CSE440: Introduction to HCI
Methods for Design, Prototyping and Evaluating User Interaction

Lecture 08: Personas & Task Analysis

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Project Status

### Framing the problem
- User research
- Competitive analysis
- Data analysis and summary

### Exploring the solution space
- Brainstorming
- Ideation through sketching

### Finding a good solution
- Scoping
- Consideration of constraints
- Scenarios, storyboards, personas
- Design rationale

### Refining the solution
- Wireframes
- Lo-fi prototypes
- Early evaluations
- Mockups/mid-fi prototypes
- Additional evaluations
Personas
“When you are designing for everyone, you are not designing for anyone.”
Personas

Confident learner

Samantha Bell

“I’d love to keep in contact with my friends”

Sam is about to go abroad for her gap year, so her parents decided to get her a new camera, to make sure she’s able to record everything she gets up to.

She likes the camera as it looks so modern, and it’s able to do so much more than a lot of her friends’ cameras.

She loves being in contact with people all the time, and finds it’s a great way to kill time like when waiting for the bus. She uses a lot of the more advanced features – panoramic shots, online upload and more.

When she encounters a problem she ignores it most of the time - she's not sure if she even got a manual with the camera. When she has trouble she can't ignore she speaks to her friends, or goes into a camera store – she wants to be talked through the problem.

First time user

Female, 27 year old, single.
Student.

Sam prefers to learn how to things by trying things out by herself. She isn’t worried about ‘breaking’ anything. If she does need help she would prefer to not to refer to a manual but “do it herself”.

Needs

In order of preference:
1. To share pictures with her parents.
2. To share her pictures with her friends.
3. To share her pictures with people she meets whilst travelling.

Ideal features

- Ability to take pictures
- Ability to upload images to personal site using 3G/Wifi
- Allowing others to access her pictures remotely
- Long battery life
- Ability to name and add comments to uploaded images
- Ability to create several albums, and upload pictures to each

Frustrations

- Lack of wireless/3G access
- Slow uploads
- Low battery life
- Need to be plugged in to upload images
- Slow shutter speed
- Want to be able to name/add comments to uploaded images
- Getting online is confusing
- Creating new albums

Key attributes

Knowledge

[ ] Low

[ ] High

Experience

[ ] Low

[ ] High

Help use

[ ] Low

[ ] High

Confidence

[ ] Low

[ ] High

Webcredible – user experience research & design

March 2010
Personas (and stories…) fight back cognitive laziness (i.e., generalizing, taking the easy way out)...

Who are we really designing for?
Benefits of Personas

Designing for the most relevant stakeholders
Easier to Empathize
  Concreteness
  Recognition
  Evocativeness
Communication among team members and with customers
## Personas

### Christina Moletti
- **Freelance Graphic Designer**

"Living life is a creative process too"
- Has enough money but not much more
- Works hard during the day but on her own hours
- Walking is her main way to travel, day or night

### Personal Information
- **Age:** 25
- **Location:** Pittsburgh, PA
- **Education:** BA Graphic Design NC State University
- **Profession:** Freelance Graphic Designer, Part-Time Student
- **Home Life:** Lives with a roommate (Eva 25)
- **Hobbies:** Playing guitar and xylophone, reading, drawing, sewing, watching movies, sleeping
- **Favorite TV shows:** Doesn’t watch much TV
- **Personality:** Easy-going, outgoing, try new things

### User Goals
- Christina uses this information system to...
  - Give her reasons to go out walking at night
  - To be active and aware of her surroundings at night
  - To find the safest places to go at night
  - Make walking and being out at night more social with her friends

### Maria Nantes
- **Newspaper Editor**

"I want to stay healthy both mentally and physically always"
- Health Conscious
- Use basic technology for day to day activities
- Enjoy Social groups

### Personal Information
- **Age:** 31
- **Location:** Ann Arbor, MI
- **Education:** Master’s in English from U of Michigan
- **Profession:** Newspaper Editor
- **Home Life:** Married, no children
- **Hobbies:** Walking, making friends, Yoga
- **Favorite TV shows:** Desperate Housewives
- **Personality:** Outgoing, Passionate, Social, Sophisticated

### User Goals
- Maria uses this information system to...
  - Connect and coordinate with friends
  - Find safe walking routes at night
  - Get a sense of safety by getting more info
  - Find out about social events taking place at night, which might be of potential interest
  - Wants to get emotional and mental relaxation by walking

### James Goettner
- **Senior Engineer**

"I know what I’m doing, I’m willing to try everything new."
- is willing to spend money on that
- Likes to chat with others online
- Knows that health is very important & work out

### Personal Information
- **Age:** 37
- **Location:** San Francisco, CA
- **Profession:** Cellphone Interface Developing
- **Education:** Master’s
- **Home Life:** Single
- **Hobbies:** Surfing online to look for new electronic products, working out at gym
- **Favorite TV shows:** Friends, Heros
- **Personality:** Knowledgeable in popular stuffs, talkative, keeping things on schedule

### User Goals
- James uses this information system to...
  - Stay ahead of latest trends on mobile devices
  - Take more time to walk as the substitute for exercise
  - Meet new friends through this application
  - Feel free to walk at night
  - Discuss the new interaction
  - Try to figure out a method for socializing and also provide a feeling of security
Personas - Gender

Abby Jones

Abby has always liked music. When she is on her way to work in the morning, she listens to music that spans a wide variety of styles. But when she arrives at work, she turns it off, and begins her day by scanning all her emails first to get an overall picture before answering any of them. (This extra pass takes time but seems worth it.) Some nights she exercises or stretches, and sometimes she likes to play computer puzzle games like Sudoku.

**Background and skills**
Abby works as an accountant. She is comfortable with the technologies she uses regularly, but she just moved to this employer 1 week ago, and their software systems are new to her.

Abby says she’s a “numbers person,” but she has never taken any computer programming or IT systems classes. She likes Math and knows how to think with numbers. She writes and edits spreadsheet formulas in her work.

In her free time, she also enjoys working with numbers and logic. She especially likes working out puzzles and puzzle games, either on paper or on the computer.

**Motivations and Attitudes**

- **Motivations:** Abby uses technologies to accomplish her tasks. She learns new technologies if and when she needs to, but prefers to use methods she is already familiar and comfortable with, to keep her focus on the tasks she cares about.

- **Computer Self-Efficacy:** Abby has low confidence about doing unfamiliar computing tasks. If problems arise with her technology, she often blames herself for these problems. This affects whether and how she will persevere with a task if technology problems have arisen.

- **Attitude toward Risk:** Abby’s life is a little complicated and she rarely has spare time. So she is risk averse about using unfamiliar technologies that might need her to spend extra time on them, even if the new features might be relevant. She instead performs tasks using familiar features, because they’re more predictable about what she will get from them and how much time they will take.

**How Abby Works with Information and Learns:**

- **Information Processing Style:** Abby tends towards a comprehensive information processing style when she needs to more information. So, instead of acting upon the first option that seems promising, she gathers information comprehensively to try to form a complete understanding of the problem before trying to solve it. Thus, her style is “burst-y”; first she reads a lot, then she acts on it in a batch of activity.

- **Learning: by Process vs. by Tinkering:** When learning new technology, Abby leans toward process-oriented learning, e.g., tutorials, step-by-step processes, wizards, online how-to videos, etc. She doesn’t particularly like learning by tinkering with software (i.e., just trying out new features or commands to see what they do), but when she does tinker, it has positive effects on her understanding of the software.

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1Abby represents users with motivations/attitudes and information/learning styles similar to hers. For data on females and males similar to and different from Abby, see http://euscs.org/gender/gender.php
Personas - Culture

Australia

- Demand for justification of inequalities and strive after equal distribution of power
- Individuals act as members of a group whose needs precede individual needs
- Preference for cooperation, modesty, caring for the weak, relations, and quality of life
- Comfortable in unstructured situations, fewer rules, tend to be more pragmatic
- Short-term: preference for time-honoured traditions, steadiness, social obligations
- Preference for logic, facts, directness; communication is clear, concise, and efficient
- Organized around a calendar, high value on punctuality, planning, staying on schedule

Society

- Hierarchical order is accepted, people have a place without the need for justification

Individualism

- Individuals take care of personal achievements and needs of immediate families

Motivation

- Preference for achievement, recognition, competition and material rewards for success

Ambiguity

- Unknown situations and unorthodox ideas are avoided by rules, laws, and regulations

Foresight

- Long-term: encourage efforts in modern education as a way to prepare for the future

Communication

- Emphasis on interpersonal relationships; words are not as important as context

Time

- Many things going on at once, tolerant to interruptions plans and commitments are flexible

Identification and affiliation to social group

- Themed, unique features and trendy design
- Australia is a rather remote area
- People depend on regulations and simplicity
- People have a laid-back attitude

Ella Jones

“I don’t like the public transport in Melbourne. Trams often break down and I actually have no clue how the new ticketing system works. But I don’t bother anymore.”

Ella is a 31 years old researcher at Monash University, Australia. As about 90% of Australians she lives in a city, more precisely in Melbourne. Ella was born and raised in Melbourne and she never left Australia except for traveling. She studied in Sydney but came back to Melbourne because she appreciated the lesser high-rise architecture. Her parents also retire in Melbourne and the public transport system is more affordable. Ella enjoys living in Melbourne although she is not happy with the public transport system; neither her nor her friends understand the new ticketing system completely. Likewise the Smartphone App, that the 65% smartphone owners in Australia can download for free, is no great support. Consequently she mostly commutes by bike. The fact that she has to wear a helmet by law does not bother her, she feels safer that way and she thinks it relieves her from deciding whether to wear a helmet or not. At work Ella doesn’t hesitate to express her emotions. Furthermore she thinks it is important to minimize inequalities among people that and that Australian made products should be favour over imported products.

Jack Anderson

“The more south you go the more busy the people are. But up here everybody is pretty relaxed.”

Jack was born as an only child in Cairns, where his parents still live. He is 25 years old and studies Civil Engineering at Queensland University of Technology in Brisbane. With 25 years he is part of Australia’s approx. 40% majority of the 25-54 years old age group. He lives in a shared flat with two other Australian students and one exchange student from Germany. Their flat is situated in East Brisbane, a vibrant neighbourhood with a lot of international students and cheap bars.

Jack is responsible for subleasing the forth room regularly to international students as he and his roommates enjoy meeting new people, although the rarely develop a deep friendship with exchange students. Jack often goes out to have drinks but tries to pay attention not to be in dept. His favourite bar is the Walrus Club. He likes that bar because of the distinctive interior design that gives him a feeling of being in Cuba. On the weekends he joins together with other locals to surf at Pinkenba, close to the centre of Brisbane. During the semester break he likes to travel, in particular to Bali or Fiji, and regularly uses his smartphone to look for travel information. Jack generally likes to use his smartphone to pass time away, as almost 70% of Australian smartphone owners do.

Jack likes to identify himself with the Australian surfer community and usually wears board shorts in his leisure time whereas he disapproves eye-catching status symbols. After his studies he wants to earn a lot of money and would not hesitate to reduce his leisure activities.

https://www.researchgate.net/publication/278034641
Why Personas Fail

They were created, but not used

No buy-in from leadership

Personas were created by UX people and imposed on others

People don’t know what personas are or why they’re useful

https://www.nngroup.com/articles/why-personas-fail/
Persona Development

What is the main user that you are designing for?
What are their most relevant characteristics?
How are their goals and motivations?

Define User Stories:

“As a [role], I want [feature] because [reason].”
Team activity

As a group, develop 1 persona for your project:

What is the main user that you are designing for?
What are their most relevant characteristics?
How are their goals and motivations?

Define at least two User Stories:

“As a [role], I want [feature] because [reason].”

Use the handout!
With another group…

Take turns explaining the context of your project and your persona.

Critique the personas:
- Are the personas representative of the user population?
- Is there an adequate level of detail?
- Do you feel like you have a good understanding of the users?
- Would it be easy/useful to refer to they while designing?

Keep them: they will come in handy throughout the next few assignments!
Task Analysis
Task Analysis

Task Analysis is a lens on the information you obtain through other user research methods

Focus on users' goals and...
... on how do people accomplish a specific task

Helps identify the tasks that your solution must support

Helps to find effective ways of accomplishing a task
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

Skills

Work habits and preferences

Physical characteristics and abilities
Question 2 and 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
POPOVERS

2 cupfuls flour
1/2 teaspoonful salt
2 teaspoonsful melted fat

2 eggs
2 cupfuls milk

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 pans or glass or earthenware custard cups, 2/3 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
1 1/2 teaspoonfuls salt
3 tablespoonfuls sugar

2 cupfuls sour milk
2 eggs, beaten
2 tablespoonsfuls melted fat

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

1 cup flour
1 teaspoonful baking powder
1/2 teaspoonful salt
1 egg
1 cup milk
1/2 cup melted fat

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

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

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

to 1 cup. chopped fruit with 2 tbsp. Lates, figs, apples, and Bake same as
Question 4

How are the tasks learned?

What does a person need to know to perform the task?

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?
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?
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
Question 10

What are the time constraints on the tasks?

What functions will people be in a hurry for?

Which ones can wait?

Is there a timing relationship between tasks?  
(Like the Target marketing for pregnancy case….)
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 people have faced or requested
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 can task analysis help with?

Say what **person** wants to do, but not how
- allows comparing different design alternatives
- identify what tasks can be improved, automated, etc.

Specify **stories** based in concrete facts
- say who person is
- 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 relevant details

Describe a complete **“accomplishment”**
- forces us to consider how features work together
Types of Task Analysis

Hierarchical Task Analysis
focused on decomposing a high-level task into subtasks

Cognitive Task Analysis
focused on understanding tasks that require:
  decision-making
  problem-solving
  memory
  attention
  and judgement

https://www.interaction-design.org/literature/article/task-analysis-a-ux-designer-s-best-friend
Hierarchical Task Analysis:

0. make a cup of tea
   plan 0.
      do 1
         at the same time, if the pot is full 2
         then 3 - 4
         after four or five minutes do 5

1. boil water
2. empty pot
3. put tea leaves in pot
4. pour in boiling water
5. wait 4 or 5 minutes
6. pour tea

plan 1.
1.1 - 1.2 - 1.3
   when kettle boils 1.4

1.1. fill kettle
1.2. put kettle on stove
1.3. wait for kettle to boil
1.4. turn off gas
Using tasks in design (Next class!)

Write up scenarios and storyboards
  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.
Activity: (Pre) Task Analysis

In your teams, consider the data from your user research and:
(You might still have a small amount of data: resist inventing answers!)

- Answer as accurately as possible the first page questions
- Select a main task that you wish to support
- Hierarchically analyse this task

Use the worksheet to guide your analysis
- Mark where you need more information
- Where your user research has to go from now on?
Ask me something!