Lecture 05: Task Analysis

James Fogarty
Daniel Epstein
Brad Jacobson
King Xia

Tuesday/Thursday
10:30 to 11:50
MOR 234
Where we came from

System will fail if:

- It is inappropriate for the customer
- It does not meet customer needs

Your contextual inquiries have emphasized getting to know your customers and their needs
... So we know what to build now, right?

Can’t we now just make ‘good’ interfaces?
Why Task Analysis?

‘Good’ has to be interpreted in the context of use
   Might be acceptable for office work, but not for play
   Infinite variety of tasks and customers

Guidelines are too vague to be generative
   e.g., “give adequate feedback”

Design is often about tradeoffs
   Examples?
Why Task Analysis?

Task analysis complements the information you obtain through methods like contextual inquiry.

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

Your assignments order the two, but in practice you should iteratively decide how to best draw upon all relevant methods throughout a process.
Why Now?

Task analysis questions due Tuesday, October 14
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 customers & data?
What other tools does the customer have?
How do customers 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 easy
  Broad products need several typical consumers

Background

Skills

Work habits and preferences

Physical characteristics
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

Skills?
may know how to put cards into ATM
Seattle Parking Meter

Who is going to use the system?

Work habits and preferences?
Park several times a week, a month, a year?

Physical characteristics?
Varying heights, don’t make it too high or too low

Anything else?
**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

- **parallel curbside**
- **angle**
- For **MOTORCYCLES**, tape to headlight cover

**Questions? Call 684-ROAD (7623)**

**paystations@seattle.gov**

**SDOT**

**Seattle Department of Transportation**

---

**닫내, trả tiền & dán biển nhận**

**Hướng dẫn về Trạm Trả Tiền Dạt Xe**

- Dủ thẻ vào và bấm nút để mua giờ **HOẠC** Bó tiền các để mua giờ
- Bấm nút **XANH** để in biển nhận
- Rút nhanh thẻ ra chờ biên nhận và dán đúng cách
- Chỉ dán một biển nhận để dạt xe tại bất cứ chỗ nào có đồng hồ hoặc trạm trả tiền cho đến khi hết giờ dạt

Đừng đỡ dán mặt sau có thể gọ ra để dán biển nhận vào **MẶT TRONG** của kính bảng trước

- **song song** bộ ít
- **góc**

**Thông Mắc? Hãy gọi số 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，以便在任何時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

- **司機座側**
- **斜角**

有問題嗎？請致電 684-ROAD (7623)

**paystations@seattle.gov**

**SDOT**

**Seattle Department of Transportation**

---
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 customers, 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 A’s insurance takes longer than most
POPOVERS

2 cupfuls flour  
½ teaspoonful salt  
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 cens or glass or earthenware custard cups, ¼ 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.
Question 4

How are the tasks learned?

What does the customer 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 customers & 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?**
Question 7

What other tools does the customer 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?
DO

ALL THE THINGS!!!

mamegenerator.net
Question 8

How do customers communicate with each other?

Who communicates with whom?
About what?
Follow lines of the organization? Against it?
Question 9

How often are the tasks performed?

- Frequent customers likely remember more details
- Infrequent customers may need more help
  
  Even for simple operations
  
  Make these tasks possible to accomplish

Which function is performed

- Most frequently?
- By which customers?
  
  Optimizing for these will improve perception of performance
  
  Careful about initial use though
Question 10

What are the time constraints on the tasks?

What functions will customers be in a hurry for?

Which can wait?

Is there a timing relationship between tasks?
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?
Selecting Tasks

Real tasks customers have faced or requested
  collect any necessary materials
Should provide reasonable coverage
  compare check list of functions to tasks
Mixture of simple & complex tasks
  easy task (common or introductory)
  moderate task
  difficult task (infrequent or for power customers)
What Should Tasks Look Like?

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

Be very specific – stories based on facts!
say who customers are (use personas or profiles)
design can really differ depending on who
give names (allows referring back with more info later)
characteristics of customers (job, expertise, etc.)
story forces us to fill out description w/ relevant details

Sometimes should describe a complete “job”
forces us to consider how features work together
Using Tasks in Design

Write up a description of tasks

formally or informally
run by customers and rest of the design team
get more information where needed

Manny is in the city at a bar and would like to call his girlfriend, Sherry, to see when she will be arriving at the bar. She called from a friend’s house while he in the Paul Allen Center basement, so he missed her call. He would like to check his missed calls and find the number so that he can call her back.
Using Tasks in Design

Rough out an interface design

discard features that don’t support your tasks
or add a real task that exercises that feature
major screens & functions (not too detailed)
hand sketched

Produce scenarios for each task

what customer has to do & what they would see
step-by-step performance of task
illustrate using storyboards
Scenarios

Scenarios are design specific, tasks are not

Scenarios force us to

show how features will work together

settle design arguments by seeing examples

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

Show users storyboards

get feedback
Caveats of User-Centered Design

Politics

“agents of change” can cause controversy
get a sense of organization & bond w/ interviewee
important to get buy-in from all those involved

Customers are not always right

cannot anticipate new technology accurately
job is to build system customers will want
not system customers say they want
be very careful about this (you are outsider)
if you can’t get customers interested, you’re probably missing something

Design/observe forever without prototyping

rapid prototyping, evaluation, & iteration is key
Summary

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’s the relationship between customer & data?
What other tools does the customer have?
How do users communicate with each other?
How often are the tasks performed?
What are the time constraints on the tasks?
What happens when things go wrong?

Selecting tasks

Real tasks with reasonable functionality coverage
Complete, specific tasks of what customer wants to do
Personas
Question 1

Who is going to use the system?

Identity

In-house or specific customer is easy
Broad products need several typical consumers

Background

Skills

Work habits and preferences

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

• Parent concerned about safety
• Carpenter who needs to transport tools
• Executive looking for a fast & sporty car
Principles of Personas

• More specific, more effective
• Give the person detail
• Give them a name
• Make it believable
Microsof	
  
  Kin

“Tia always wants to know what cool things her friends are up to”

• 16 years old
• From La Jolla, CA
• Loves all things pink
• 2 sisters, Diana & Ashley
• Was Juliet in last year’s school performance of “Romeo & Juliet”
Types of users

- Power Users
- Computer Literate Users
- Novice Users
Types of users

“Elise is a 33-year-old accountant who uses Microsoft Excel every day. She likes to watch ‘House of Cards’ on her iPhone before bed, but has had trouble connecting her email to her phone. She goes hiking nearly every weekend.”
Designing with Personas

• Design to make the “primary” persona(s) happy

• Avoid design choices that make personas unhappy
Why use Personas?

Thoroughly think about who is using your product

Ensure the design is effective for those people

Make the product and its impacts “real”
Cultural Probes & Diary Studies
Self-Report Data

Minimal influence on actions

Event takes place over a long period of time
Diary Study

<table>
<thead>
<tr>
<th>Time</th>
<th>TV SET</th>
<th>Station or Channel Name</th>
<th>Name of Program or Movie</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 PM</td>
<td></td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>7 PM</td>
<td></td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>8 PM</td>
<td>CW 5</td>
<td>Smallville (Harvest)</td>
<td></td>
</tr>
<tr>
<td>9 PM</td>
<td></td>
<td>N/A</td>
<td>Purchase DVDs Smallville</td>
</tr>
<tr>
<td>10 PM</td>
<td></td>
<td>HGTV 39</td>
<td>House Hunters</td>
</tr>
</tbody>
</table>
As we saw earlier, Rachel also had a datebook, but her parents had both survived the Holocaust and immigrated to make ends meet. For Charlotte, financial decisions are very made even harder for her to continue to return to this job after she was shot and killed. This clearly emotionally devastating event with her fiancée sitting in the passenger seat when he was fired.

Bonnie; her emphasis was more on saving money on practices noted in a similar generation interviewed in Charlotte's account notebook: a paper spreadsheet. In nearly fifty years, he had caught a 57  year old government employee, living alone. Her was a 57  year old government employee, living alone. Her was a 57  year old government employee, living alone. Her parents had both survived the Holocaust and immigrated to make ends meet. For Charlotte, financial decisions are very made even harder for her to continue to return to this job after she was shot and killed. This clearly emotionally devastating event with her fiancée sitting in the passenger seat when he was fired.

Like Bonnie, Joelle also made investment decisions based on emotional grounds. A bout ten years ago, she and her husband decided to engage a professional financial advisor to prepare her taxes. This introduced its own overhead, however, as she kept it instead of being talked into giving up control of the automatic categorization of expenses. Some people had by storing the folders in different locations, meant that providing tangible evidence of payment. This process, required, this suggests that this practice had more to do with the real value of ensuring that the bonds functioned as a personal piggy bank for personal purchases and those for her business.

One was for 4 packs of corned beef at $1.98/lb, another for friends, and one for expenses: mortgage, electricity, cell phone, Internet, water, and gas. This was due to the cash nature of many but not all of her photography. When we looked at her wallet, we noticed professional photography business, primarily wedding photography. When we looked at her wallet, we noticed contents of Joelle's coupon wallet. Coupons in her wallet showed evidence of her frugality. In Figure 3, we see Bonnie's wallet showing evidence of her frugality. In Figure 4, we see Joelle's wallet showing evidence. Figure 3: Bonnie's wallet showed evidence of her frugality. Figure 4: Contents of Joelle's coupon wallet. Coupons in her wallet showed evidence of her frugality. Figure 8: Charlotte's account notebook: a paper spreadsheet. Figure 6: Rachel's calendar, showing the integration of her personal and professional lives. Figures 6, 7, and 11 show the content of Rachel's calendar. Figure 7 shows the content of Joelle's calendar and Figure 11 shows the content of Olivia's calendar.

Bonnie's cards were organized in a way that was easy for her to find them, and she kept them in a place where she could easily see them. However, although she told us that she had been paying attention to her expenses, she was not keeping track of them in a way that made sense to her. This was due to the cash nature of many but not all of her photography. When we looked at her wallet, we noticed professional photography business, primarily wedding photography. When we looked at her wallet, we noticed contents of Joelle's coupon wallet. Coupons in her wallet showed evidence of her frugality. In Figure 3, we see Bonnie's wallet showing evidence of her frugality. In Figure 4, we see Joelle's wallet showing evidence. Figure 3: Bonnie's wallet showed evidence of her frugality. Figure 4: Contents of Joelle's coupon wallet. Coupons in her wallet showed evidence of her frugality. Figure 8: Charlotte's account notebook: a paper spreadsheet. Figure 6: Rachel's calendar, showing the integration of her personal and professional lives. Figures 6, 7, and 11 show the content of Rachel's calendar. Figure 7 shows the content of Joelle's calendar and Figure 11 shows the content of Olivia's calendar.

Kaye et al. Money Talks: Tracking Personal Finances, CHI 2014
Why use Diary Studies & Cultural Probes?

Learn about your [potential] user’s habits

Artifacts reflect how people currently do something

Contextual Inquiry with a record
Experience Sampling Method
Why use Experience Sampling?

Learn about your [potential] user’s habits

Learn what influences these habits

Diary studies with prompting