CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 05:
Task Analysis

Tuesday / Thursday
12:00 to 1:20

James Fogarty
Kailey Chan
Dhruv Jain
Nigini Oliveira
Chris Seeds
Jihoon Suh

PAUL G. ALLEN SCHOOL
OF COMPUTER SCIENCE & ENGINEERING

DESIGN
USE
BUILD

The Homer

Project Status

Looking Forward

- 2c: Design Research Check-In due Tonight
- 2d: Design Research Review due Monday 10/16
- 2e: Task Review due Thursday 10/19
- 2f: Design Check-In (3x4) Due Monday 10/23
- 2g: Design Review (1x2) Due Thursday 10/26
- “Getting the Right Design” Report and Presentation

Other Assignments

- Readings to be Posted Soon

CSE Colloquium Today

Design at Large: real-world, large scale, and sometimes disruptive

Scott Klemmer (UCSD)
Host: Froehlich
Paul G. Allen School Distinguished Lecture
Thursday, October 12, 2017, 3:30 pm
EEB-105
Maps and directions

Abstract

In recent years, my group--and probably many of you--have experienced a dramatically-increased ability to do Design at Large: creating research that is widely-used by real people and learning a ton from the experience. When moving from designing artifacts in the lab to designing experiences at large we inevitably shift to studying complex sociotechnical systems. A lot of the behavior is emergent, and sometimes completely unexpected. The successes in this new world are tremendously exciting, but like all creative endeavors, there are lots of flops. One source of failure is that designers often receive guidance that's based on faith rather than insight. This leads to designs that 'solve' nonexistent problems, miss important needs, hold onto misguided assumptions for too long, or waste time relearning known insights. To help sketch where a shift to Design at Large may take us, I'll share insights from our research systems and their real-world usage, experiences with online learning, former students' adventures, and what we're up to in the Design Lab.

Bio

Scott is a Professor of Cognitive Science and Computer Science & Engineering at UC San Diego, where he co-founded the Design Lab. He previously served as Associate Professor of Computer Science at Stanford, where he co-directed the HCI Group, held the Bredt Faculty Scholar chair, and was a founding participant in the d.school. He has a PhD in CS from Berkeley and a dual BA in Art-Semiotics and Computer Science from Brown (with work at RISD). His former graduate students include leading professors, researchers, & founders. He leads the Interaction Design Specialization on Coursera; it introduced peer assessment to online education. He has been awarded the Katayanagi Emerging Leadership Prize, Sloan Fellowship, NSF CAREER award, Microsoft Research New Faculty Fellowship, and Nine best-paper or honorable mention awards. He is program co-chair of Learning@Scale '18, on the editorial board of HCI and TOCHI; was program co-chair for UIST, the CHI systems area, and HCIC. He advises university design programs globally. Organizations worldwide use his group's open-source design tools and curricula.

Design Research Reminders

You are not doing science

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

Do the best design work you can

- May find that self-tracking is not the opportunity
- 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

Structure of Section and Critique

Focus on peer feedback and learning

- Bring your artifacts, be ready to present them
- Bring paper, keep the laptops put away

Critique progression

- Reminder of your project
- What you have done
- What you have learned
- Your plan going forward
- Feedback from peers / staff
- Questions you have for peers / staff

Structure of Section and Critique

With 3 Project Groups:

- 2 groups in peer critique
- 1 group with course staff
- Rotate at about 12 minutes

With 4 Project Groups:

- 2 groups in peer critique
- 2 groups each with member of course staff
- Rotate at about 17 minutes

Time at end to huddle, follow up with anybody

Developing Insight Is Hard

Design research yields a lot of data

- Does not reduce to a statistical test

Need to get from data to design insight

- But this is fundamentally difficult

Data
????
Insight

Although project sequence separates research from design ideas, you will be exploring ideas as your do the research

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.

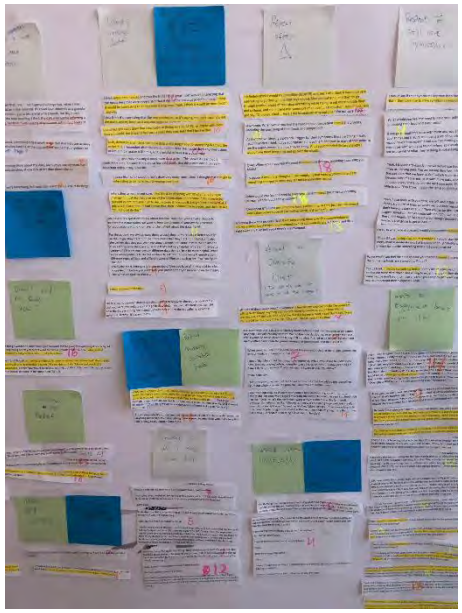
Affinity Diagrams

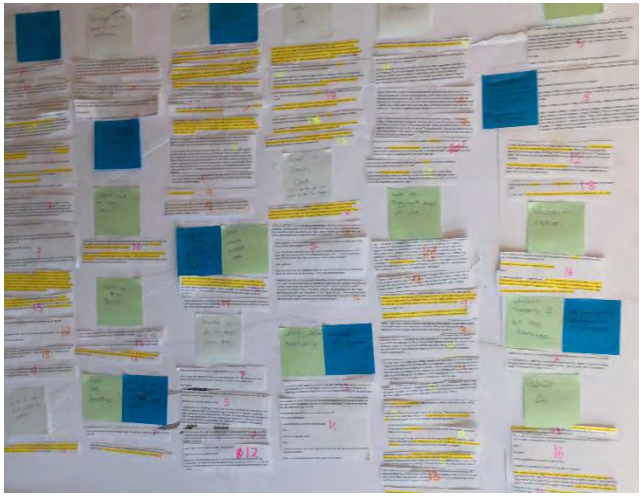
Generated during group session

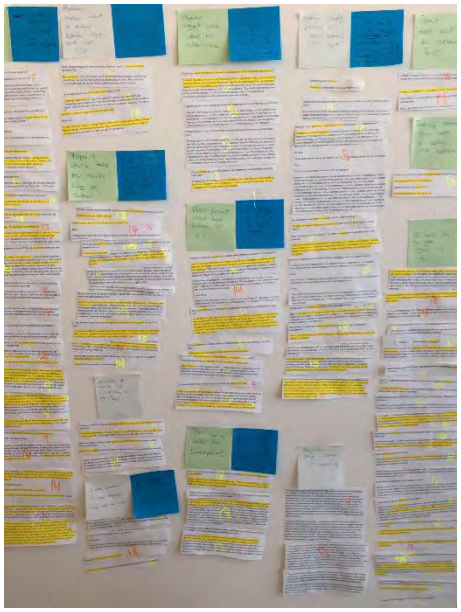
Each observation, idea, note to a post-it

Notes are hierarchically organized into themes, based on project focus

Affinity Diagrams







Affinity Diagrams

Developing Models

Distilling models that summarize data

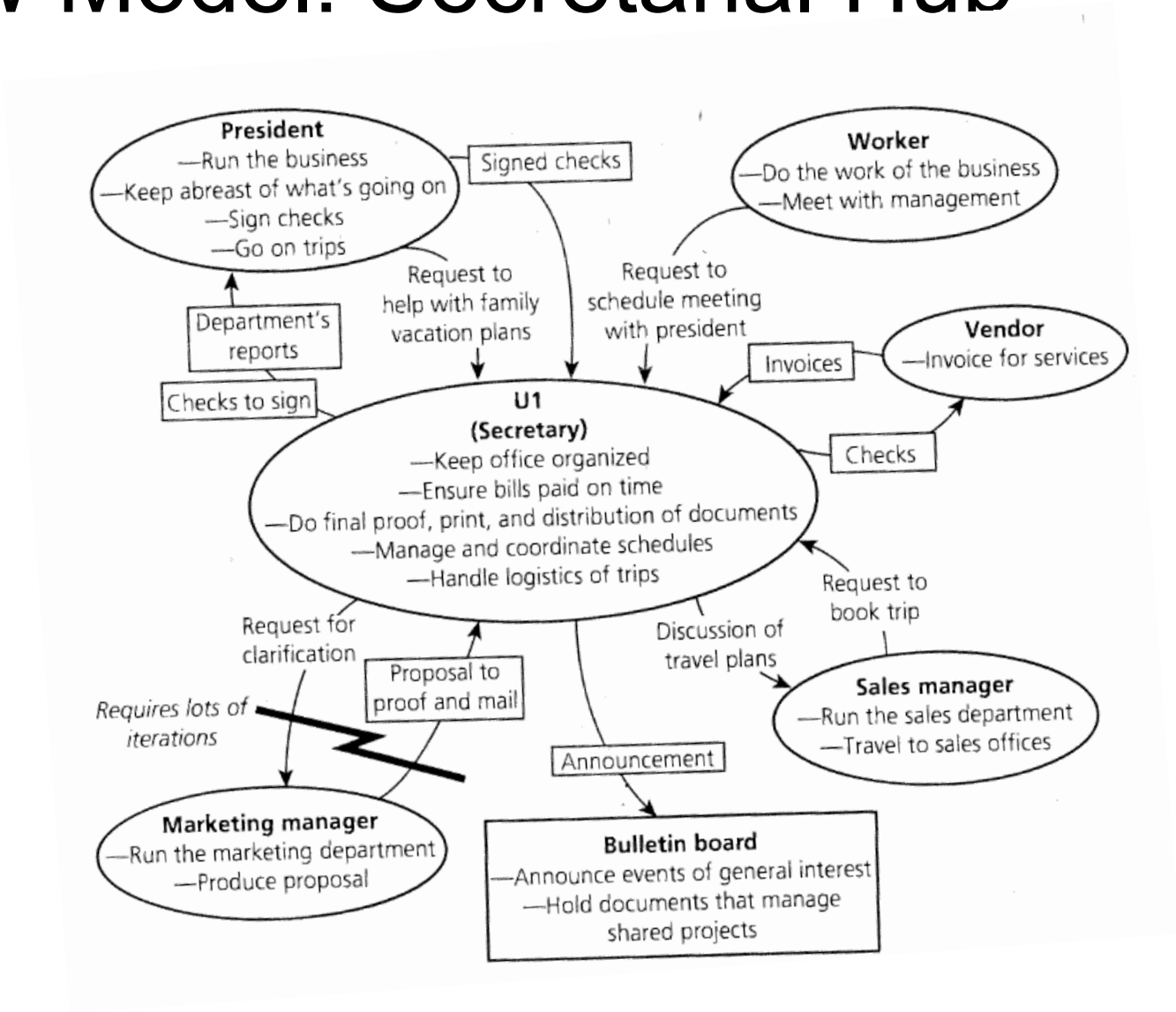
- Highlights gaps in understanding
- Identify breakdowns and workarounds

Many types of models

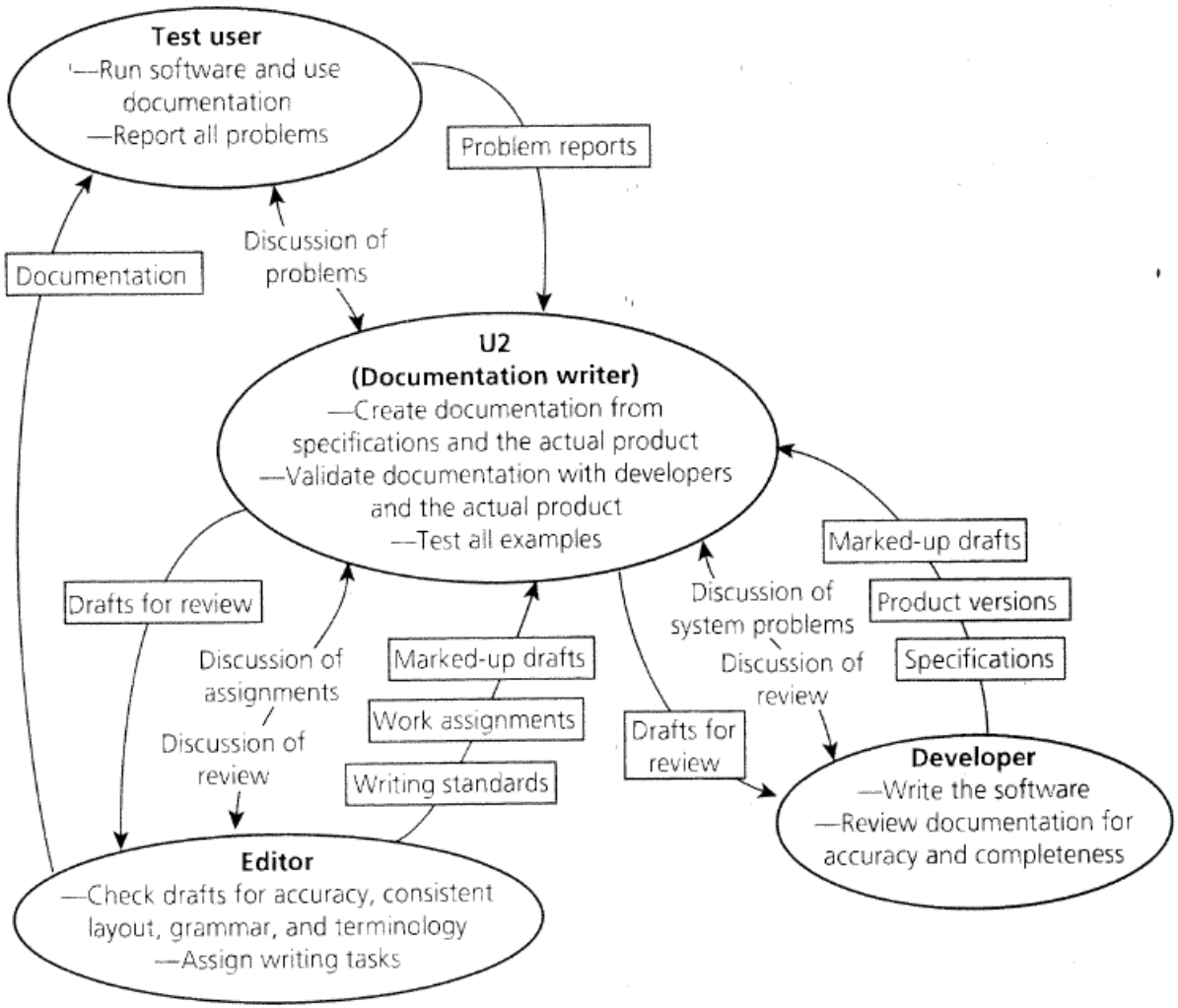
- e.g., Flow, Sequence, Artifact, Cultural, Physical
- None is perfect, they highlight different things

No model is perfect or guarantees insight

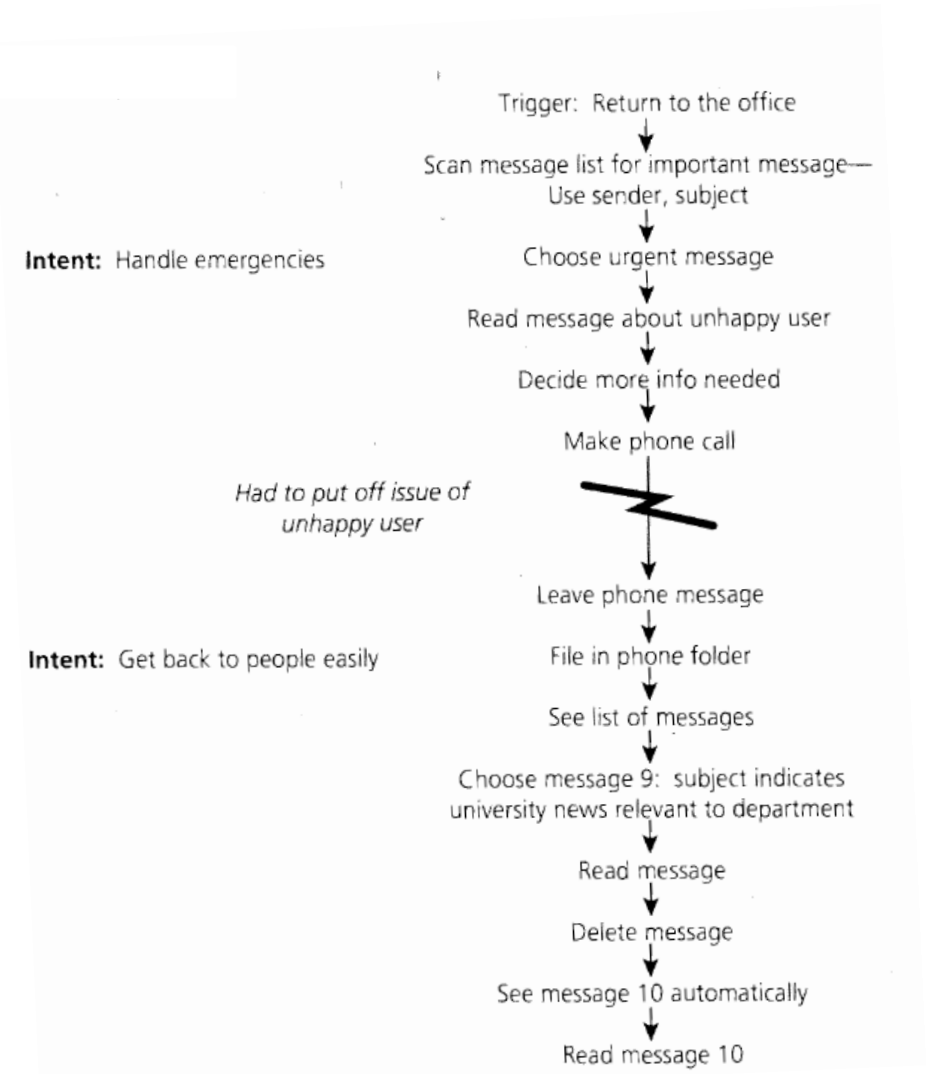
Flow Model: Secretarial Hub



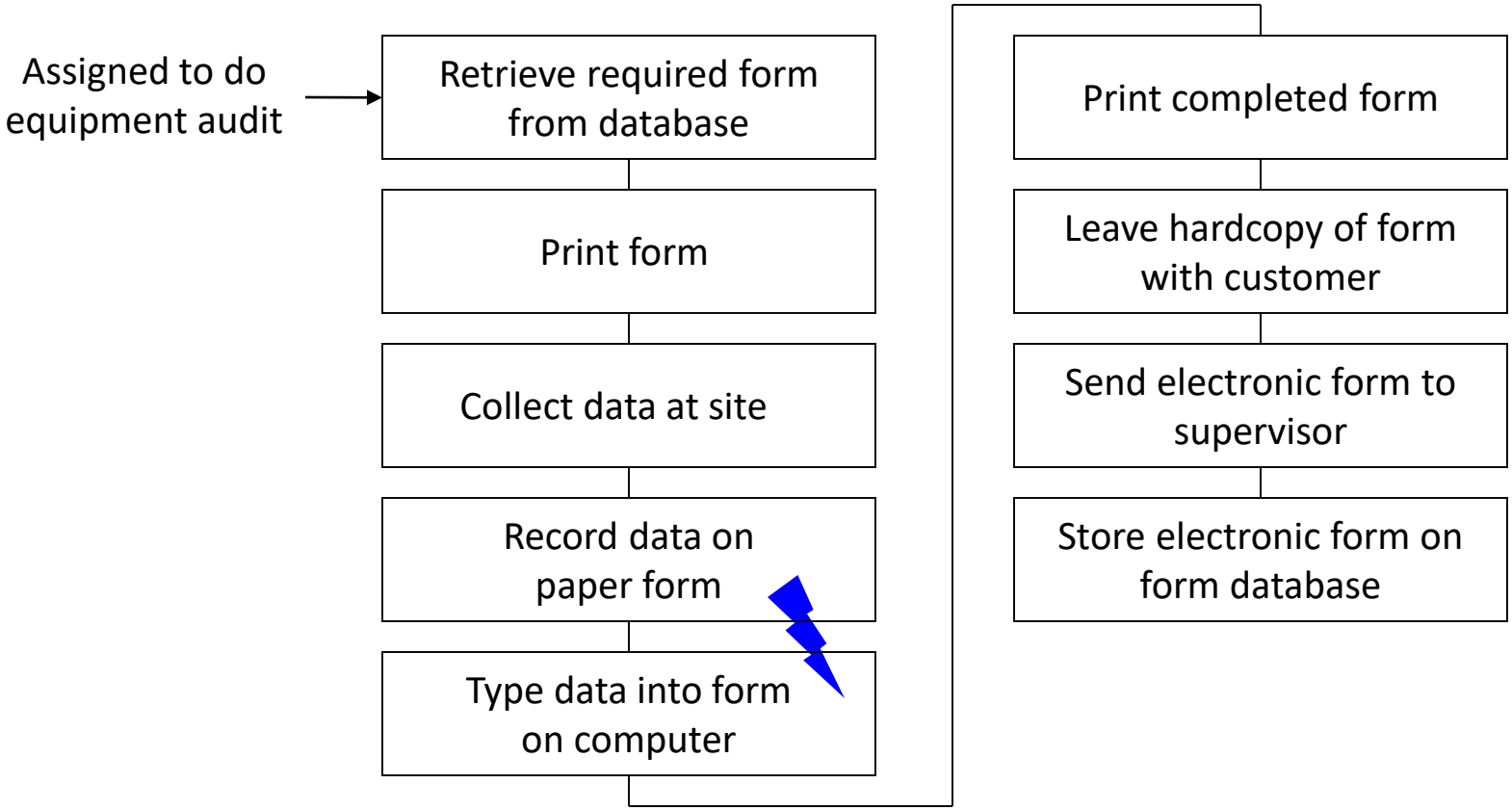
Flow Model: Creative Work



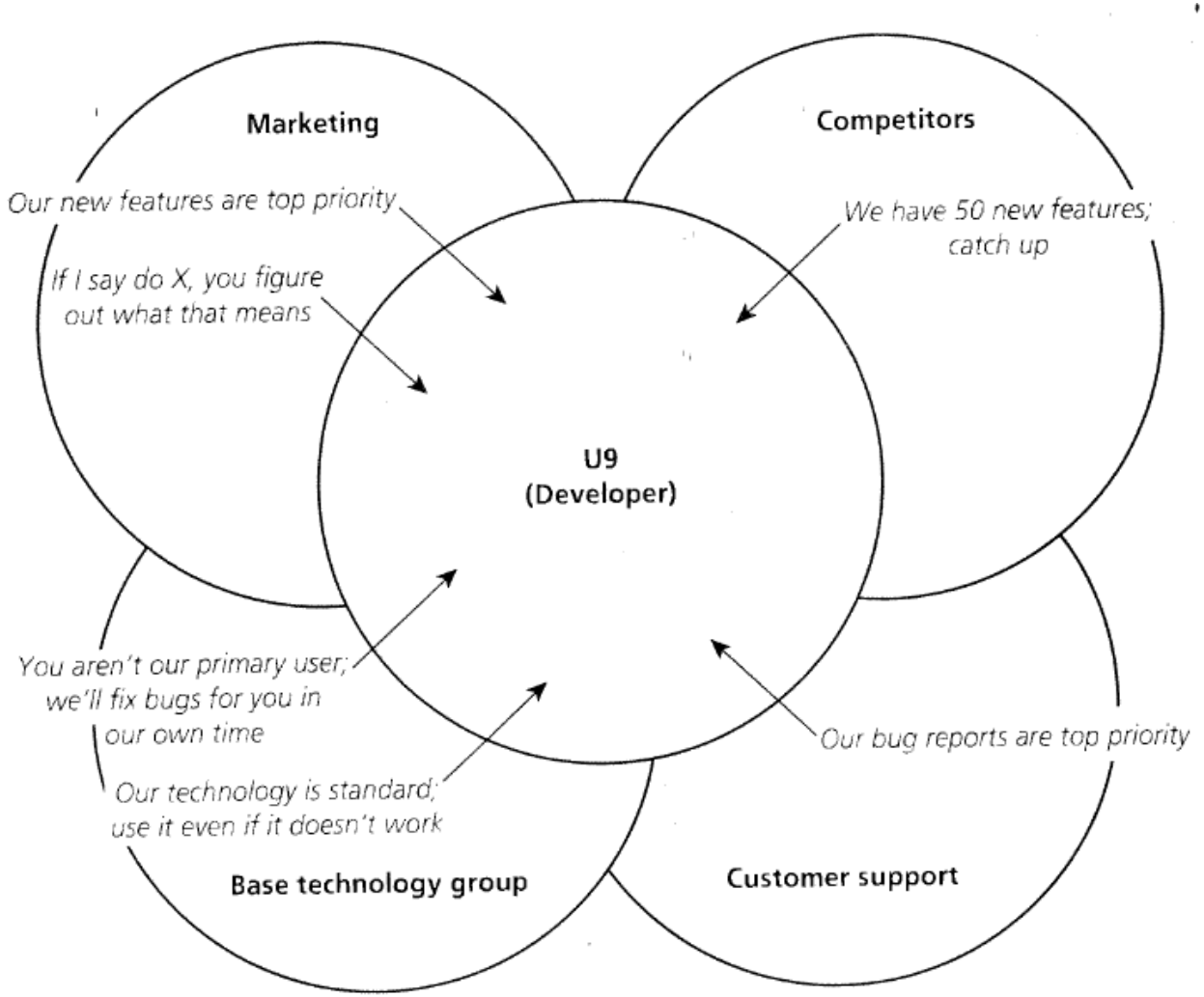
Sequence Model: Doing Email



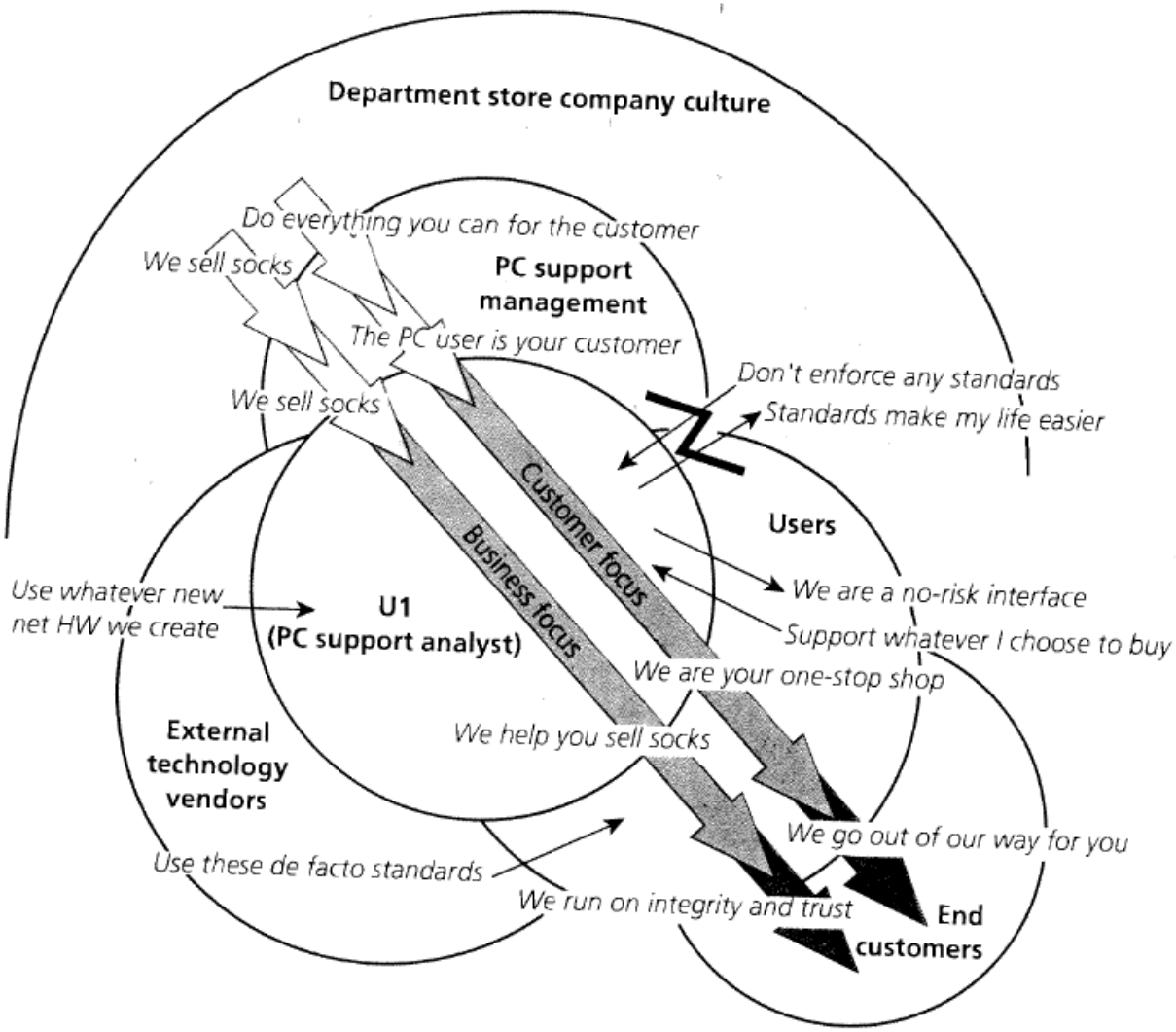
Sequence Model: Equipment Audit



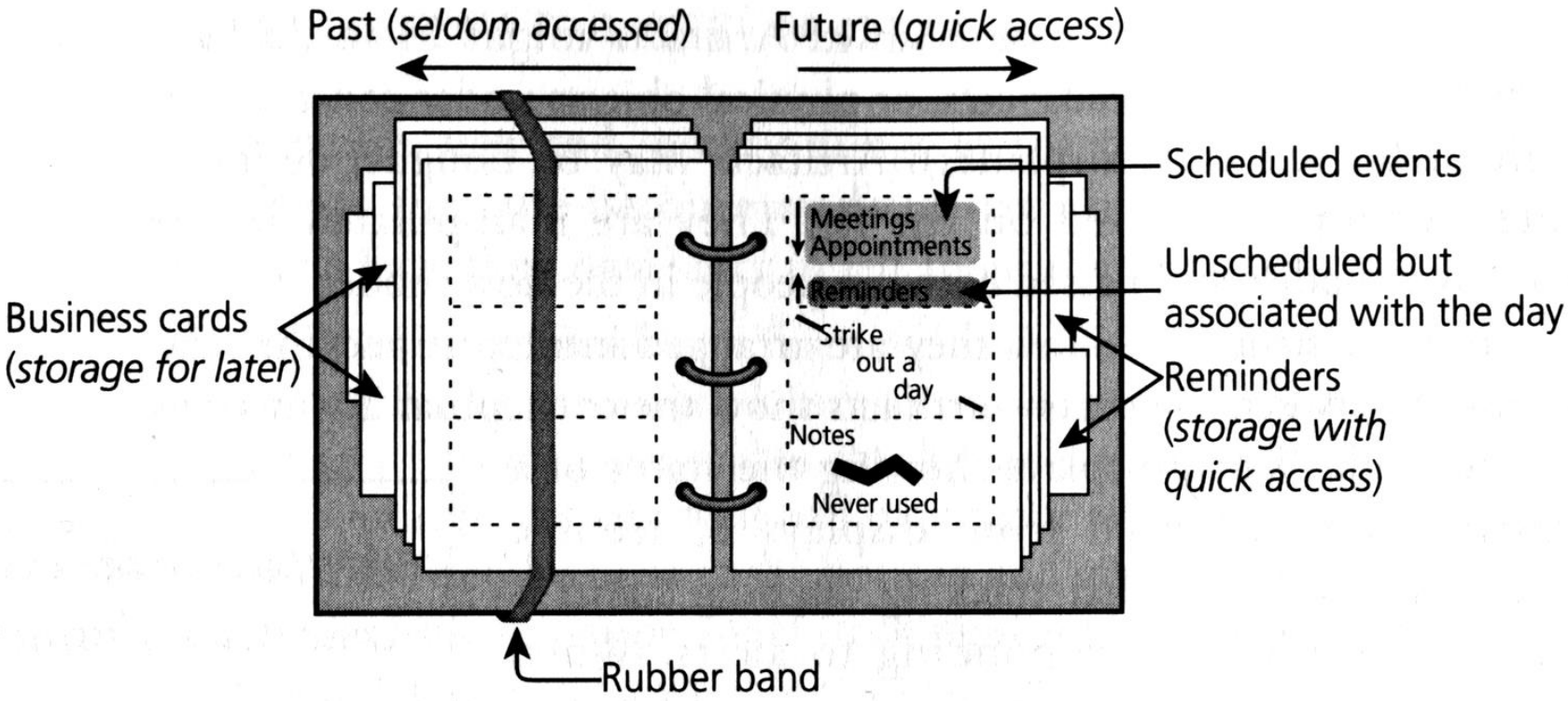
Cultural Model: Developer



Cultural Model: Department Store

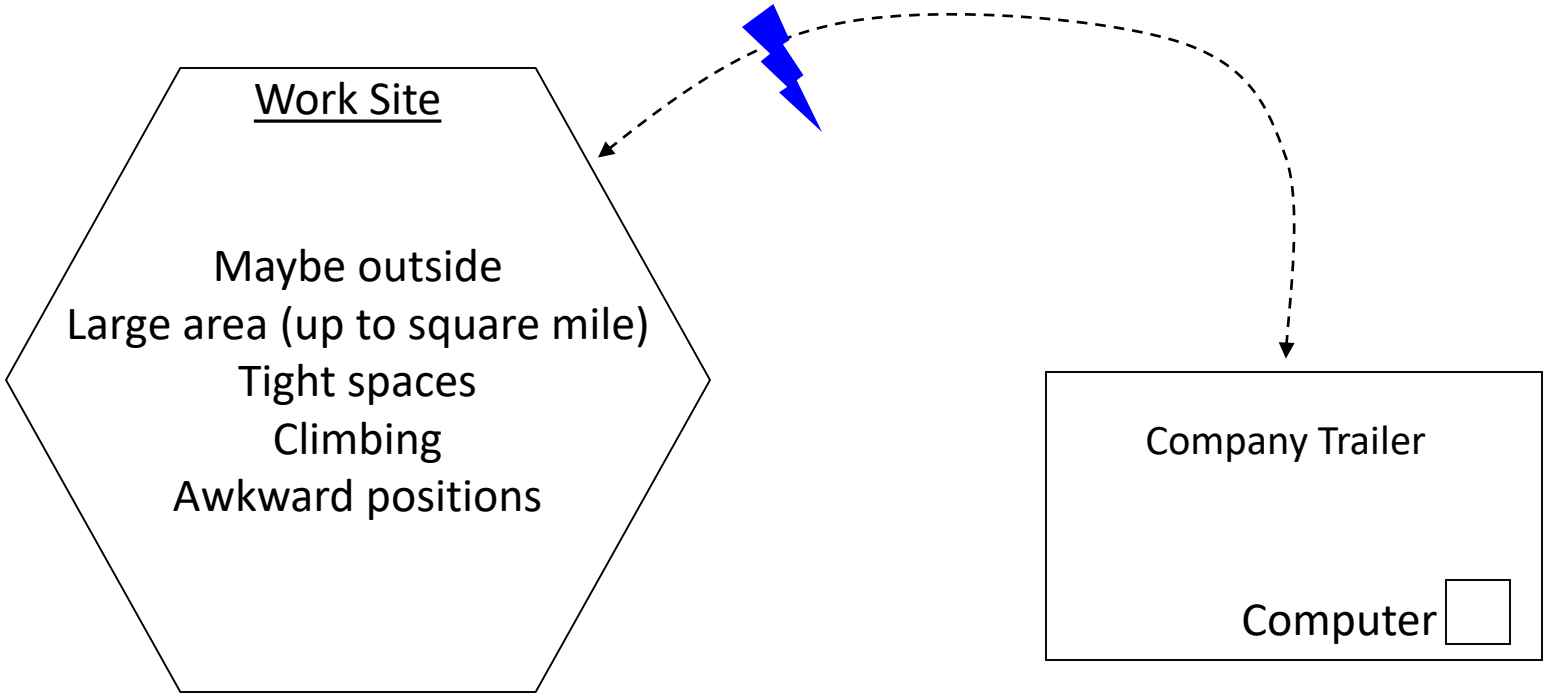


Artifact Model: Calendar



Physical Model: Work Site

Approximately a 5 minute walk. If doing an audit at a site under construction, then safe path frequently changes and may need to wait for construction equipment to pass.



Designing with Tasks

We will primarily emphasize designing with tasks

Tasks Matter

System will fail if:

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

Your contextual inquiries will emphasize getting to know people and their needs

Can you then just make 'good' interfaces?

Why Task Analysis?

‘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

Design is often about tradeoffs

Example of gestures to navigate display

Why Task Analysis?

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

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

Who is going to use the system?

Identity

In-house or specific customer is more defined

Broad products need several typical consumers

Background

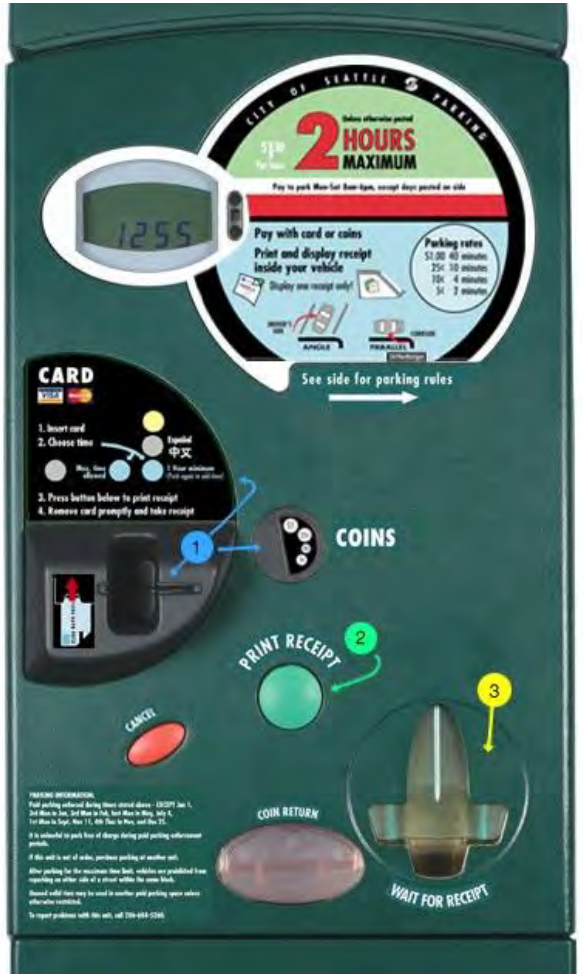
Existing systems, training

Skills

Work habits and preferences

Physical characteristics and abilities


Cards
Coins


CITY OF SEATTLE PARKING
2 HOURS MAXIMUM
1255
Pay with card or coins
Print and display receipt inside your vehicle
Parking rates
See side for parking rules
CARD
1. Insert card
2. Choose time
3. Press button below to print receipt
4. Remove card promptly and take receipt
COINS
PRINT RECEIPT
CANCEL
COIN RETURN
WAIT FOR RECEIPT

Seattle Parking Meter

Who is going to use the system?

Identity?

People who park in Seattle

Business people, students, elderly, tourists

Background?

Have used parking meters before

May have an ATM or credit card

Have used other fare machines before

Seattle Parking Meter

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?

Qdoba soda machine

PARK, PAY & DISPLAY

Parking Pay Station Instructions

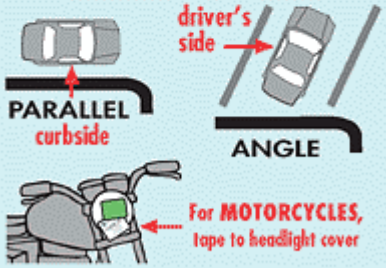
Insert card and push **BLUE** button to buy time **OR** **Insert coins** to buy time

Push **GREEN** button to print receipt

Remove card quickly wait for receipt and display properly

Display one receipt only to park in any meter or pay station space until your time expires

Use the removable backing to tape receipt to INSIDE of a front-seat side window



Questions? Call 684-ROAD (7623)
paystations@seattle.gov
SDOT
Seattle Department of Transportation

泊車、付款並顯示

泊車付費站使用說明

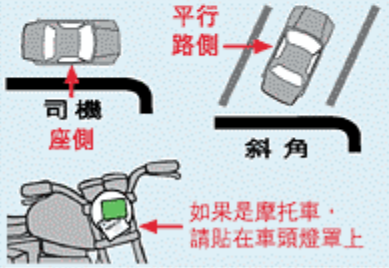
插入卡並按**藍色**按鈕購買時間，
或投入硬幣購買時間

按**綠色**按鈕
打印收據

迅速將卡取出
等候收據並適當顯示

僅限顯示一張收據，
以便在任何眯表或付費站的車位泊車，直到您的時間到期

請使用可剝離的背面，將收據貼在前座側車窗內側



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ĐẬU XE, TRẢ TIỀN & DÁN BIÊN NHẬN

Hướng Dẫn về Trạm Trả Tiền Đậu Xe

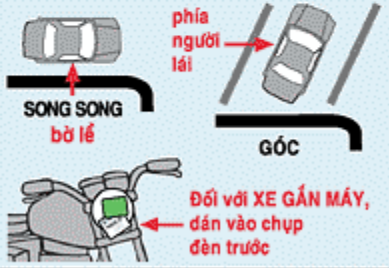
Đút thẻ vào và bấm nút **XANH** để mua giờ **HOẶC** **Bỏ tiền các** để mua giờ

Bấm nút **XANH** để in biên nhận

Rút nhanh thẻ ra chờ biên nhận và dán đúng cách

Chỉ dán một biên nhận để đậu xe tại bất cứ chỗ nào có đồng hồ hoặc trạm trả tiền cho đến khi hết giờ đậu

Dùng miếng dán mặt sau có thể gỡ ra để dán biên nhận vào MẶT TRONG cửa kính bằng trước



Thắc Mắc? Hãy gọi số 684-ROAD (7623)
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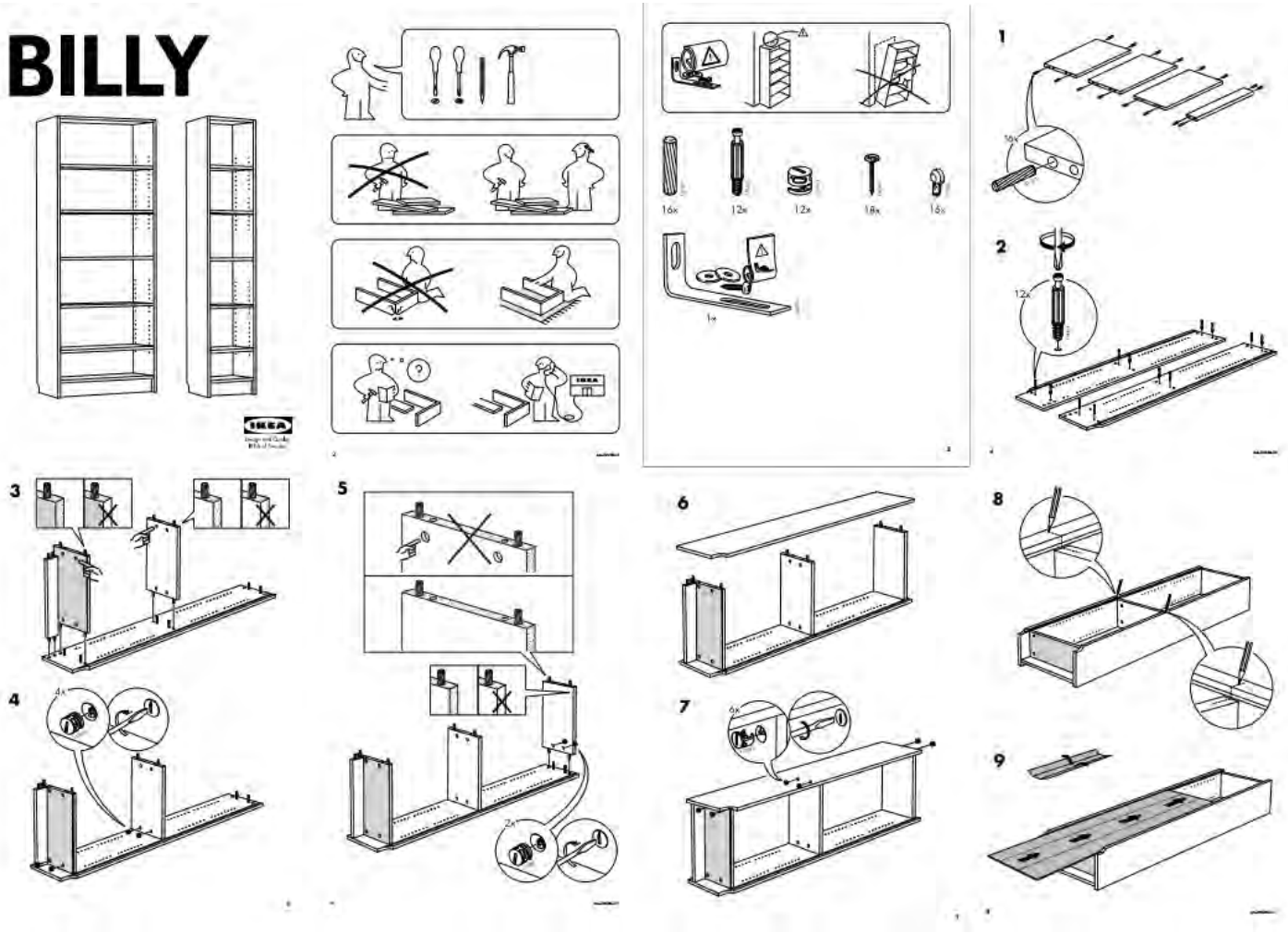
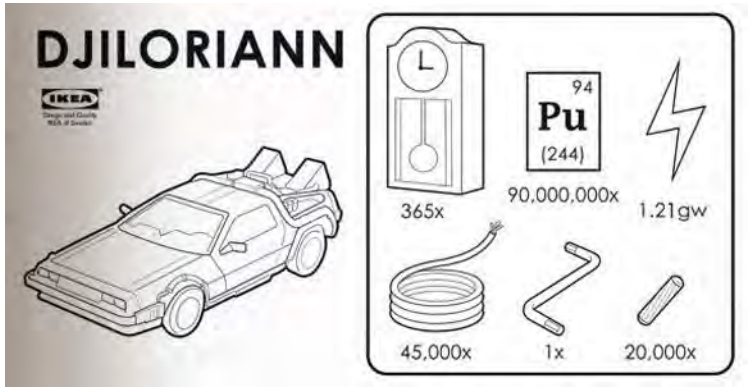


There are limits, a tradeoff in this design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IKEA
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1.21gw
45,000x
1x
20,000x


HÖUSS
IKEA
4x
1x
4x
7,450x
1x
1x


Coolant Low
Cruise Control
Dashboard Illumination
Defroster Front
Defroster Rear
Diesel Preheat
Door Power Lock
Door Open
Emissions Malfunction
or
Fan Operation
or
Fresh Air
Fog Light Front
Fog Light Rear
or
Fuel Gauge or Low
Hazard Lights

Question 2 and Question 3

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 dentists 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

PROVED

poonful salt
eaten
l milk

beaten egg and add
melted fat. Bake in
25 min. Makes 11

cup. flour, add 4
baking powder to
and bake same as

sp. baking powder,
same as for Plain
d adding to other
14.

to 1 cup. chopped
fruit with 2 tbsp.
lates, figs, apples,

Yorkshire Puddings
Individual

POPOVERS

3 egg recipe makes 12

beat well

2 cupfuls flour
½ teaspoonful salt
2 eggs
2 cupfuls milk
2 teaspoonfuls melted fat

Beat eggs slightly. Sift flour and salt, and add alternately with milk to eggs. Add melted fat. Beat with egg beater until smooth and full of bubbles. Fill hot greased cast aluminum or iron gem-pans or glass or earthenware custard cups, ⅔ full of popover batter. Place immediately in a hot oven of 450° F. and bake for 30 min. Then lower temperature to 350° F. and bake for 15 min. longer. Makes 9 popovers.

CORNBREAD

2 cupfuls cornmeal
1 teaspoonful soda
1½ teaspoonfuls salt
2 cupfuls sour milk
2 eggs, beaten
2 tablespoonfuls melted fat
3 tablespoonfuls sugar

Sift dry ingredients together. Mix milk with beaten eggs and add to dry ingredients. Stir well together and add melted fat. Pour into a hot greased baking pan or muffin tins and bake in hot oven of 400° F. for 20-25 min. Makes 24 pieces.

GRIDDLE CAKES

Question 4

How are the tasks learned?

What does a person need to know?

Do they need training?

academic

general knowledge / skills

special instruction / training

Question 5

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

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

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?

Question 8

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

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

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

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?

Plantr Task Analysis

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

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

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

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

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

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

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

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

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

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

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.

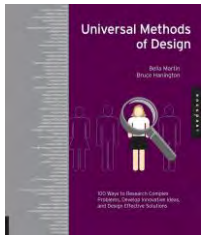
Combine with Other Methods

Personas

Concept Mapping

Competitive Analysis

Method 63



"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

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

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

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

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

Key Significant Differences

Uses the phone for work calls
Bought his mobile phone (not a gift)
Tech savvy compared to other groups

Personal Information

Age: 43 years
Profession: Owns and manages computer game club with eight computers
Lives: In the capital city of Bishkek
Home Life: Lives with his wife and two sons
Russian: Can speak and read fluently
Primary Home Language: Kyrgyz
Primary Work Language: Russian
Schooling: He has a degree in economics focused on finance and credit from Kyrgyzstan Slavonic University
Income: 5200 soms a month (approx $140.00)

Technical Information

Internet Use: Yes, at least occasionally
- **Length of use**: 36 months
- **Use how often:** 1-2 days a week
- **Where use:** Most often at a friend's internet cafe

Computer User: Yes
- **How often:** Several times a day at work

Cable or Satellite TV: Yes
Home Landline: Yes

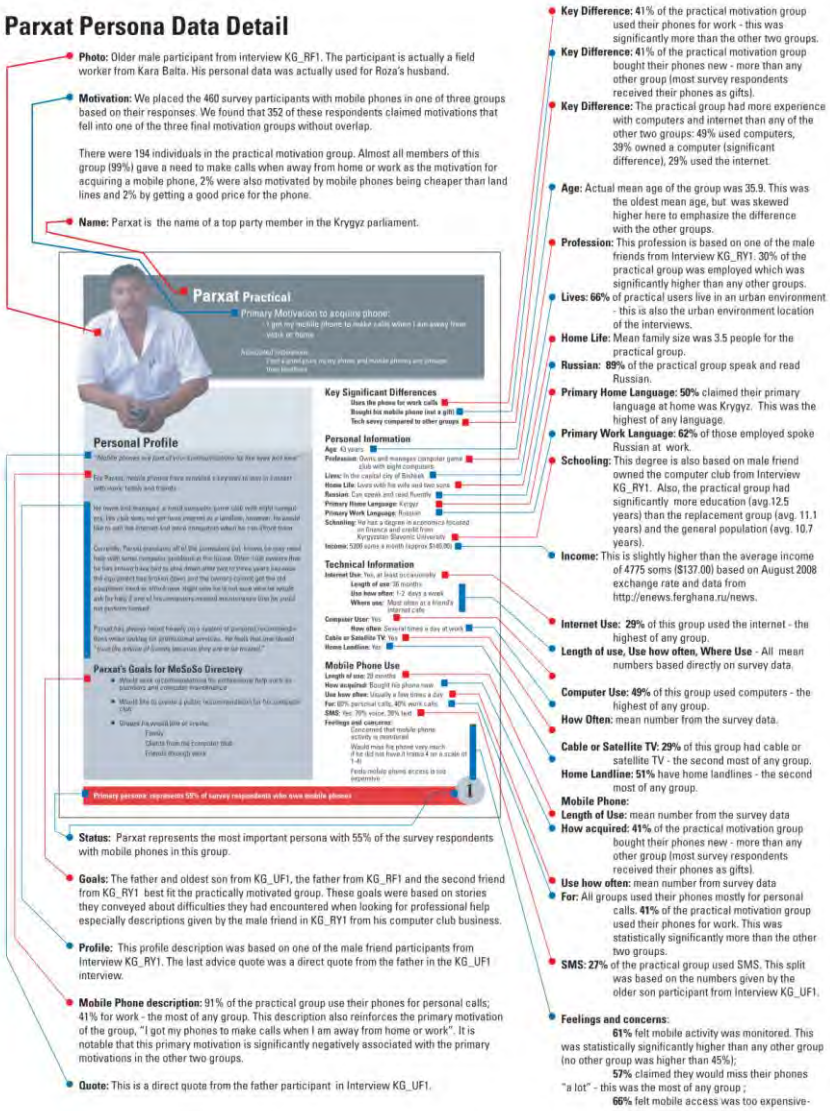
Mobile Phone Use

Length of use: 28 months
How acquired: Bought his phone new
Use how often: Usually a few times a day
For: 60% personal calls, 40% work calls
SMS: Yes: 70% voice, 30% text
Feelings and concerns:
- Concerned that mobile phone activity is monitored
- Would miss his phone very much if he did not have it (rated 4 on a scale of 1-4)
- Feels mobile phone access is too expensive

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

1

Personas


Parxat Persona Data Detail
Photo: Older male participant from interview KG_RF1. The participant is actually a field worker from Kara Balta. 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 (99%) 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 Krygyz parliament.
Parxat Practical
Primary Motivation to acquire phone:
Personal Profile
Parxat's Goals for MeSoSo Directory
Key Significant Differences
Personal Information
Technical Information
Mobile Phone Use
Primary persona represents 55% of survey respondents who own 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_RY1 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_RY1 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 phones 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: 49% 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 was employed which was significantly higher 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: 50% claimed their primary language at home was Krygyz. 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 4775 soms ($137.00) based on August 2008 exchange rate and data from http://enews.ferghana.ru/news.
Internet Use: 29% of this group used the internet - the highest of any group.
Length of use, 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 their 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 group was higher than 45%);
57% claimed they would miss their phones "a lot" - this was the most of any group ;
66% felt mobile access was too expensive-

Personas

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

Key Significant Differences

- **Uses the phone to primarily to call friends**
- **Least likely to feel mobile access is too expensive**
- **Somewhat tech savvy**

Personal Information

Age: 20 years
Profession: Student and works part time as a bartender in a local cafe
Lives: In the capital city of Bishkek
Home Life: Lives with her dad and an older brother. She also has around 30 cousins in towns.
Russian: Can speak and read fluently
Primary Home Language: Kyrgyz
Primary Work Language: Kyrgyz
Schooling: She is a full time student (junior) at the American University of Central Asia studying business administration
Income: 2000 soms a month (approx $55.00)

Technical Information

Internet Use: Yes, at least occasionally
- **Length of use**: 33 months
- **Use how often:** About once a week
- **Where use:** Most often at an internet cafe

Computer User : Yes
- **How often:** A few times a week at school

Cable or Satellite TV: Yes
Home Landline: Yes

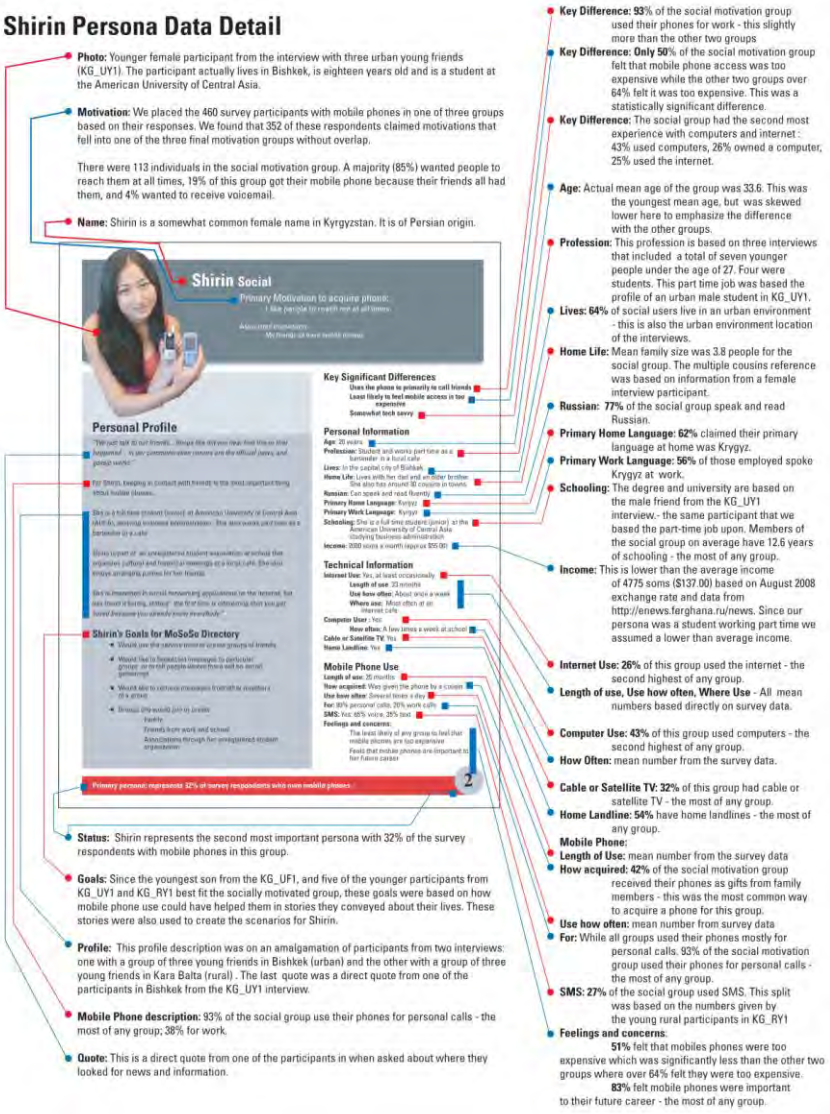
Mobile Phone Use

Length of use: 25 months
How acquired: Was given the phone by a cousin
Use how often: Several times a day
For: 80% personal calls, 20% work calls
SMS: Yes: 65% voice, 35% text
Feelings and concerns:
- The least likely of any group to feel that mobile phones are too expensive
- Feels that mobile phones are important to her future career

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

2

Personas


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:
Personal Profile
Shirin's Goals for MoSoSo Directory
Key Significant Differences
Personal Information
Technical Information
Mobile Phone Use
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 was on 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 Balta (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.
Key Difference: 93% of the social motivation group used their phones for work - this slightly more than the other two groups
Key Difference: Only 50% of the social motivation group felt that mobile phone access was too expensive while the other two groups over 64% felt it was too expensive. This was a statistically significant difference.
Key Difference: The social group had the second most experience with computers and internet : 43% used computers, 26% owned a computer, 25% used the internet.
Age: Actual mean age of the group was 33.6. This was the youngest mean age, but was skewed lower here to emphasize the difference with the other groups.
Profession: This profession is based on three interviews that included a total of seven younger people under the age of 27. Four were students. This part time job was based the profile of an urban male student in KG_UY1.
Lives: 64% of social users live in an urban environment - this is also the urban environment location of the interviews.
Home Life: Mean family size was 3.8 people for the social group. The multiple cousins reference was based on information from a female interview participant.
Russian: 77% of the social group speak and read Russian.
Primary Home Language: 62% claimed their primary language at home was Krygyz.
Primary Work Language: 56% of those employed spoke Krygyz at work.
Schooling: The degree and university are based on the male friend from the KG_UY1 interview.- the same participant that we based the part-time job upon. Members of the social group on average have 12.6 years of schooling - the most of any group.
Income: This is lower than the average income of 4775 soms ($137.00) based on August 2008 exchange rate and data from http://enews.ferghana.ru/news. Since our persona was a student working part time we assumed a lower than average income.
Internet Use: 26% of this group used the internet - the second highest of any group.
Length of use, Use how often, Where Use - All mean numbers based directly on survey data.
Computer Use: 43% of this group used computers - the second highest of any group.
How Often: mean number from the survey data.
Cable or Satellite TV: 32% of this group had cable or satellite TV - the most of any group.
Home Landline: 54% have home landlines - the most of any group.
Mobile Phone:
Length of Use: mean number from the survey data
How acquired: 42% of the social motivation group received their phones as gifts from family members - this was the most common way to acquire a phone for this group.
Use how often: mean number from survey data
For: While all groups used their phones mostly for personal calls. 93% of the social motivation group used their phones for personal calls - the most of any group.
SMS: 27% of the social group used SMS. This split was based on the numbers given by the young rural participants in KG_RY1
Feelings and concerns:
51% felt that mobiles phones were too expensive which was significantly less than the other two groups where over 64% felt they were too expensive.
83% felt mobile phones were important to their future career - the most of any group.

Personas

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 specialist 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
  - May look in the public area for professional services

Key Significant Differences

Least likely to use the phone for work
Lives in a rural area
Not tech savvy

Personal Information

Age: 35 years
Profession: Housewife - her husband is a driver for an agricultural corporation (for 23 years)
Lives: In Ceragulak, a rural village
Home Life: Lives with her husband, son and two daughters
Russian: Can speak and read Russian
Primary Home Language: Kyrgyz
Primary (Husband's)Work Language: Kyrgyz
Schooling: Completed secondary school
Income: (Husband's income) 4200 soms a month (approx $110.00)

Technical Information

Internet Use?: No
Computer User? : No, but she would like to get a computer for her two daughters who are still in school
Cable or Satellite TV: No
Home Landline: No

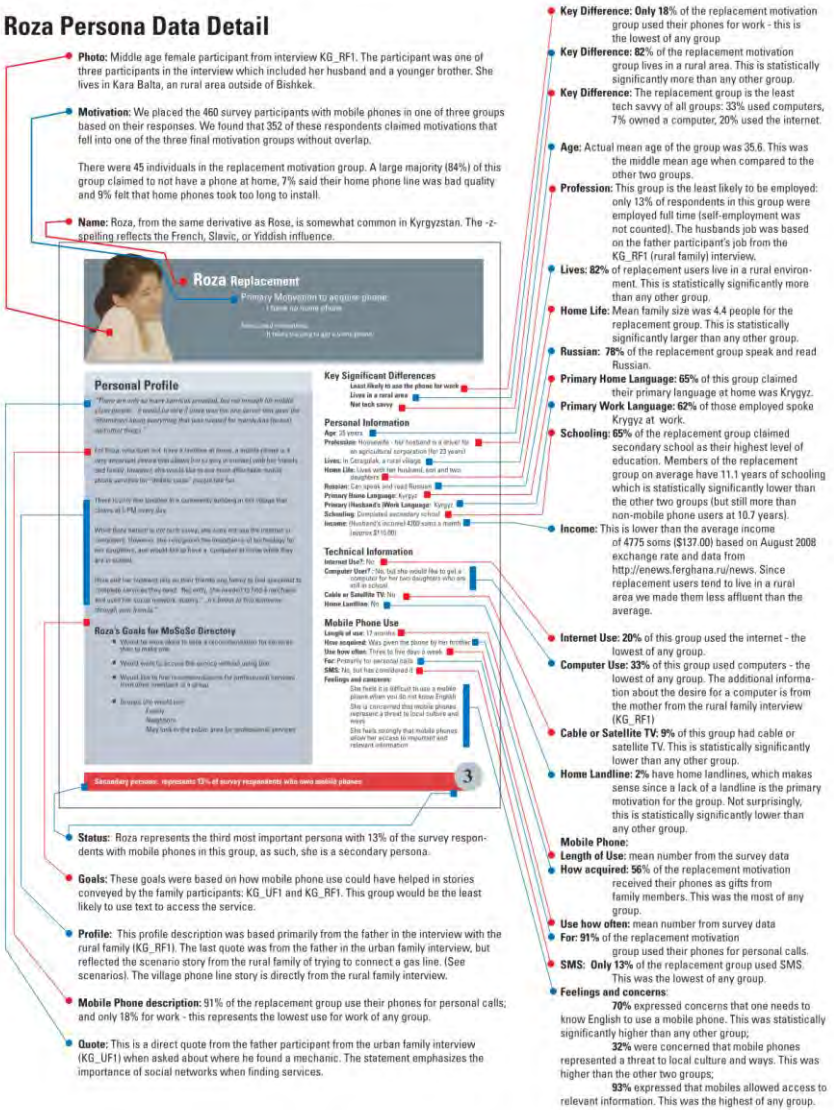
Mobile Phone Use

Length of use: 17 months
How acquired: Was given the phone by her brother
Use how often: Three to five days a week
For: Primarily for personal calls
SMS: No, but has considered it
Feelings and concerns:
- She feels it is difficult to use a mobile phone when you do not know English
- She is concerned that mobile phones represent a threat to local culture and ways
- She feels strongly that mobile phones allow her access to important and relevant information

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

3

Personas


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 Balta, an 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
Personal Profile
Roza's Goals for MoSoSo Directory
Secondary persona: represents 13% of survey respondents who own mobile phones
3
Key Significant Differences
Least likely to use the phone for work
Lives in a rural area
Not tech savvy
Personal Information
Technical Information
Mobile Phone Use
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 group is the least likely to be employed: only 13% of respondents in this group were employed full time (self-employment was not counted). The husbands job was based on the father participant's job from the KG_RF1 (rural family) interview.
Lives: 82% of replacement users 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: 65% of this group claimed their primary language at home was Krygyz.
Primary Work Language: 62% of those employed spoke Krygyz 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 non-mobile phone users at 10.7 years).
Income: This is lower than the average income of 4775 soms ($137.00) based on August 2008 exchange rate and data from http://enews.ferghana.ru/news. Since replacement users tend to live in a rural area we made them less affluent than the average.
Internet Use: 20% of this group used the internet - the lowest of any group.
Computer Use: 33% 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 sense since a 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.
Use how often: mean number from survey data
For: 91% of the replacement motivation group used their phones for personal calls.
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% were concerned that mobile phones represented a threat to local culture and ways. This was higher than the other two groups;
93% expressed that mobiles allowed access to relevant information. This was the highest of any group.

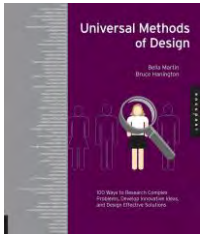
Combine with Other Methods

Personas

Concept Mapping

Competitive Analysis

Method 16

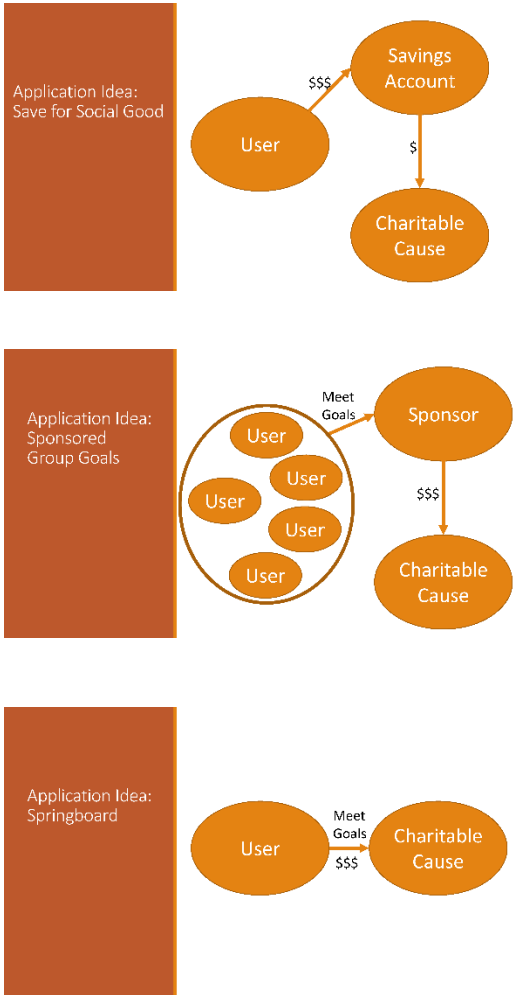


Combine with Other Methods

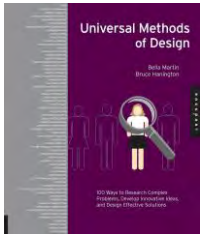
Personas

Concept Mapping

Competitive Analysis



Method 16

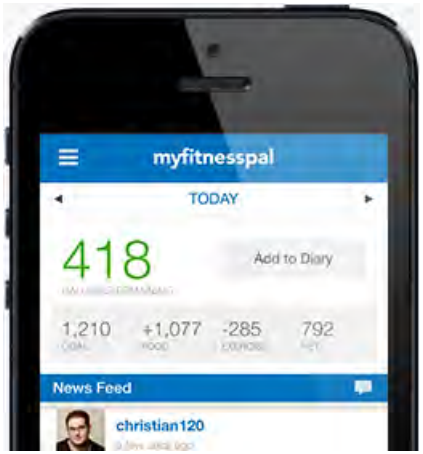


Combine with Other Methods

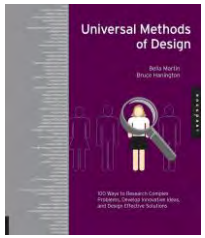
Personas

Concept Mapping

Competitive Analysis



Method 15



Project Status

Looking Forward

- 2c: Design Research Check-In due Tonight
- 2d: Design Research Review due Monday 10/16
- 2e: Task Review due Thursday 10/19
- 2f: Design Check-In (3x4) Due Monday 10/23
- 2g: Design Review (1x2) Due Thursday 10/26

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)

What Should Tasks Look Like?

- 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

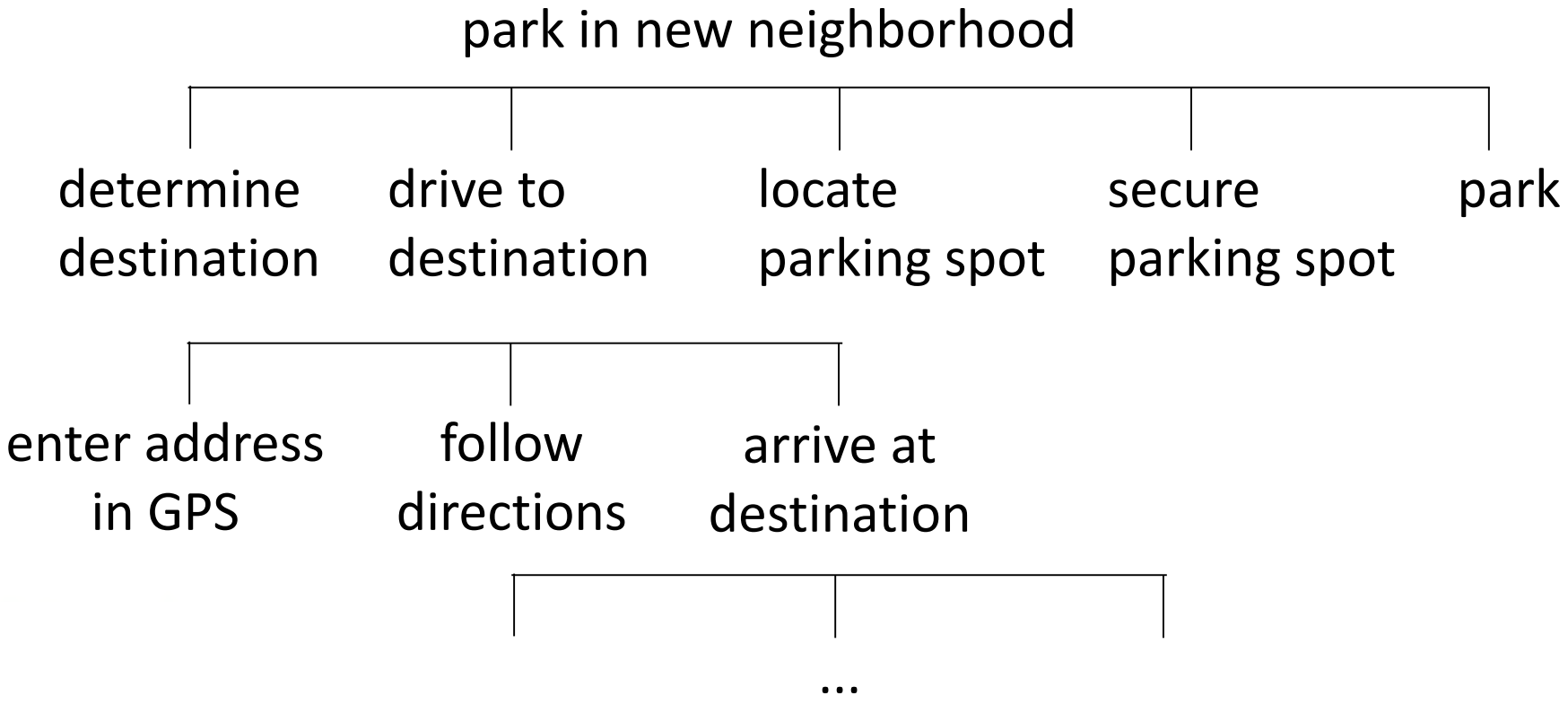
filename task example

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.

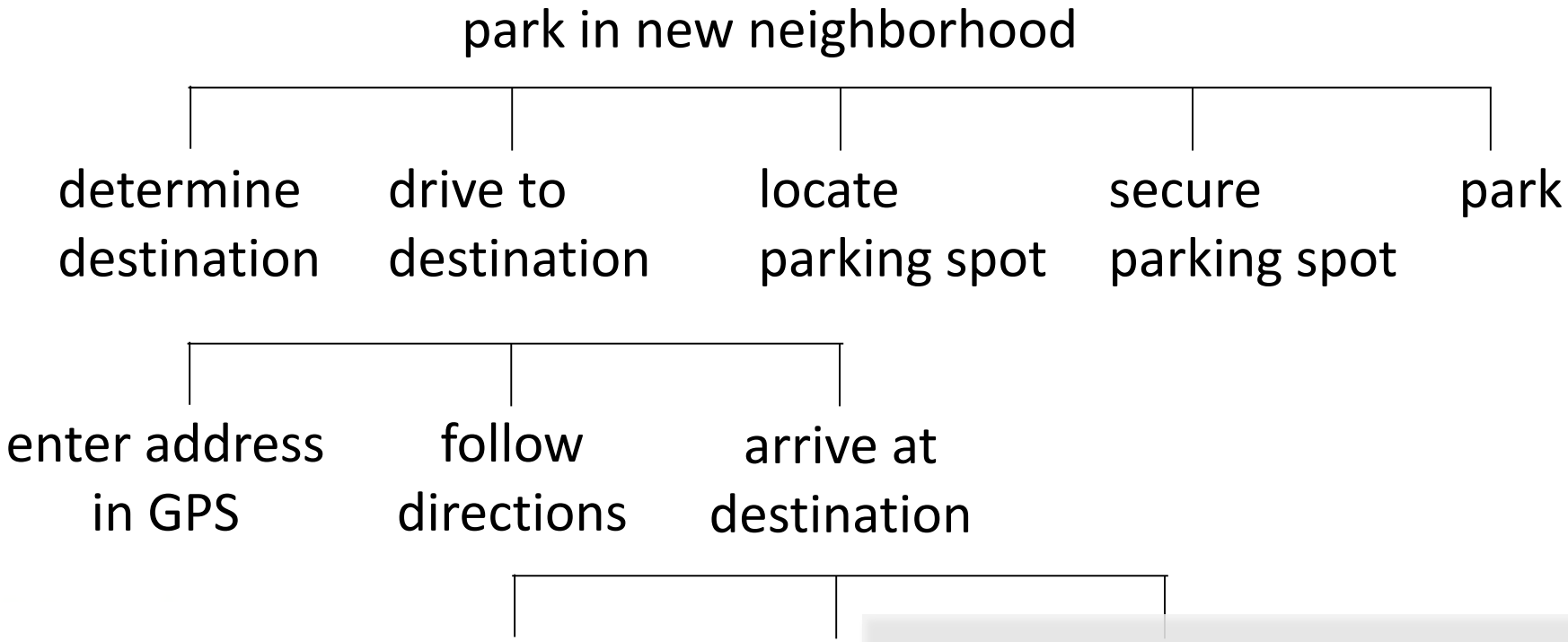
Hierarchical Task Analysis

Steps of the task execution (detailed in a hierarchy)



Hierarchical Task Analysis

Steps of the task execution (detailed in a hierarchy)



Using Tasks in Design

Write up a description of tasks

formally or informally

run by people and rest of the design team

get more information where needed

Manny is in the city at a restaurant and would like to call his friend Sherry to see when she will be arriving. She called from a friend's house while he was in the bus tunnel, so he missed her call. He would like to check his missed calls and find the number to call her back.

Using Tasks in Design

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

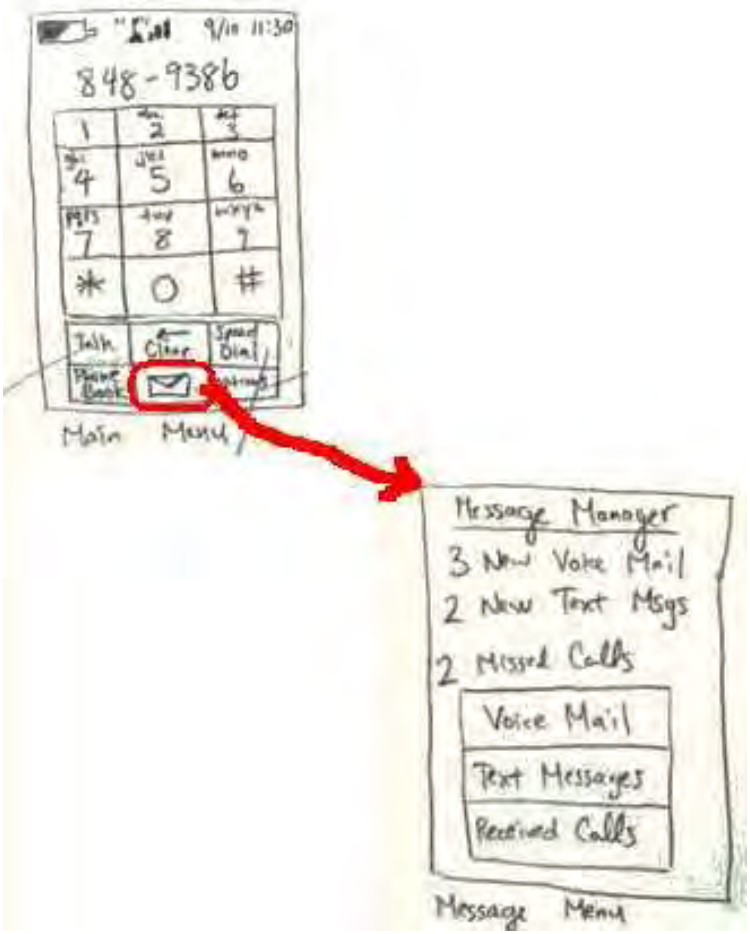
show how things work together

settle arguments with examples

but these are only examples,
and may need to look beyond flaws

Show people storyboards

topic for next Thursday



Tasks, Personas, and Scenarios

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

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 at the zoo
- Park Friday night in Ballard
- Park at the airport

CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 05:
Task Analysis

Tuesday / Thursday
12:00 to 1:20

James Fogarty
Kailey Chan
Dhruv Jain
Nigini Oliveira
Chris Seeds
Jihoon Suh

PAUL G. ALLEN SCHOOL
OF COMPUTER SCIENCE & ENGINEERING

DESIGN
USE
BUILD