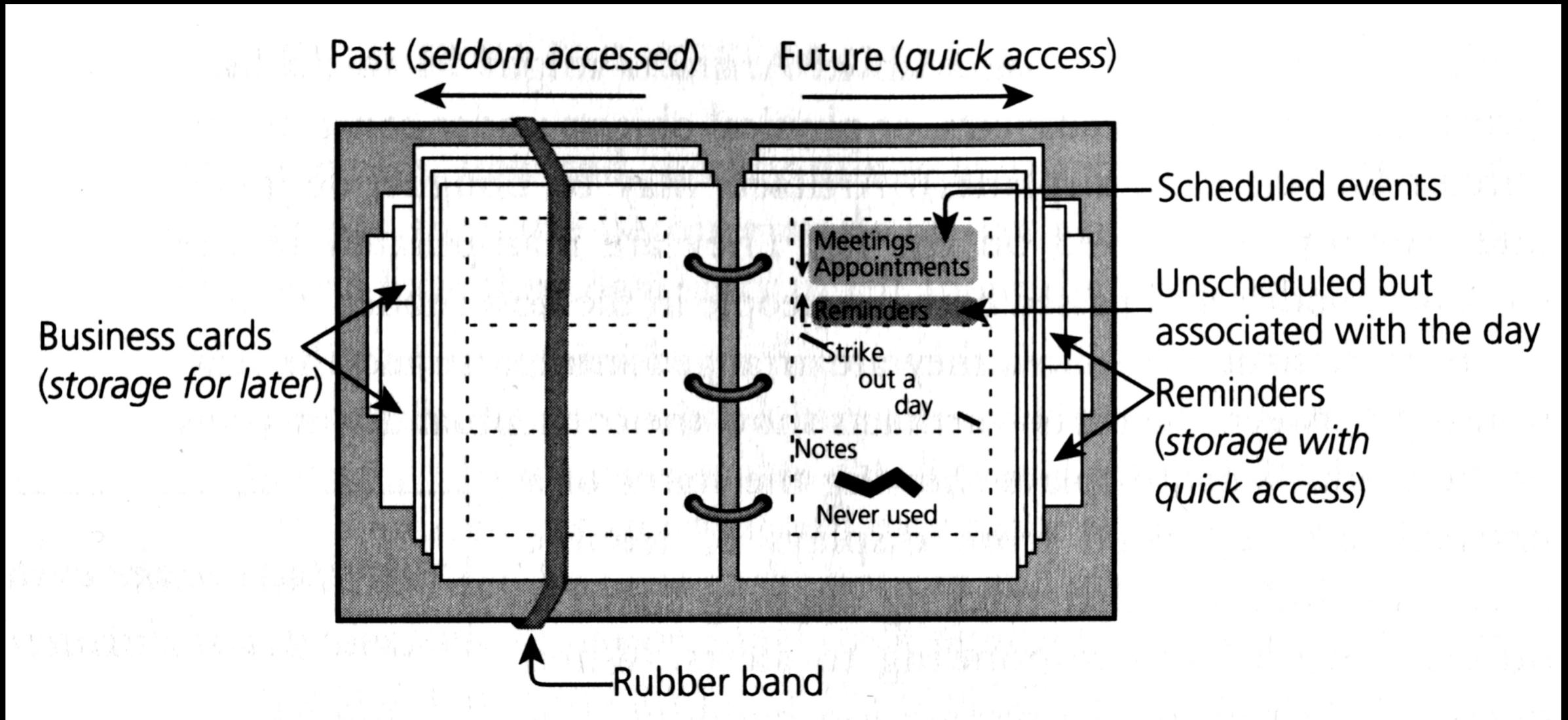
# Sequence Model: Equipment Audit



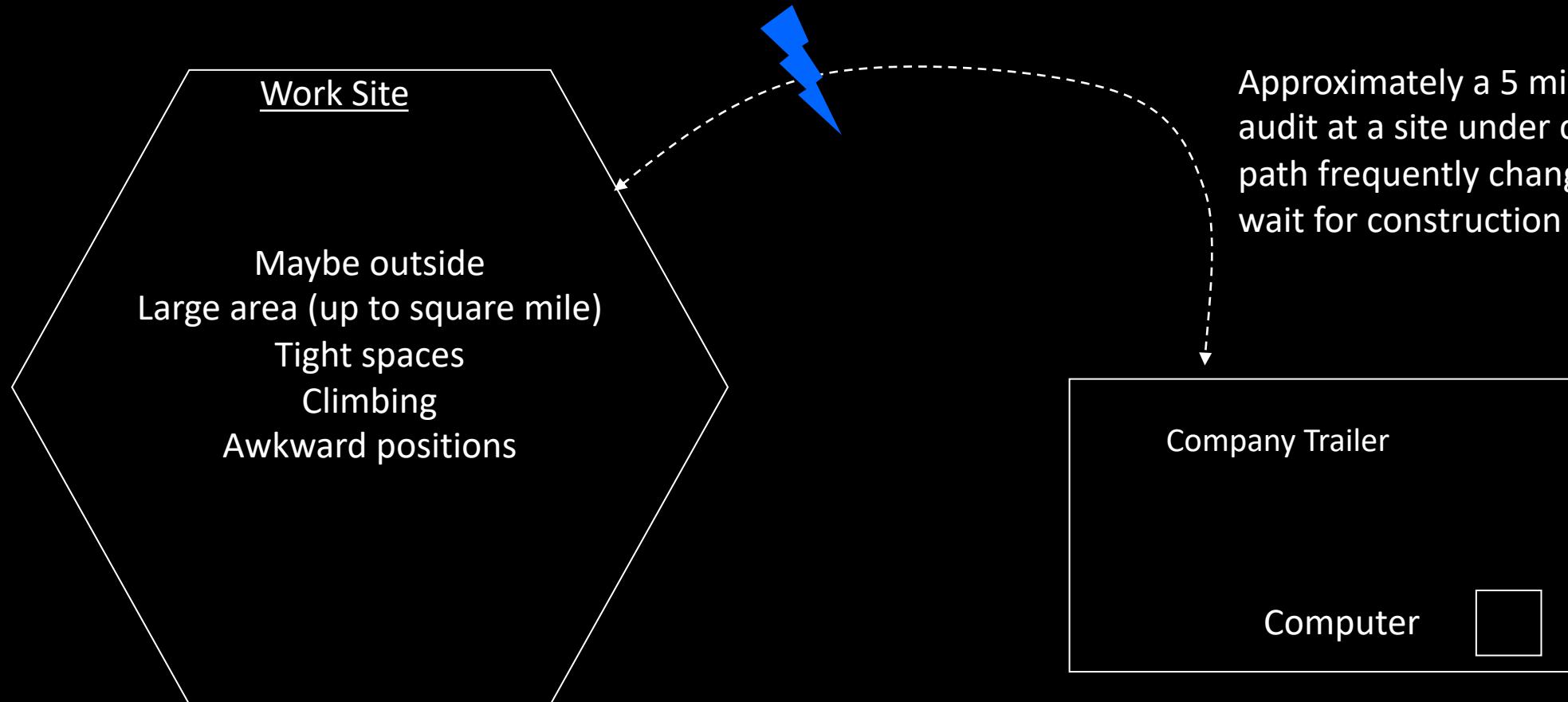
# Cultural Model: Developer



# Artifact Model: Calendar

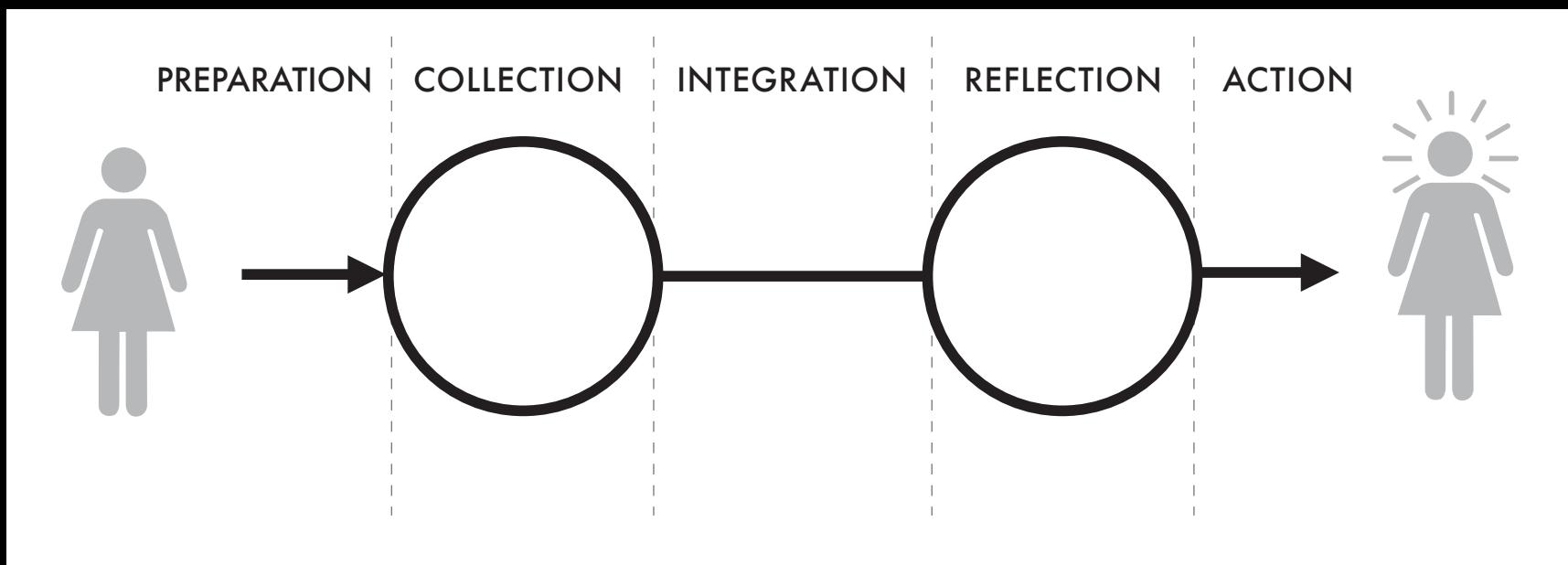


# Physical Model: Work Site



# Five-Stage Model of Personal Informatics

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Li I., Dey A., Forlizzi J. *CHI 2010.*  
“A Stage-Based Model of Personal Informatics Systems”

# Five-Stage Model of Personal Informatics

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20 years old

Has a family history  
of heart disease

Wants to be more active

Does not know how,  
because she is busy

Li I., Dey A., Forlizzi J. *CHI 2010.*  
“A Stage-Based Model of Personal Informatics Systems”

# Preparation

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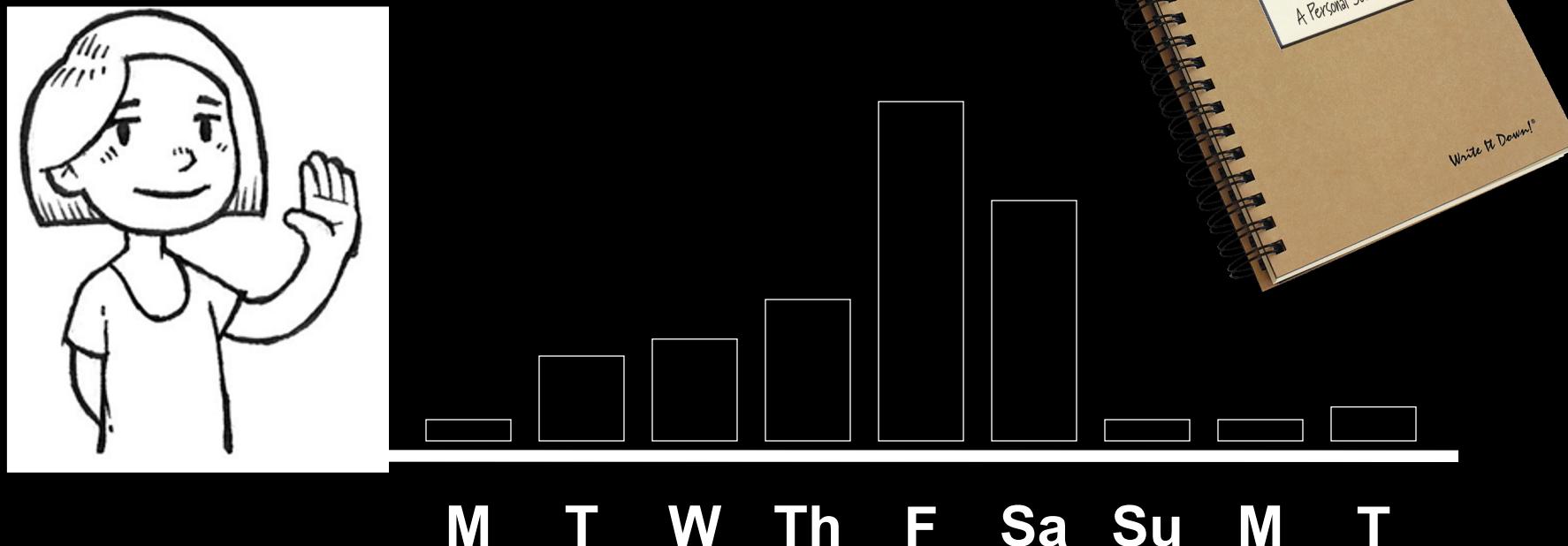
# Collection

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Li I., Dey A., Forlizzi J. *CHI 2010.*  
“A Stage-Based Model of Personal Informatics Systems”

# Integration



Li I., Dey A., Forlizzi J. *CHI 2010.*  
“A Stage-Based Model of Personal Informatics Systems”

# Reflection

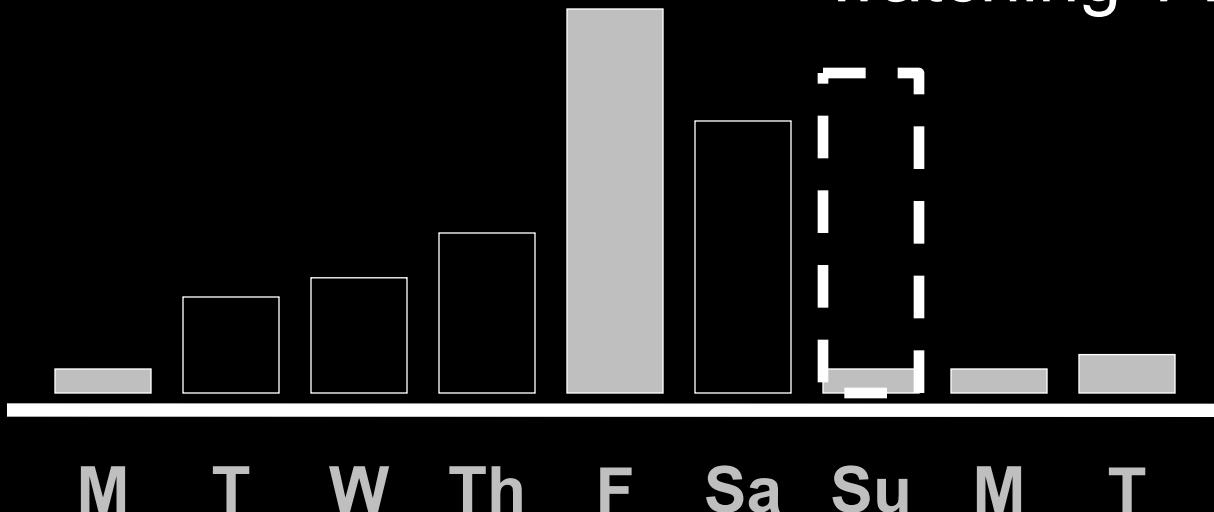
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Li I., Dey A., Forlizzi J. *CHI 2010.*  
“A Stage-Based Model of Personal Informatics Systems”

## Action

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Walk in park  
instead of  
watching TV

Li I., Dey A., Forlizzi J. *CHI 2010.*  
“A Stage-Based Model of Personal Informatics Systems”

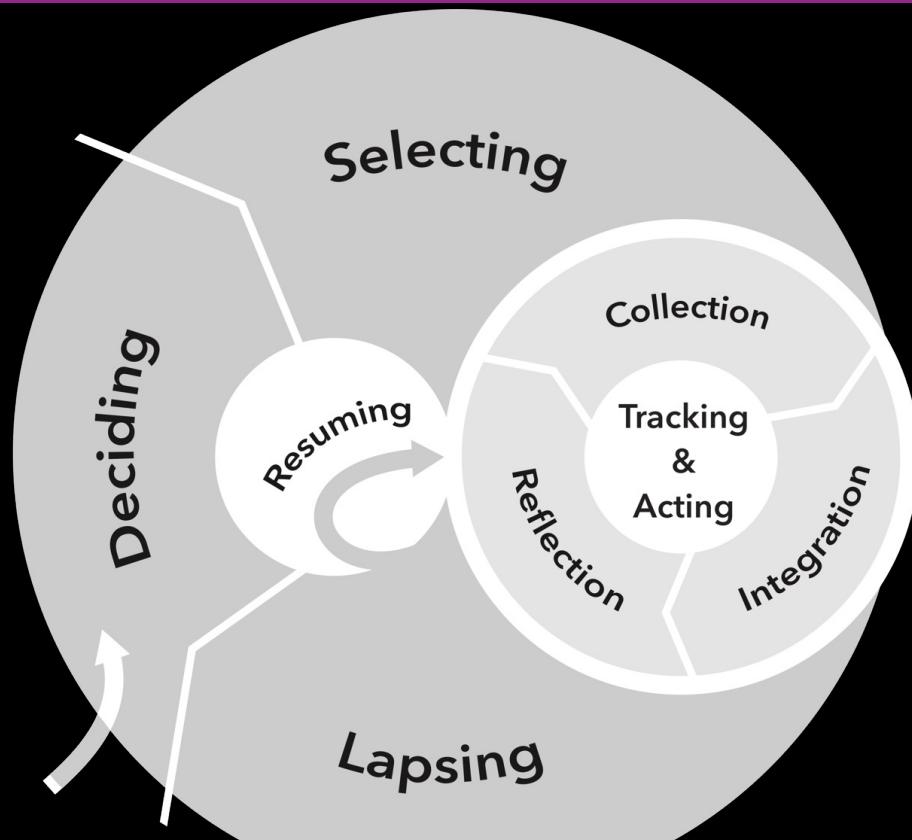
# A Model of Lived Informatics

Extends 5-stage model to surface additional opportunities and challenges in lifecycle

Returning to a tool  
(e.g., short/long lapse)

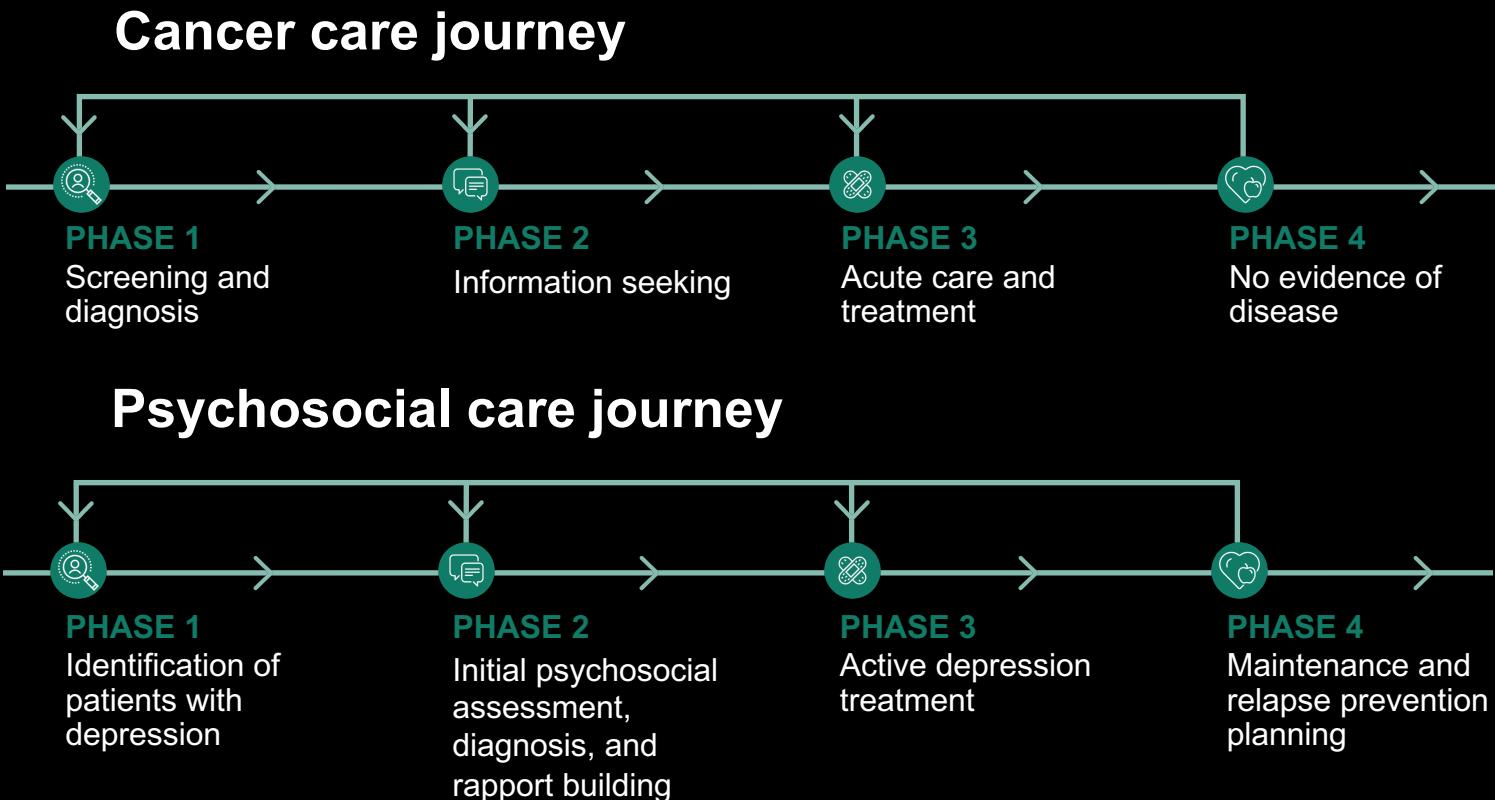
Changing tools  
(e.g., due to burden)

Changing goals  
(e.g., due to discovery)



Daniel A. Epstein, An Ping, James Fogarty, Sean Munson. UbiComp 2015.  
A Lived Informatics Model of Personal Informatics

# Parallel Journeys Framework



Jina Suh, Spencer Williams, Jesse R. Fann, James Fogarty, Amy M. Bauer, Gary Hsieh. CSCW 2020.  
Parallel Journeys of Patients with Cancer and Depression: Challenges and Opportunities for Technology-Enabled Collaborative Care

# Developing Models

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Distilling models that summarize data

Highlights gaps in understanding, identify breakdowns

Many types of models

e.g., Flow, Sequence, Artifact, Cultural, Physical

None is perfect, they highlight different things

No model is perfect or guarantees insight

But each may surface a different perspective

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# Designing with Tasks

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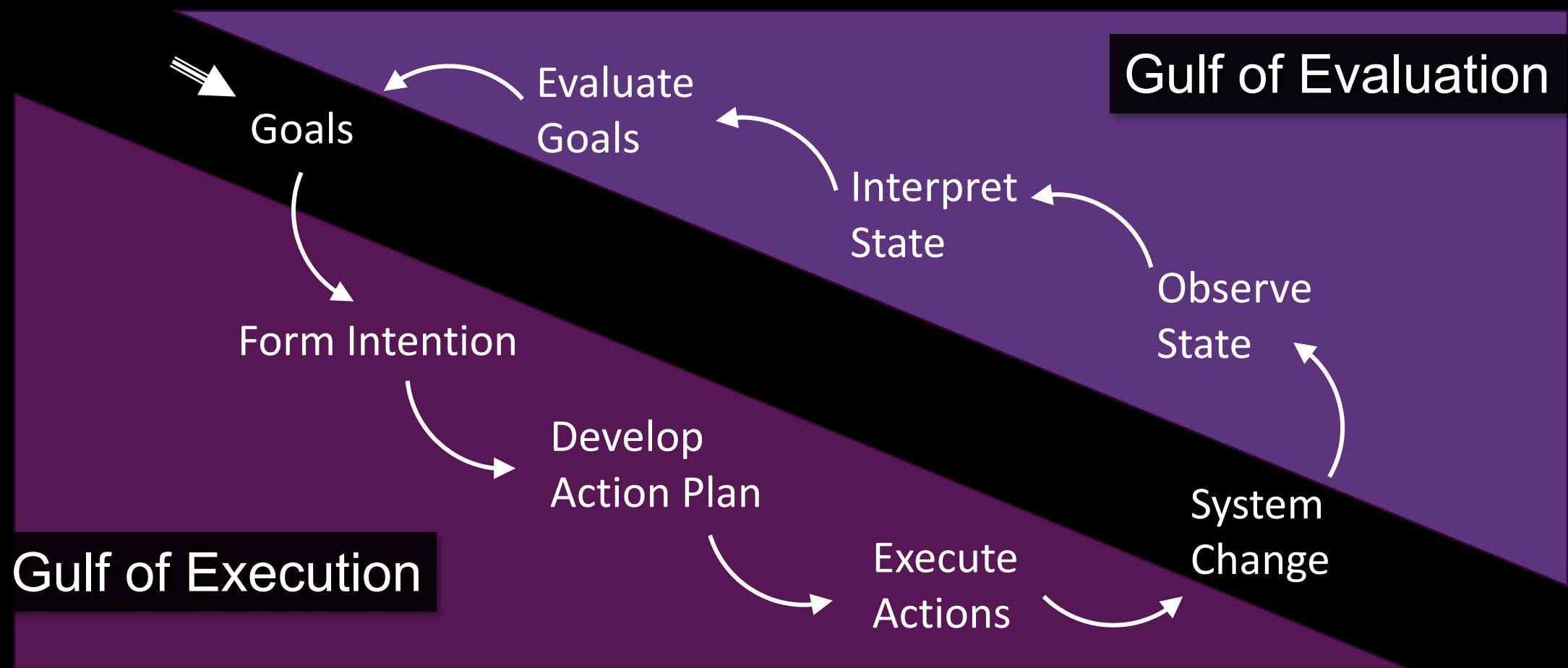
We will primarily emphasize designing with **tasks**

*...remember those?*

# Recap: Intro to Task-Based Design

*L02: Design Language 101*

# Norman's Execution-Evaluation Cycle



# Bridging the Gulfs

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## Gulf of Execution: “How do I do it?”

Commands and mechanisms need to match the goals, thoughts, and expectations of a person

## Gulf of Evaluation: “What does it mean?”

Output needs to present a view of the system that is readily perceived, interpreted, and evaluated

**Tasks** are a useful model for understanding and describing what people are trying to do

# Intro to Task-Based Design

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A **Task** represents something that a user is trying to accomplish

A task can be:

*Based on a Long- or Short-term Goal*

Long-term goal: Brad wants to get in shape by working out more

Related Tasks: “Track physical fitness progression”  
“Schedule more workouts”

Short-term goal: Nina wants to go see a movie right now

Related Tasks: “Find nearby theaters”  
“Learn what movies are playing”

# Intro to Task-Based Design

---

A **Task** represents something that a user is trying to accomplish

A task can be:

*Oriented around an outcome in any part of the System*

Goal: Be able to read in a dark room

Related Tasks: “Increase the light in the room”  
“Find the book on a smartphone with a lit screen”  
“Acquire night-vision”

# Intro to Task-Based Design

---

A **Task** represents something that a user is trying to accomplish

A task can be:

*Composed of Other Tasks*

Long-term goal: Increase the light in the room

Subtasks:

- “Determine if opening the curtains would fix this”
- “Learn if there are lamps in the room”
- “Turn on a lamp”

# Tasks Matter

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System will fail if:

- It is inappropriate for the person
- It does not meet a person's needs

Your design research will emphasize  
getting to know people and their needs

Can you then just make ‘good’ interfaces?

# Why Task Analysis?

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‘Good’ has to be interpreted in the context of use

- Might be acceptable in office, but not for play

- Infinite variety of tasks and customers

Guidelines are too vague to be generative

- e.g., “give adequate feedback”

- Can be used to critique, but not to generate

# Why Task Analysis?

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# Why Task Analysis?



# Why Task Analysis?

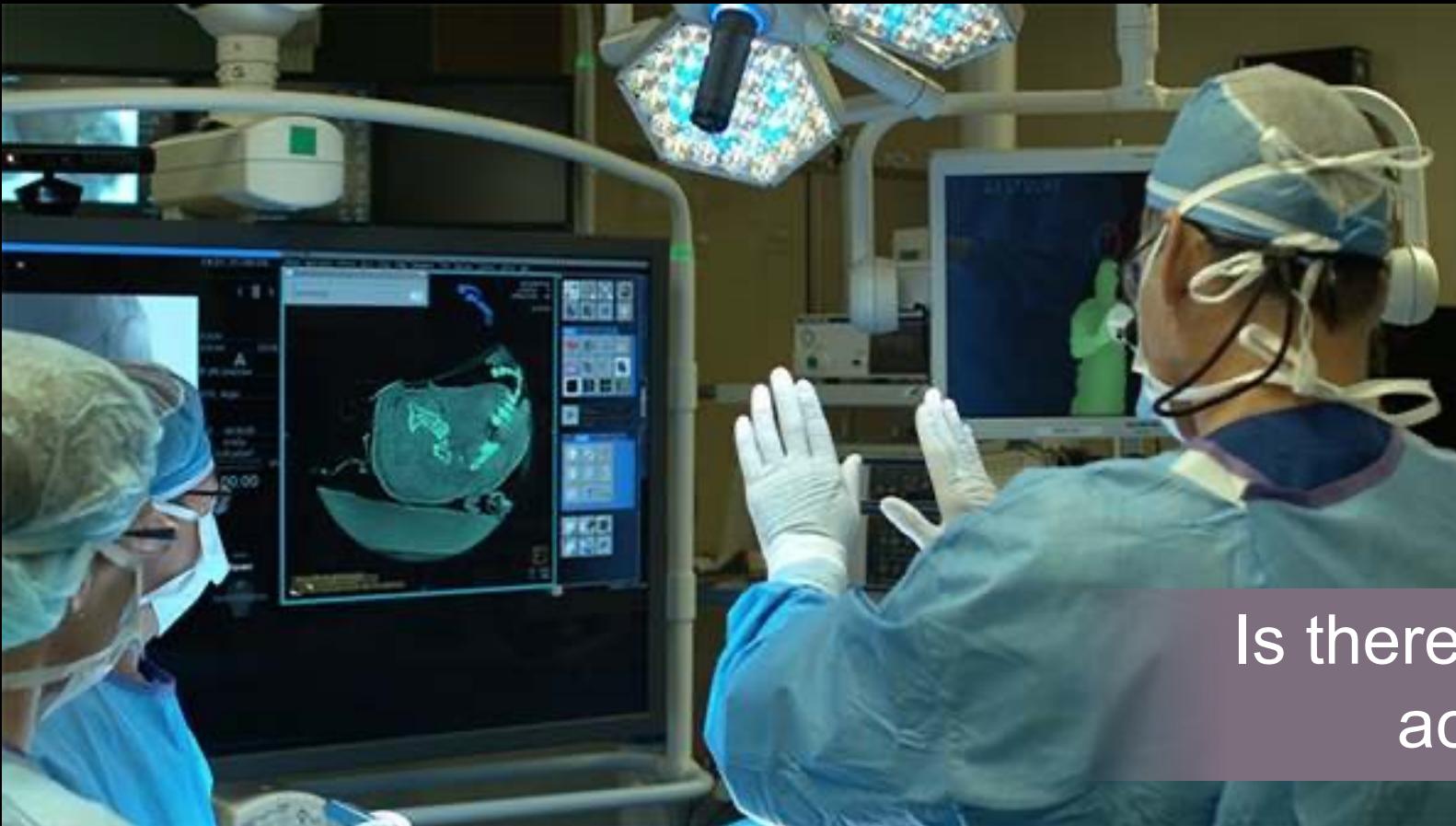
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Is there a context where this  
actually makes sense?

# Why Task Analysis?

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Is there a context where this actually makes sense?

# Why Task Analysis?

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Task analysis is a lens on the information you obtain through design research methods

Use what you learned in your research to answer the questions in the task analysis

Project sequence orders the two, but in practice you should iteratively decide how to best draw upon all relevant methods throughout a process

# 11 Task Analysis Questions

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Who is going to use the system?

What tasks do they now perform?

What tasks are desired?

How are the tasks learned?

Where are the tasks performed?

What is the relationship between people & data?

What other tools do people have?

How do people communicate with each other?

How often are the tasks performed?

What are the time constraints on the tasks?

What happens when things go wrong?

# Question 1

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Who is going to use the system?

## Identity

In-house or specific customer is more defined

Broad products need several “typical” consumers – more on that later!

## Background

Existing systems, training

**Values** (remember VSD?)

## Skills

Work habits and preferences

Physical characteristics and abilities

# Seattle Parking Meter



# Seattle Parking Meter

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Who is going to use the system?

Identity?

- “People who park in Seattle”

- Businesspeople, students, older adults, tourists

Background?

- Have used parking meters before

- May have an ATM or credit card

- Have used other fare machines before

# Seattle Parking Meter

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Who is going to use the system?

Skills?

May know how to put cards into ATM

Work habits and preferences?

Park several times a week, a month, a year

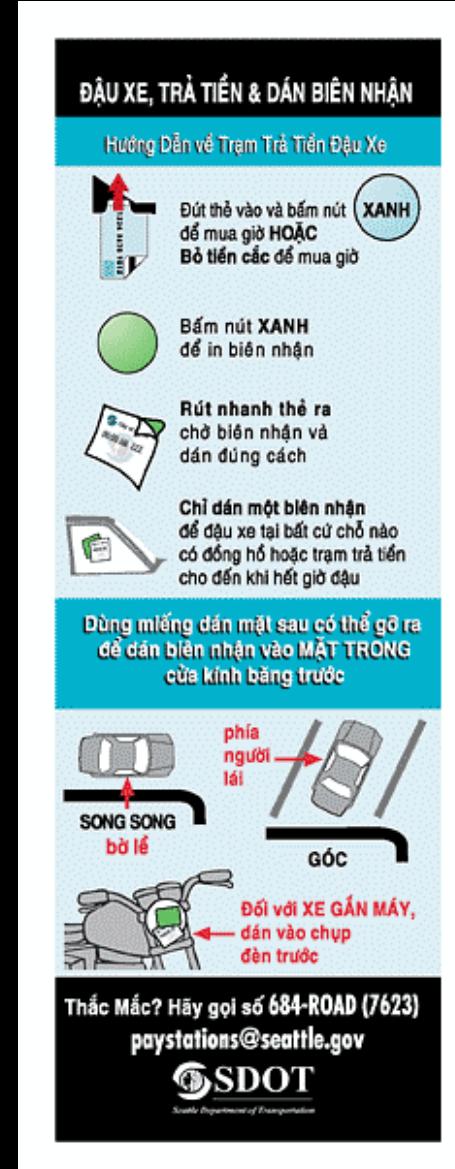
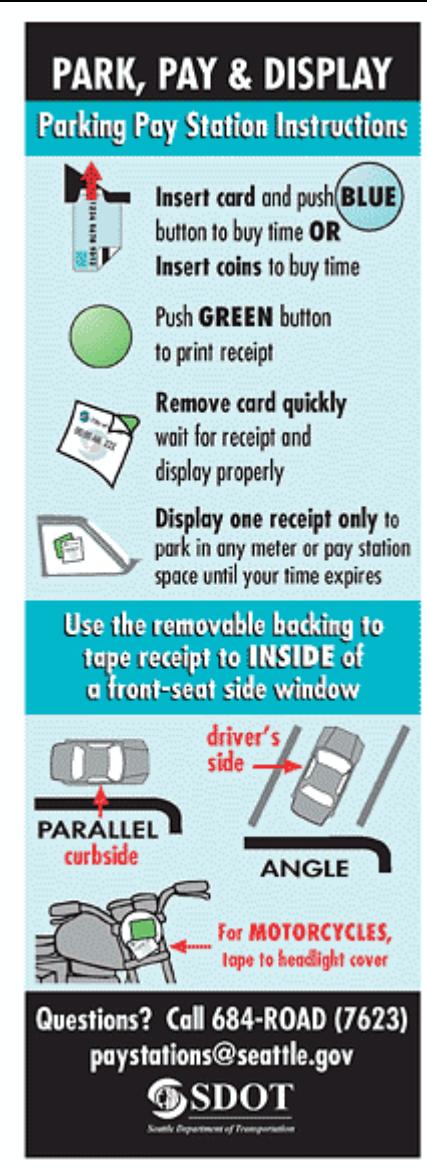
Physical characteristics and abilities?

Varying heights, do not make it too high or too low

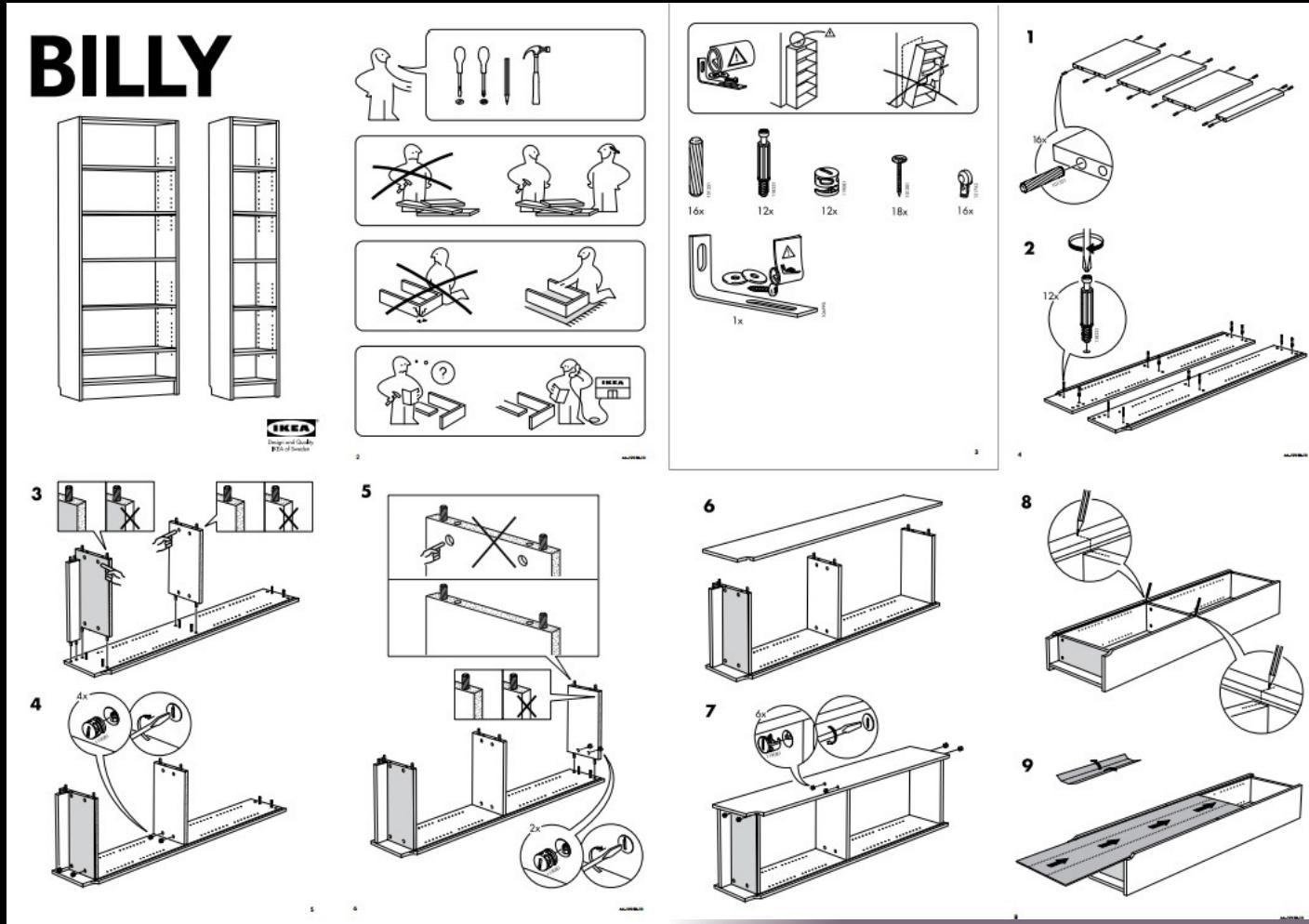
Anything else?



# Seattle Parking Meter



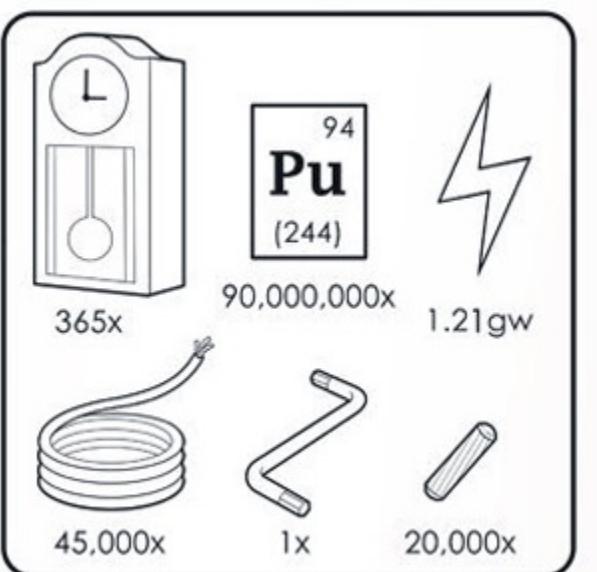
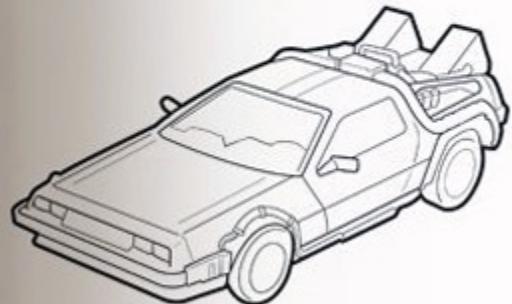
# Non-Textual Communication



There are limits, a tradeoff in this design

# Non-Textual Communication

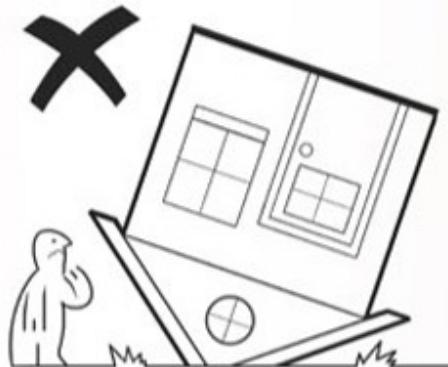
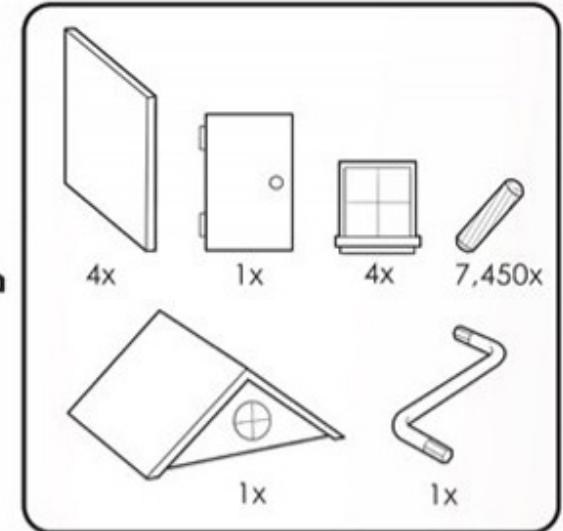
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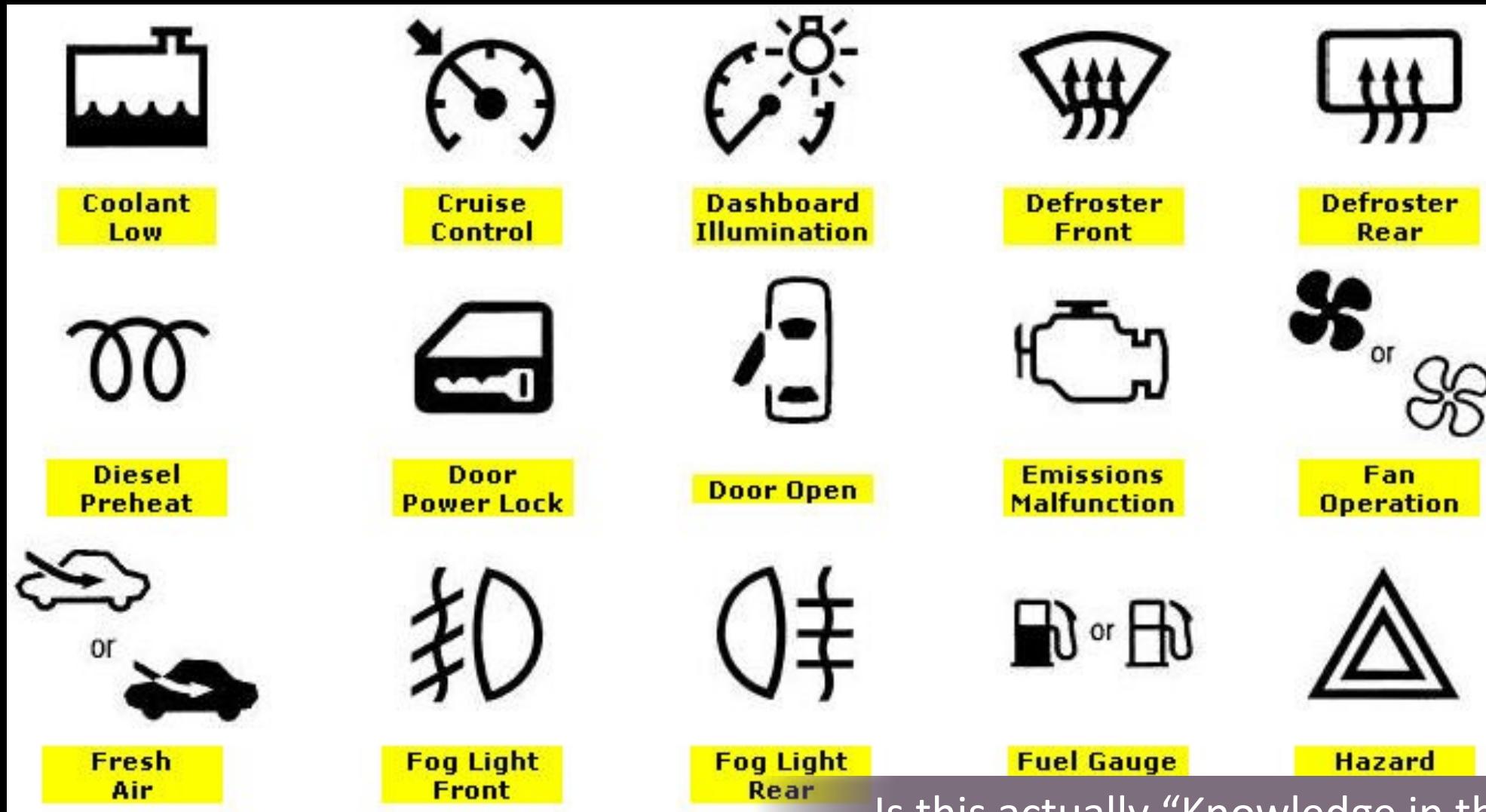
Design and Quality  
IKEA of Sweden



# Non-Textual Communication



# Non-Textual Communication



Is this actually “Knowledge in the World”?

# Tangent: “The User Should Know...”

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Be VERY careful when assuming what knowledge  
a user has AND how they will use it

Learned it once ≠ Knows it now

What happens if they “Didn’t get the reference”?

Might be distracted, might not have all the info available

NEVER assume you’re the user’s #1 priority

*Pissed off guy at the construction site on Brooklyn: here's to you!*

# Question 2 and Question 3

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What tasks do they now perform?

What tasks are desired?

Important for both automation and new functionality

Relative importance of tasks?

Observe people, see it from their perspective

## Automated Billing Example

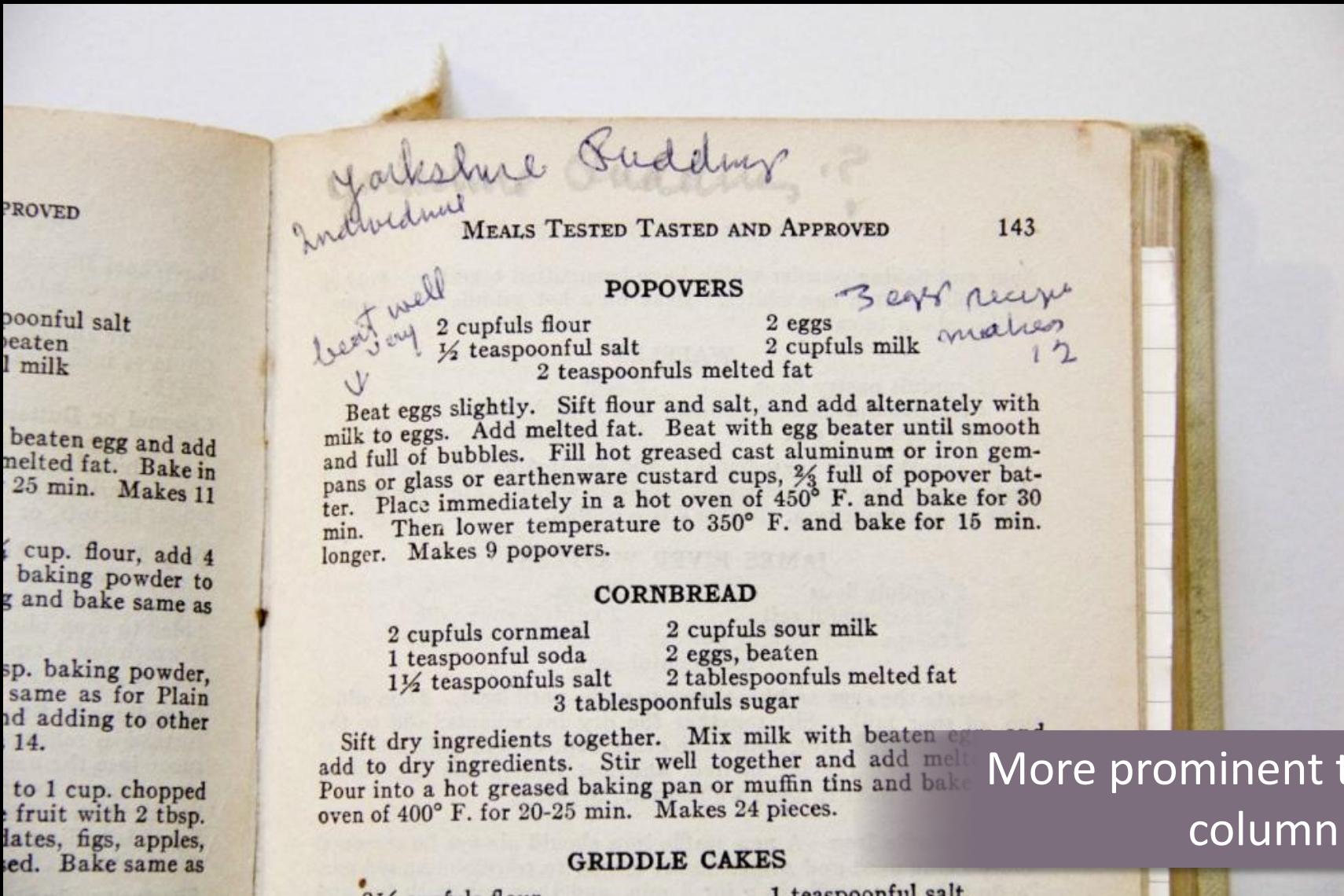
small dentist office had billing automated

assistants were unhappy with new system

old forms contained hand-written margin notes

e.g., patient's insurance takes longer than most

# Marginalia



More prominent than 'just another column in a spreadsheet'

# Question 4

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How are the tasks learned?

What does a person need to know?

Do they need training?

academic

general knowledge / skills

special instruction / training

# Tangent: On Tutorials

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## What Tutorials Are Good At:

Teaching a user a conceptual model of a system

Translating a user's existing model to the specifics of a new system

## What Tutorials ARE NOT Good At:

Teaching a user every feature they can use

Ensuring a user has any idea what's going on the NEXT time they use a system

# Tangent: On Discovery

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“Well if I can’t use a tutorial, how am I supposed to teach my user all the features that exist in my tool?”

**Who here knows every feature in Photoshop?**

Learning features is HARD, especially for infrequently used applications

My opinion (often):

**Cutting a feature > complicating learning**

# Question 5

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Where are the tasks performed?

Office, laboratory, point of sale?

Effects of environment on customers?

Are people under stress?

Confidentiality required?

Do they have wet, dirty, or slippery hands?

Soft drinks?

Lighting?

Noise?

# Question 6

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What is the relationship between people & data?

Personal data

Always accessed at same machine?

Do people move between machines?

Common data

Used concurrently?

Passed sequentially between customers?

Remote access required?

Access to data restricted?

Does this relationship change over time?

Patient-provider curation example, Fitbit example

# Question 7

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What other tools does a person have?

More than just compatibility

How customer works with collection of tools

Automating lab data collection example:

how is data collected now?

by what instruments and manual procedures?

how is the information analyzed?

are the results transcribed for records or publication?

what media/forms are used and how are they handled?

Enhanced Field Biologist Notebooks, Navigating by Sextant

# Question 8

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How do people communicate with each other?

Who communicates with whom?

About what?

Follow lines of the organization? Against it?

Old Email Adoption Example, Contrasted to Current Expectations

# Question 9

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How often are the tasks performed?

Frequent use likely remember more details

Infrequent use may need more help

- Even for simple operations

- Make these tasks possible to accomplish

Which function is performed

- Most frequently?

- By which people?

- Optimizing for these will improve perception of performance

- Careful about initial use scenario

# Question 10

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What are the time constraints on the tasks?

What functions will people be in a hurry for?

Which can wait?

Is there a timing relationship between tasks?

Target example, versus Pregnancy in Web Search

# Question 11

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What happens when things go wrong?

How do people deal with

task-related errors?

practical difficulties?

catastrophes?

Is there a backup strategy?

What are the consequences?

# Combine with Other Methods

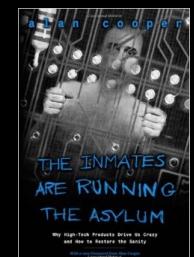
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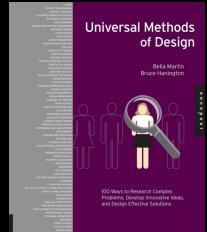
Personas

Concept Mapping

Competitive Analysis

“If you want to create a product that satisfies a broad audience ..., logic will tell you to make it as broad in its functionality as possible to accommodate the most people. Logic is Wrong.”





# Personas

Archetypal character meant to represent a group of people in a role who share common goals, attitudes, and behaviors when interacting with a particular product or service



*"This is what I need in order to do my job."*



**NAME:** Vivica Parker

**AGE:** 32

**OCCUPATION:** Journalist

**PROFILE:**

Born in Washington, DC  
Lives and works in New York City (far from family)  
Lives by herself in a small apartment  
Has a driver's license  
Calls parents and older brother on weekends  
Works for an online art magazine and is currently in charge of writing a blog about graffiti. In order to do that she needs to do the following tasks:

- Walk/drive around the city
- Take pictures
- Talk with artists and keep record of that info (place, time, people)
- Work day/night
- Share the collected information with editor and magazine's readers

To do her job, usually carries notebooks, camera and cell phone to keep in touch with her editor.

**INTERESTS:**

Amateur theater actress since she was 23  
Travel and merge in different cultures  
Architecture

**ACTIVITIES:**

Did research on ancient Egyptian architecture  
Member of the Art Society of NY

**TECH EXPERIENCE:**

Basic knowledge about operating systems  
Uses the Internet frequently either for personal or business purposes

**TECH ATTITUDE:**

Always open to new technology, but she feels annoyed with complex applications and discards them very often  
Tends to feel numb using the latest high-tech gadgets and needs time to get used to them

**GOALS & SITUATED BLOGGING NEED:**

Needs to keep track of her location and time when she (a) finds and photographs graffiti and street art for her blog and (b) conducts audio interviews of artists and enthusiasts  
Needs to have a quick way of keeping track of content gathered from separate locations in order to post articles before editorial deadlines

# Personas

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## Purpose

Empathy: characters to engage and relate to

Focus: can focus on specific people and needs,  
versus always attempting to design for everybody

Communication: conveys range of data,  
can help make assumptions more explicit

## Multiple Types

Primary, Secondary, Supplemental,  
Customer, Served, Negative

# Personas

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## Goals

**Life Goals: personal aspirations**

e.g., to retire before the age of 50

**Experience Goals: how to feel with a product**

e.g., to be competent while using the product

**End Goals: tangible outcomes with a design**

e.g., to be updated about finances over last month

# Personas

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## Roles

Personas do not necessarily equal roles

e.g., parent, doctor, programmer, actor

People can have multiple roles

People in a role can have different needs and goals

e.g., new programmer vs. experienced programmer

e.g., parent of 1 vs. parent of 8

e.g., oncologist vs. podiatrist

# Personas

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Critical to avoid using stereotypes as personas

“The whole point in creating personas is  
to get past our personal opinions and presuppositions.”

Goodwin, 2002

Not a substitute for design research, but a tool  
for summarizing and conveying that research

Collect design research data

Segment people

Create personas for segments

# Personas



## Parxat Practical

**Primary Motivation to acquire phone:**  
I got my mobile phone to make calls when I am away from work or home  
  
**Associated motivations:**  
I got a good price on my phone and mobile phones are cheaper than landlines

### Personal Profile

"Mobile phones are part of your communications its like eyes and ears"  
  
For Parxat, mobile phones have provided a key way to stay in contact with work, family and friends.

He owns and manages a small computer game club with eight computers. His club does not yet have internet or a landline; however, he would like to add the internet and more computers when he can afford them.

Currently, Parxat maintains all of the computers but knows he may need help with some computer problems in the future. Other club owners that he has known have had to shut down after two to three years because the equipment has broken down and the owners cannot get the old equipment fixed or afford new. Right now he is not sure who he would ask for help if one of his computers needed maintenance that he could not perform himself.

Parxat has always relied heavily on a system of personal recommendations when looking for professional services. He feels that one should "trust the advice of friends because they are to be trusted."

### Parxat's Goals for MoSoSo Directory

- Would seek recommendations for professional help such as plumbers and computer maintenance
- Would like to create a public recommendation for his computer club
- Groups he would join or create
  - Family
  - Clients from his computer club
  - Friends through work

Primary persona: represents 55% of survey respondents who own mobile phones

1



## Shirin Social

**Primary Motivation to acquire phone:**  
I like people to reach me at all times  
  
**Associated motivations:**  
My friends all have mobile phones

### Personal Profile

"We just talk to our friends...things like did you hear that this or that happened - in our communication rumors are the official news, and gossip works"

For Shirin, keeping in contact with friends is the most important thing about mobile phones.

She is a full time student (junior) at American University of Central Asia (AUCA), studying business administration. She also works part time as a bartender in a cafe.

Shirin is part of an unregistered student association at school that organizes cultural and historical meetings at a local cafe. She also enjoys arranging parties for her friends.

She is interested in social networking applications on the internet, but has found it boring, stating "the first time is interesting then you get bored because you already know everybody."

### Shirin's Goals for MoSoSo Directory

- Would use the service most to create groups of friends
- Would like to broadcast messages to particular groups or to tell people where there will be social gatherings
- Would like to retrieve messages from other members of a group
- Groups she would join or create
  - Family
  - Friends from work and school
  - Associations through her unregistered student organization

Primary persona: represents 32% of survey respondents who own mobile phones

2



## Roza Replacement

**Primary Motivation to acquire phone:**  
I have no home phone  
  
**Associated motivations:**  
It takes too long to get a home phone

### Personal Profile

"There are only so many services provided, but not enough for middle class people... it would be nice if there was the one server that gave the information about everything that was needed for marshukas (buses) and other things."

For Roza, who does not have a landline at home, a mobile phone is a very important device that allows her to stay in contact with her friends and family; however, she would like to see more affordable mobile phone services for "middle class" people like her.

There is only one landline in a community building in her village that closes at 5 PM every day.

While Roza herself is not tech savvy, she does not use the internet or computers. However, she recognizes the importance of technology for her daughters, and would like to have a computer at home while they are in school.

Roza and her husband rely on their friends and family to find specialists to complete services they need. Recently, she needed to find a mechanic and used her social network, stating "...it's better to find someone through your friends."

### Roza's Goals for MoSoSo Directory

- Would be more likely to seek a recommendation for services than to make one
- Would want to access the service without using text
- Would like to find recommendations for professional services from other members of a group
- Groups she would join
  - Family
  - Neighbors

Secondary persona: represents 13% of survey respondents who own mobile phones

3

# Personas

## Parxat Persona Data Detail

**Photo:** Older male participant from interview KG\_RF1. The participant is actually a field worker from Kara Balka. His personal data was actually used for Roza's husband.

**Motivation:** We placed the 460 survey participants with mobile phones in one of three groups based on their responses. We found that 352 of these respondents claimed motivations that fell into one of the three final motivation groups without overlap.

There were 194 individuals in the practical motivation group. Almost all members of this group (95%) gave a need to make calls when away from home or work as the motivation for acquiring a mobile phone, 2% were also motivated by mobile phones being cheaper than land lines and 2% by getting a good price for the phone.

**Name:** Parxat is the name of a top party member in the Kyrgyz parliament.



Parxat Practical

Primary Motivation to acquire phone:  
I got my mobile phone to make calls when I am away from work or home

Associated motivation:  
I got a good price on my phone and mobile phones are cheaper

Key Significant Differences:

- Bought their phones new - more than any other group
- Received their phones as gifts
- Used mobile phones for work - significantly more than the other two groups

Personal Information:

- Age: 53 years old
- Profession: Owner and manager computer game
- Lives: In the capital city of Bishkek
- Home Life: Lives with his wife and two sons
- Primary Home Language: Kyrgyz
- Schooling: High school graduate
- Income: 500 Som a month (approx \$40.00)

Technical Information:

- Internet Use: Use often, 30+ hours per week
- Computer Use: Computer user, 1-2 days a week
- Cable or Satellite TV: Cable or satellite TV user, 1-2 days a week
- Mobile Phone Use: Length of use: 3 months
- How acquired: Bought his phone new - more than any other group (most survey respondents received their phones as gifts)
- Use how often: mean number from survey data
- For: All groups used their phones mostly for personal calls. 41% of the practical motivation group used phones for work. This was statistically significantly more than the other two groups.
- SMS: 27% of the practical group used SMS. This split was based on the numbers given by the older son participant from Interview KG\_UF1.
- Feelings and concerns:

61% felt mobile activity was monitored. This was statistically significantly higher than any other group (no other groups was higher than 45%).

57% claimed they would miss their phones "a lot" - this was the most of any group.

60% felt mobile access was too expensive.

**Parxat's Goals for MoSoSe Director**

- Would like to receive professional help such as planners and computer maintenance
- Groups he would like to create
- Family
- Friends from his computer club
- Friends from work

**Primary persona:** represents 55% of survey respondents who even mobile phones

**Status:** Parxat represents the most important persona with 55% of the survey respondents with mobile phones in this group.

**Goals:** The father and oldest son from KG\_UF1; the father from KG\_RF1 and the second friend from KG\_UF1 best fit the practically motivated group. These goals were based on stories they conveyed about difficulties they had encountered when looking for professional help especially descriptions given by the male friend in KG\_UF1 from his computer club business.

**Profile:** This profile description was based on one of the male friend participants from Interview KG\_RY1. The last advice quote was a direct quote from the father in the KG\_UF1 interview.

**Mobile Phone description:** 91% of the practical group use their phones for personal calls; 41% for work - the most of any group. This description also reinforces the primary motivation of the group, "I got my phone to make calls when I am away from home or work". It is notable that this primary motivation is significantly negatively associated with the primary motivations in the other two groups.

**Quote:** This is a direct quote from the father participant in Interview KG\_UF1.

- Key Difference:** 41% of the practical motivation group used their phones for work - this was significantly more than the other two groups.
- Key Difference:** 41% of the practical motivation group bought their phones new - more than any other group (most survey respondents received their phones as gifts).
- Key Difference:** The practical group had more experience with computers and internet than any of the other two groups: 40% used computers, 39% owned a computer (significant difference), 29% used the internet.
- Age:** Actual mean age of the group was 35.9. This was the oldest mean age, but was skewed higher here to emphasize the difference with the other groups.
- Profession:** This profession is based on one of the male friends from Interview KG\_RY1. 30% of the practical group worked in IT, which was considerably more than any other groups.
- Lives:** 66% of practical users live in an urban environment - this is also the urban environment location of the interviews.
- Home Life:** Mean family size was 3.5 people for the practical group.
- Russian:** 89% of the practical group speak and read Russian.
- Primary Home Language:** 52% claimed their primary language at home was Kyrgyz. This was the highest of any language.
- Primary Work Language:** 62% of those employed spoke Russian at work.
- Schooling:** This degree is also based on male friend owned the computer club from Interview KG\_RY1. Also, the practical group had significantly more education (avg 12.5 years) than the replacement group (avg. 11.1 years) and the general population (avg. 10.7 years).
- Income:** This is slightly higher than the average income of 4735 soms (\$17.00) based on August 2008 exchange rate and data from <http://enews.fergana.ru/news>.

- Internet Use:** 25% of this group used the internet - the highest of any group.
- Length of use, How often, Where Use - All** mean numbers based directly on survey data.
- Computer Use:** 49% of this group used computers - the highest of any group.
- How Often:** mean number from the survey data.

- Cable or Satellite TV:** 29% of this group had cable or satellite TV - the second most of any group.
- Home Landline:** 51% have home landlines - the second most of any group.
- Mobile Phone:**

- Length of use:** mean number from the survey data
- How acquired:** 41% of the practical motivation group bought their phones new - more than any other group (most survey respondents received their phones as gifts).
- Use how often:** mean number from survey data
- For:** All groups used their phones mostly for personal calls. 41% of the practical motivation group used phones for work. This was statistically significantly more than the other two groups.
- SMS:** 27% of the practical group used SMS. This split was based on the numbers given by the older son participant from Interview KG\_UF1.

- Feelings and concerns:**

61% felt mobile activity was monitored. This was statistically significantly higher than any other group (no other groups was higher than 45%).

57% claimed they would miss their phones "a lot" - this was the most of any group.

60% felt mobile access was too expensive.

- Shirin's Goals for MoSoSe Director**
- Would like to use the service to create groups of friends
- Would like to broadcast messages to particular groups (or to tell people where there will be a meeting)
- Would like to receive messages from other members of a group
- Groups she would join or create
- Family
- Friends from work and school
- Feedback from others

- Mobile Phone Use**
- Length of use: 20 months
- New acquired: Was given my phone by a cousin
- Use how often: Once a week
- For: 80% personal calls, 20% work calls
- SMS: 80% voice, 20% text
- Feedback from others

- Primary persona:** represents 32% of survey respondents who own mobile phones
- Status:** Shirin represents the second most important persona with 32% of the survey respondents with mobile phones in this group.

**Goals:** Since the youngest son from the KG\_UF1, and five of the younger participants from KG\_UY1 and KG\_RY1 best fit the socially motivated group, these goals were based on how mobile phone use could have helped them in stories they conveyed about their lives. These stories were also used to create the scenarios for Shirin.

**Profile:** This profile description is an amalgamation of participants from two interviews: one with a group of three young friends in Bishkek (urban) and the other with a group of three young friends in Kara Balka (rural). The last quote was a direct quote from one of the participants in Bishkek from the KG\_UY1 interview.

**Mobile Phone description:** 93% of the social group use their phones for personal calls - the most of any group, 38% for work.

**Quote:** This is a direct quote from one of the participants in when asked about where they looked for news and information.

## Shirin Persona Data Detail

**Photo:** Younger female participant from the interview with three urban young friends (KG\_UY1). The participant actually lives in Bishkek, is eighteen years old and is a student at the American University of Central Asia.

**Motivation:** We placed the 460 survey participants with mobile phones in one of three groups based on their responses. We found that 352 of these respondents claimed motivations that fell into one of the three final motivation groups without overlap.

There were 113 individuals in the social motivation group. A majority (85%) wanted people to reach them at all times, 19% of this group got their mobile phone because their friends all had them, and 4% wanted to receive voicemail.

**Name:** Shirin is a somewhat common female name in Kyrgyzstan. It is of Persian origin.



Shirin Social

Primary Motivation to acquire phone:

I like people to reach me at all times

Associated motivation:

My friends all have mobile phones

- Key Significant Differences:**
- Used the phone to primarily to call friends
- Least likely to feel mobile access is too expensive
- Smartwatch tech savvy

- Personal Profile**
- Age: 18 years old
- Profession: Student
- Education: Attended university and spent quite a bit of time in a local coffee shop
- Home Life: Lives with her dad and an older brother
- Primary Home Language: Kyrgyz
- Schooling: High school graduate
- Income: 2000 soms a month (approx \$80.00)

- Technical Information**
- Internet Use: Once or twice a month
- Computer Use: Once or twice a month
- Cable or Satellite TV: Once or twice a month
- Mobile Phone Use

- Shirin's Goals for MoSoSe Director**
- Want to use the service to create groups of friends
- Want to broadcast messages to particular groups (or to tell people where there will be a meeting)
- Want to receive messages from other members of a group
- Groups she would join or create
- Family
- Friends from work and school
- Feedback from others

- Mobile Phone Use**
- Length of use: 20 months
- New acquired: Was given my phone by a cousin
- Use how often: Once a week
- For: 80% personal calls, 20% work calls
- SMS: 80% voice, 20% text
- Feedback from others

- Primary persona:** represents 32% of survey respondents who own mobile phones
- Status:** Shirin represents the second most important persona with 32% of the survey respondents with mobile phones in this group.

**Goals:** Since the youngest son from the KG\_UF1, and five of the younger participants from KG\_UY1 and KG\_RY1 best fit the socially motivated group, these goals were based on how mobile phone use could have helped them in stories they conveyed about their lives. These stories were also used to create the scenarios for Shirin.

**Profile:** This profile description is an amalgamation of participants from two interviews: one with a group of three young friends in Bishkek (urban) and the other with a group of three young friends in Kara Balka (rural). The last quote was a direct quote from one of the participants in Bishkek from the KG\_UY1 interview.

**Mobile Phone description:** 93% of the social group use their phones for personal calls - the most of any group, 38% for work.

**Quote:** This is a direct quote from one of the participants in when asked about where they looked for news and information.

## Roza Persona Data Detail

**Photo:** Middle age female participant from interview KG\_RF1. The participant was one of three participants in the interview which included her husband and a younger brother. She lives in Kara Balka, on rural area outside of Bishkek.

**Motivation:** We placed the 460 survey participants with mobile phones in one of three groups based on their responses. We found that 352 of these respondents claimed motivations that fell into one of the three final motivation groups without overlap.

There were 45 individuals in the replacement motivation group. A large majority (84%) of this group claimed to not have a phone at home, 7% said their home phone line was bad quality and 9% felt that home phones took too long to install.

**Name:** Roza, from the same derivative as Rose, is somewhat common in Kyrgyzstan. The -z spelling reflects the French, Slavic, or Yiddish influence.



Roza Replacement

Primary Motivation to acquire phone:

I have no home phone

Associated motivation:

It takes too long to get a home phone

- Key Significant Differences:**
- Least likely to use the phone for work
- Uses in a rural area
- Most likely to use the phone in a rural environment

- Personal Profile**
- Age: 35 years old
- Profession: Housewife. Her husband is a driver for a taxi company. They have two sons
- Education: Primary school
- Home Life: Lives in a rural village
- Primary Home Language: Russian
- Schooling: Completed primary school
- Income: \$1000 per month

- Technical Information**
- Internet Use: Once or twice a month
- Computer Use: Once or twice a month
- Cable or Satellite TV: Once or twice a month
- Mobile Phone Use

- Roza's Goals for MoSoSe Director**
- Would like to seek a recommendation for services
- Would want to access the service without using credit
- Would like to find recommendations for professional services from other members of a group
- Groups she would join
- Neighbors
- May look in the public area for professional services

- Mobile Phone Use**
- Length of use: 20 months
- New acquired: Was given my phone by her brother
- Use how often: Three to five days a week
- For: Personal use, work, and school
- SMS: No, but has considered it
- Feedback from others

- Secondary persona:** represents 13% of survey respondents who own mobile phones
- Status:** Roza represents the third most important persona with 13% of the survey respondents with mobile phones in this group, as such, she is a secondary persona.

**Goals:** These goals were based on how mobile phone use could have helped in stories conveyed by the family participants: KG\_UF1 and KG\_RF1. This group would be the least likely to use text to access the service.

**Profile:** This profile description was based primarily from the father in the interview with the rural family (KG\_RF1). The last quote was from the father in the urban family interview, but reflected the scenario story from the rural family of trying to connect a gas line. (See scenarios). The village phone line story is directly from the rural family interview.

**Mobile Phone description:** 91% of the replacement group use their phones for personal calls; and only 18% for work - this represents the lowest use for work of any group.

**Quote:** This is a direct quote from the father participant from the urban family interview (KG\_UF1) when asked about where he found a mechanic. The statement emphasizes the importance of social networks when finding services.

**Key Difference:** Only 18% of the replacement motivation group used their phones for work - this is the lowest of any group

**Key Difference:** 82% of the replacement motivation group lives in a rural area. This is statistically significantly more than any other group.

**Key Difference:** The replacement group is the least tech savvy of all groups: 33% used computers, 7% owned a computer, 20% used the internet.

**Age:** Actual mean age of the group was 35.6. This was the middle mean age when compared to the other two groups.

**Profession:** This person is the least likely to be employed: only 13% of respondents in this group were employed full time (self-employed was not counted). The husband's job was based on the father's family interview.

**Lives:** 62% of the replacement group live in a rural environment. This is statistically significantly more than any other group.

**Home Life:** Mean family size was 4.4 people for the replacement group. This is statistically significantly larger than any other group.

**Russian:** 78% of the replacement group speak and read Russian.

**Primary Home Language:** 85% of this group claimed the primary language at home was Kyrgyz.

**Primary Work Language:** 62% of those employed spoke Kyrgyz at work.

**Schooling:** 65% of the replacement group claimed secondary school as their highest level of education. Members of the replacement group on average have 11.1 years of schooling which is statistically significantly lower than the other two groups (but still more than the average of 7.7 years).

**Income:** This is lower than the average income of \$7750 (SOM \$137.00) based on August 2008 exchange rate and data from <http://enews.fergana.ru/news>. Since replacement users tend to live in a rural area we made them less efficient than the average.

**Internet Use:** 20% of this group used the internet - the lowest of any group.

**Computer Use:** 20% of this group used computers - the lowest of any group. The additional information about the desire for a computer is from the mother from the rural family interview (KG\_RF1).

**Cable or Satellite TV:** 9% of this group had cable or satellite TV. This is statistically significantly lower than any other group.

**Home Landline:** 2% have home landlines, which makes them similar since lack of a landline is the primary motivation for the group. Not surprisingly, this is statistically significantly lower than any other group.

**Mobile Phone:**

- Length of Use:** mean number from the survey data
- How acquired:** 56% of the replacement motivation received their phones as gifts from family members. This was the most of any group.

**Profile:** 91% of the replacement group used their phones for personal calls. This was the lowest of any group.

**Use how often:** mean number from survey data

**SMS:** Only 13% of the replacement group used SMS. This was the lowest of any group.

**Feelings and concerns:**

- 70% expressed concerns that one needs to know English to use a mobile phone. This was statistically significantly higher than any other group;
- 32% expressed concern that mobile phones represented a threat to local culture and ways. This was higher than the other two groups;
- 33% expressed that mobile phones allowed access to relevant information. This was the highest of any group.

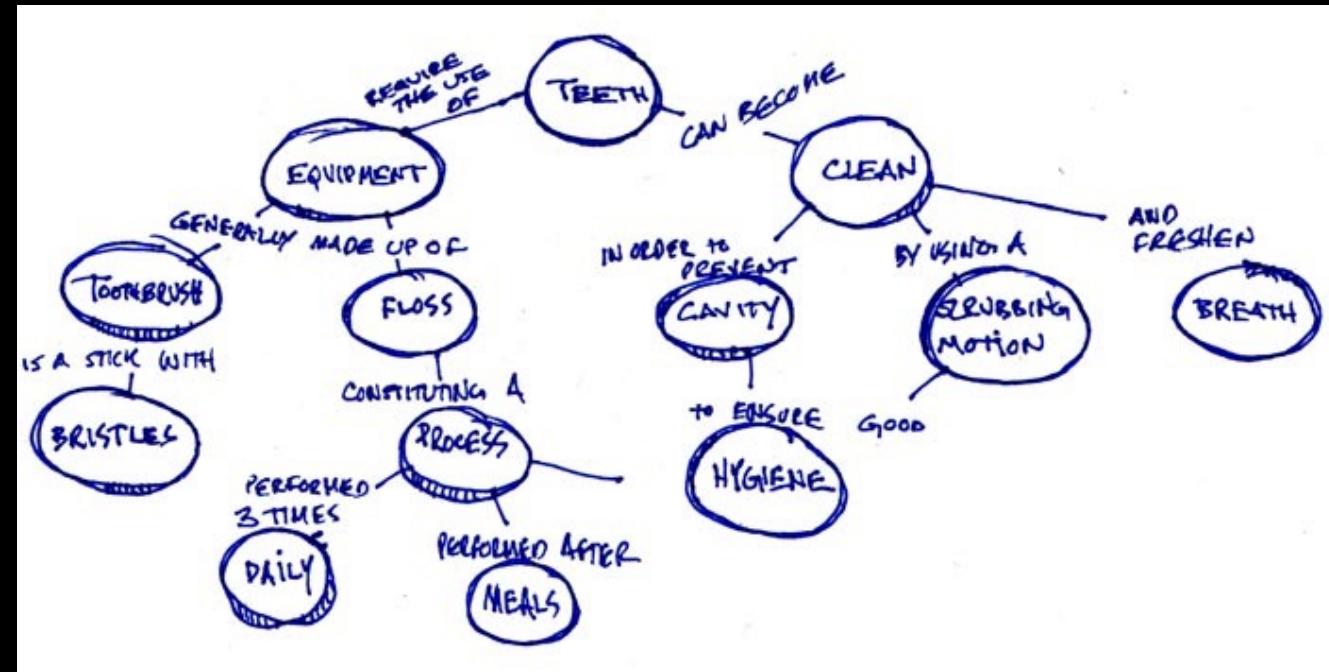


# Combine with Other Methods

Personas

Concept Mapping

Competitive Analysis



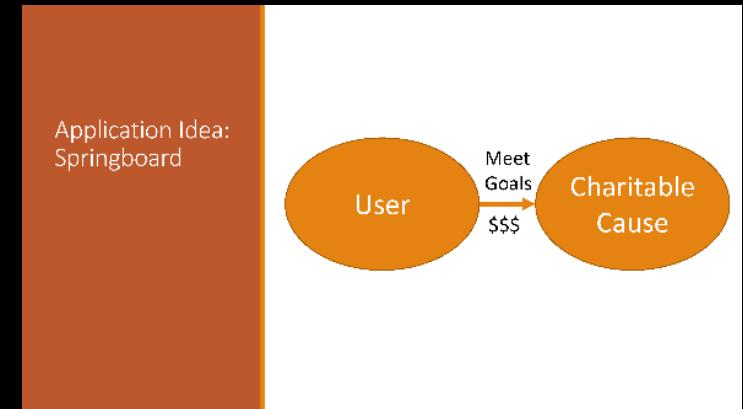
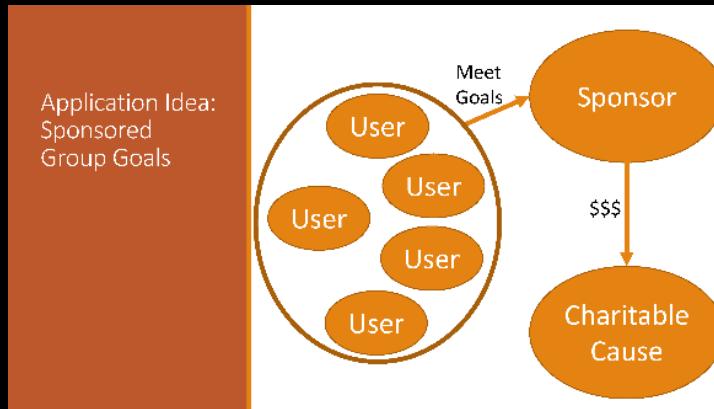
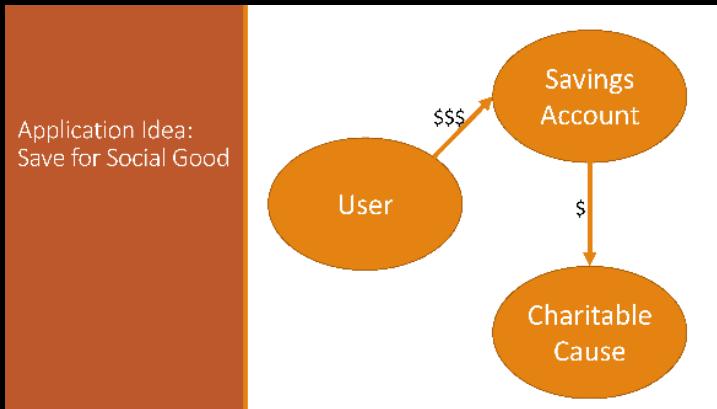


# Combine with Other Methods

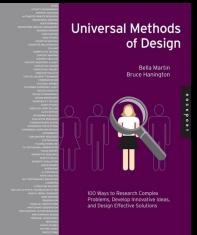
Personas

Concept Mapping

Competitive Analysis



## Method 15

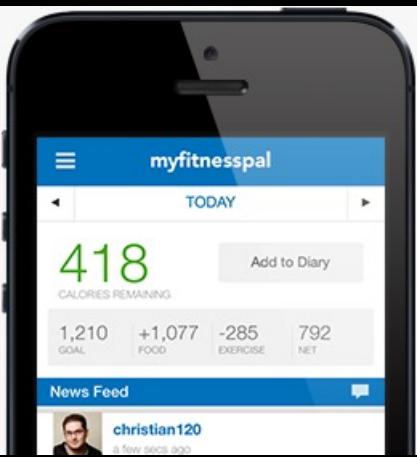


# Combine with Other Methods

Personas

Concept Mapping

Competitive Analysis



# Project Status

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2c: Design Research Check-In due Yesterday

## Looking Forward

2d: Design Research Review due Thursday

2e: Task Review due Monday

2f: Design Check-In due Wednesday

# Selecting Tasks

---

Real tasks people have faced or requested

as supported by your design research

collect any necessary materials

Should provide reasonable coverage

compare check list of functions to tasks

Mixture of simple and complex tasks

easy tasks (common or introductory)

moderate tasks

difficult tasks (infrequent or for power use)

Easy / Moderate / Hard Tasks:  
Not Required, Could be Useful

# What Should Tasks Look Like?

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Say what person wants to do, but not how  
allows comparing different design alternatives

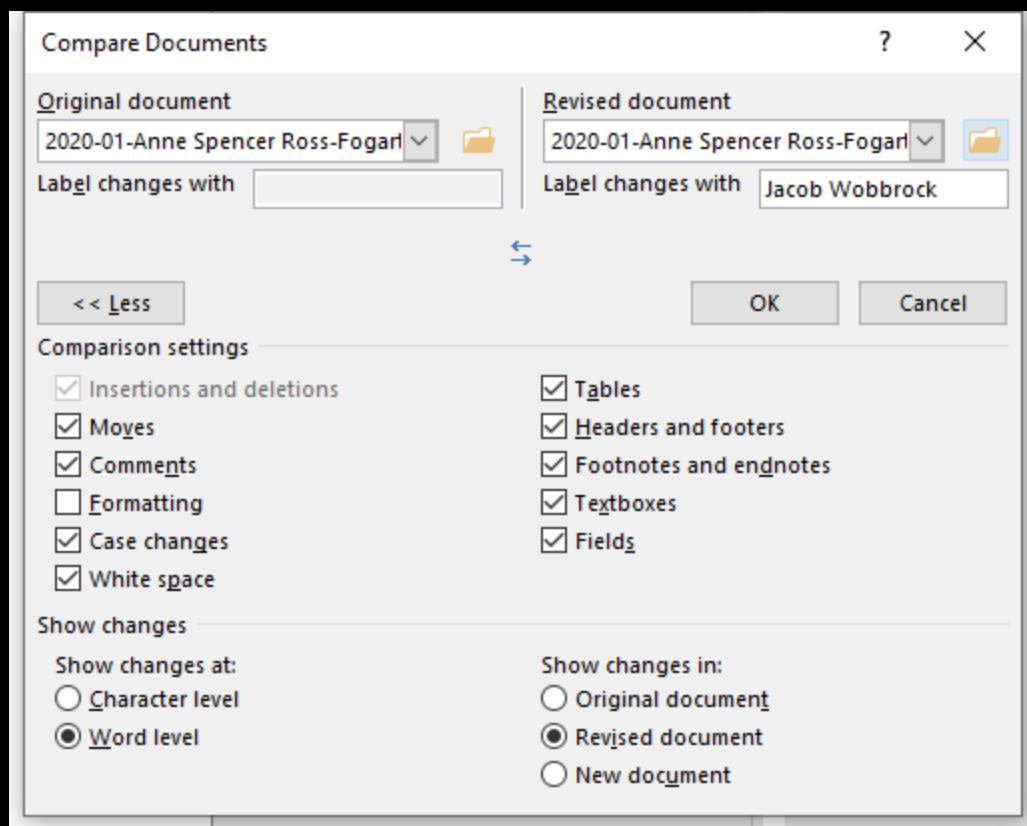
Be specific, stories based in concrete facts  
say who person is (e.g., using personas or profiles)

design can really differ depending on who  
give ‘names’ (allows referring back with more info later)  
characteristics of person (e.g., job, expertise)

story forces us to fill in description with details

Sometimes describe a complete “accomplishment”  
forces us to consider how features work together

filename task  
example



# Task: Park in a New Neighborhood

---

Peter is going to brunch on a Sunday with his roommates. He is trying a new place he found on Yelp. He has the address for the place and he is using his phone's GPS for directions. He leaves the apartment with his roommates at 8:30am and he wants to beat the crowd so they won't have to wait in line. He is driving a Toyota Corolla that he has owned for five years. It is a rainy day and he doesn't have an umbrella.

# Hierarchical Task Analysis

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Steps of the task execution (detailed in a hierarchy)

determine destination	drive to destination	locate parking spot	secure parking spot	park
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enter address in GPS	follow directions	arrive at destination		
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...

# Hierarchical Task Analysis

---

Steps of the task execution (detailed in a hierarchy)



Or step back a level and  
motivate ridesharing

# Using Tasks in Design

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Rough out an interface design

discard features that do not support your tasks

or add a real task that exercises that feature  
major elements and functions, not too detailed  
hand sketched

Produce scenarios for each task

what person does and what they see

step-by-step performance of task

illustrate using storyboards

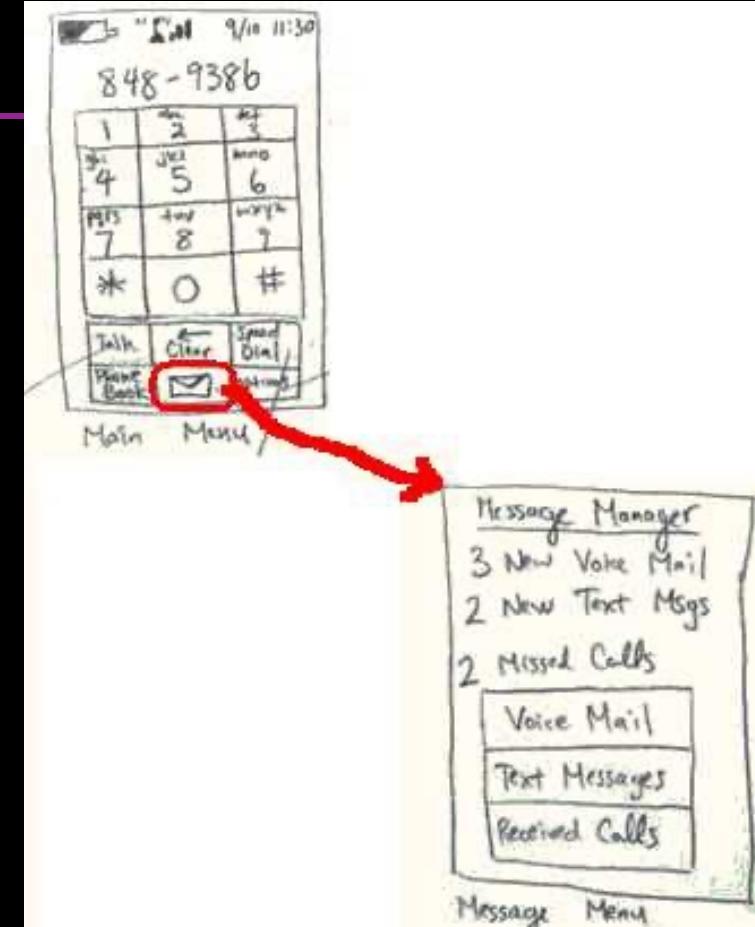
# Scenarios

---

Scenarios are design specific,  
tasks are not

Scenarios force us to  
show how things work together  
settle arguments with examples  
but these are only examples,  
and may need to look beyond flaws

Show people storyboards  
topic for next Tuesday



# Tasks, Personas, and Scenarios

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**Task:** a design-agnostic objective

**Persona:** a fictional person with a backstory

**Scenario:** narrative that demonstrates a persona completing a task using a particular design

**Use Case:** in software engineering,  
describes requirements using one or more scenarios

# Tasks in Your Projects

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Say what is accomplished, not how

Real tasks that people currently encounter,  
or new tasks your design will enable

Reasonable coverage of the interesting aspects  
of your problem and your design space

Range of difficulty and complexity

Park in a New Neighborhood (near the zoo)

Park in a New Neighborhood (Friday night in Ballard)

Park in a New Neighborhood (at the airport)

CSE 440:  
Introduction to HCI

# 07: Task Analysis

April 16, 2024

Jesse J. Martinez | Avery Mack | Simona Liao

# PS: Plantr Task Analysis

# Plantr Task Analysis

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Example abbreviated task analysis

Be sure to see other examples on website

As with models, no question promises insight

# Plantr Task Analysis

---

## 1. Who is going to use the system?

Anyone who owns indoor plants is a potential user of Plantr. All of the plant owners that we interviewed forgot to water their plants at some point regardless of age, experience, and background. Even Lucy, who spent most of her time at home because she worked from home, struggled with timely watering.

# Plantr Task Analysis

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## 2. What are the currently possible tasks?

When people purchase a plant, they often look up information about the proper lighting and temperature conditions for their plants. Additionally, people must find out how much and how frequently to water and fertilize their plants.

# Plantr Task Analysis

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## 3. What are currently unavailable, desired tasks?

People want a way to remember to water and care for their plants. Forgetting to water plants was the most cited reason for plant death, and the only task that participants in our inquiries mentioned completing on a regular basis.

# Plantr Task Analysis

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## 4. How are tasks learned?

Most people learned how to take care of their plants through trial and error. Some consulted the Internet, nursery staff, or friends for more information on plant care.

# Plantr Task Analysis

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## 5. Where are the tasks performed?

Tasks like watering and fertilizing are performed at the plant's location. People keep plants in their workplace, like Jack, or at home, like Lucy and Caroline. Getting information about plant care was performed in a variety of places. People who consult the Internet could be anywhere with a platform that supports web browsing. Those who go to the nursery to talk to plant experts are required to go to a specific location to talk to someone in person.

# Plantr Task Analysis

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## 6. What is the relationship between a person and data?

We identified three different types of data: a plant's current state, information about plants, and data that reflects the person's plant care history.

A plant's current state is data on the moisture level of its soil and the general appearance of the plant (e.g., color, stiffness/limpness of leaves). People use this information to determine the plant's needs. Caroline and Lucy watered their plants when the soil felt dry or the leaves began to droop.

# Plantr Task Analysis

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People consulted various plant care information databases when they wanted to know how to care for their plants.

People used their personal history of plant care to determine how to take care of plants. Caroline said that she used to underwater plants, but she learned from her mistake and now tries to water them more often. People also base their buying decisions based upon their plant care history. Caroline noted that she tries to buy plants that require minimal water.

# Plantr Task Analysis

---

## 7. What other tools do people have?

Caroline, Lucy, Jack, and Kacy all have phones and computers. People also have a water source, pots, and soil for their plants. Most people probably have access to a nursery or library.

# Plantr Task Analysis

---

## 8. How do people communicate with each other?

Plant owners communicate on online forums and message boards. People who happen to be in the nursery at the same time might talk to each other about plant care. Likewise, people who have friends with indoor plants may share plant care tips.

# Plantr Task Analysis

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## 9. How often are the tasks performed?

Watering is performed with a frequency between twice a week (Jack) and twice a month (Caroline). Fertilizing is performed less frequently, between once every two weeks to once every three months. Plants do not become sick often enough to make a good estimate about how often people try to get help.

# Plantr Task Analysis

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## 10. What are time constraints on the tasks?

Plants must be watered with some regularity, so if people do not water their plants for long enough, the plants will start to die. Likewise, if plants are in need of attention for other reasons - pH imbalance, environment too dry - and they do not receive attention within some amount of time, they will die. Watering, caring, and learning how to care for a plant takes time. People who are very busy might not have the time or attention required for plant care.

# Plantr Task Analysis

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## 11. What happens when things go wrong?

When plants became "sick", people take action, seek help, or ignore the problem until the plant dies. When people forget to water plants, they usually notice that the plant needs water and give it water. Sometimes people may not realize that a plant needs water until it is too late.