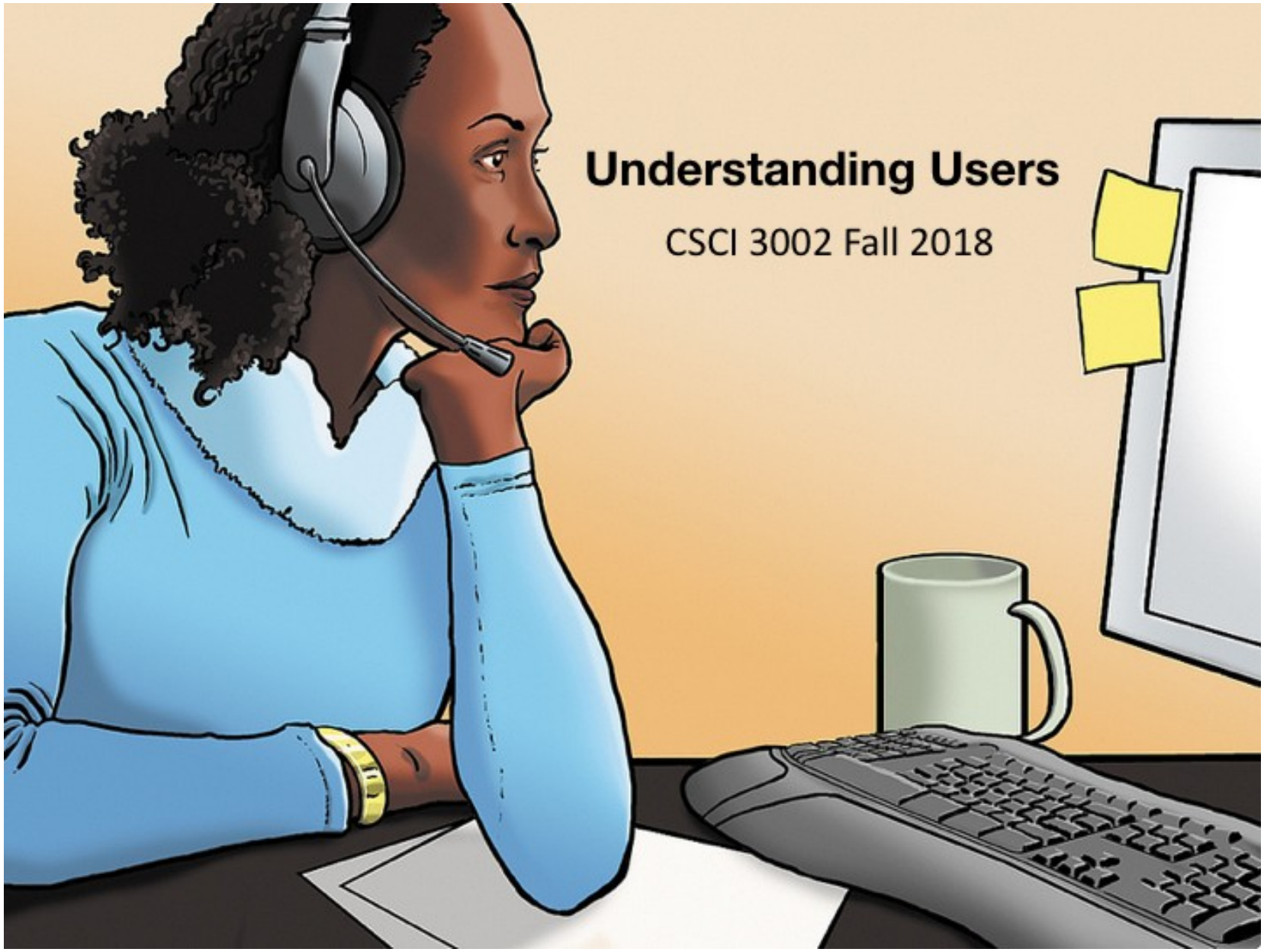

Image from A Web for Everyone:
http://rosenfeldmedia.com/books/a-web-for-everyone/

Project proposal due Sunday at 5 pm

~ Ellen

Today

- How to talk about users
- How to identify different **stakeholders**
- Careers in HCI

What is a user, anyway?

Image: https://www.thrillist.com/travel/nation/kids-on-planes-why-there-s-no-family- section-on-planes

Roles

- **User** – the primary person who is directly interacting with the system
- **Customer** – the person/organization who purchases the product
- **Stakeholder** – other individuals who may be impacted by use of the system

Roles in Facebook (clickers)

- What role does **a single Facebook user** have?

  A. User

  B. Customer

  C. Stakeholder

  D. User & customer

  E. User & stakeholder

Discussion

- Roles in Facebook

So who do we design for?

A. User

B. Customer

C. Stakeholder

D. Everyone

Who do we optimize for?

Going forward

- We will mostly talk about users

  … but will keep stakeholders in mind

Other roles

- **Participant / informant** – individuals who participate in the design process as testers, focus group members, etc.

About users

- Who the heck are they?
- How do we understand them?
- How do we talk about users?

Understanding users

- It's a common saying in user-centered design that **"you are not your user"**
- Users are different from us in many ways
- Users are also different from each other!

- It's not about one person who is "the user"
- Instead, we want to capture the diversity of potential users

Understanding users

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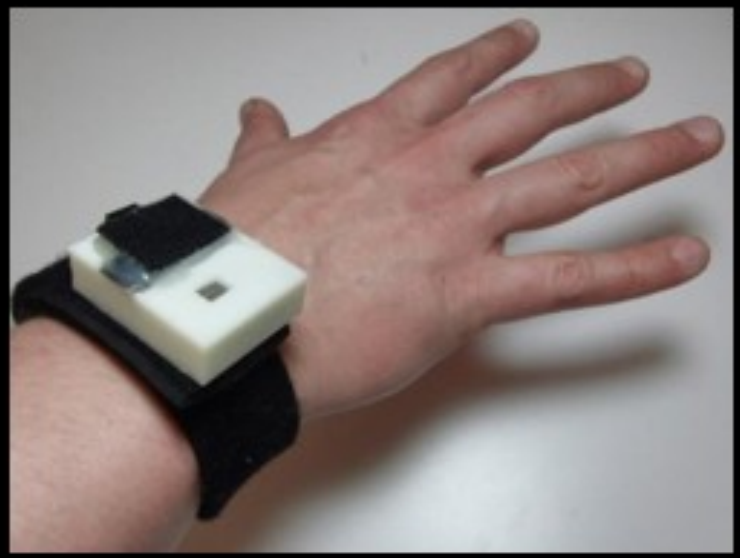
- Instead, we want to capture the diversity of potential users

Who they are. Their needs. Their abilities. Ask them? Observe them.

Designing a new wearable device for food tracking

- What do we want to know about the characteristics of our users?
- Let's make a list
- Talk with your neighbor



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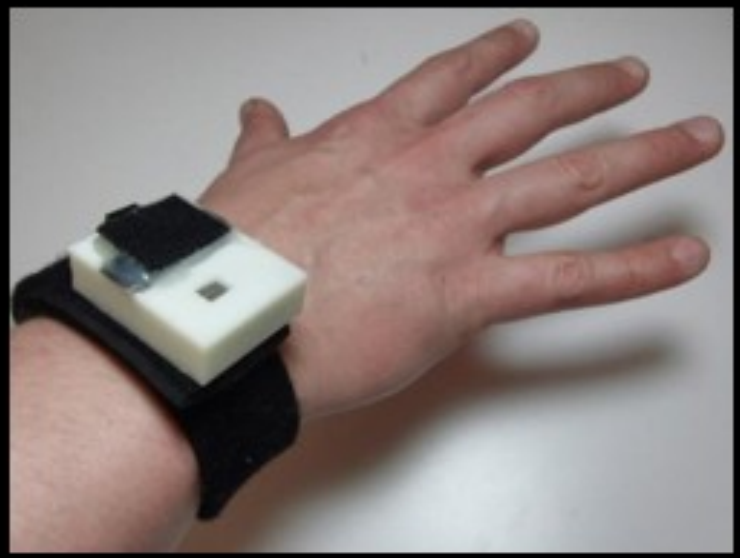


Age, gender, handedness,

Image: https://www.sciencedaily.com/releases/2016/06/160601111407.htm

User characteristics

Why they matter

User characteristics Why they matter

From last time

-Motivation (athletes, health goal)
-Perceptual abilities (color blindness)
-Other technologies (access to camera?)
-Knowledge / beliefs
-Human factors (age, gender, general fitness)

Commonly considered user characteristics

- Age
- Gender
- Culture
- Language
- Ability
- Education

Commonly considered user characteristics

- Age
- Gender
- Culture
- Language
- Ability
- Education

Additional: vision abilities, motor abilities, past experiences, language,

Personality characteristics

- Background knowledge
  - In the domain, with technology in general
- Mouse or keyboard user
- Mac/Windows, Android/iOS fan
- Personal aesthetic tastes
- Others?

Cultural preferences

From K. Reinecke and A. Bernstein. Improving Performance, Perceived Usability, and Aesthetics with Culturally Adaptive User Interfaces. In: *ACM Transactions on Computer-Human Interaction (ToCHI)*, 18(2):8:1–8:29, 2011.

(a) A brightly colored version of MOCCA with a flat button navigation. The participant who received this interface was from Mexico, and had shortly lived in Bulgaria before coming to Switzerland.

(b) A version without the colored borders that define the different areas of the interface. It was personalized for an Indian participant, who had lived in France and the US for several years, which reduced the complexity of the interface predicted by our model for a 'pure' Indian version.

(c) A version with the to-dos in list view, so that to-dos have to be expanded to show more information. The interface was generated for a participant from Poland, who had also lived in Ireland and Germany.

(d) MOCCA with pastel colors, as it was triggered for a participant with Russian, Romanian, and Swiss background. Functions (e.g., delete, add, or edit) are always accessible and add to the information density.

Fig. 4. Example interfaces of MOCCA as they were generated for different participants.

http://www.zora.uzh.ch/id/eprint/63319/1/20120628093346_merlin-id_2477.pdf

Be wary of stereotypes

9-year Old Girl Jordanian Java Programmer

Joud, 9-year old Jordanian little girl, speaks about her programming knowledge so far, and presents her small Java program. Joud has learned HelloWorldKids curriculum.

Ken Thompson

For other people named Ken Thompson, see Ken Thompson (disambiguation).

Kenneth Lane "Ken" Thompson (born February 4, 1943), commonly referred to as **ken** in hacker circles,[1] is an American pioneer of computer science. Having worked at Bell Labs for most of his career, Thompson designed and implemented the original Unix operating system. He also invented the B programming language, the direct predecessor to the C programming language, and was one of the creators and early developers of the Plan 9 operating systems. Since 2006, Thompson has worked at Google, where he co-invented the Go programming language.

Kenneth Thompson

A Picture of Ken Thompson

Born	February 4, 1943 (age 75) New Orleans, Louisiana, U.S.
Nationality	American
Alma mater	University of California, Berkeley (B.S., 1965; M.S., 1966)

9 … 75

https://medium.com/@hanankhader/a-9-year-old-jordanian-java-programmer- d8d376f0d768
https://en.wikipedia.org/wiki/Ken_Thompson

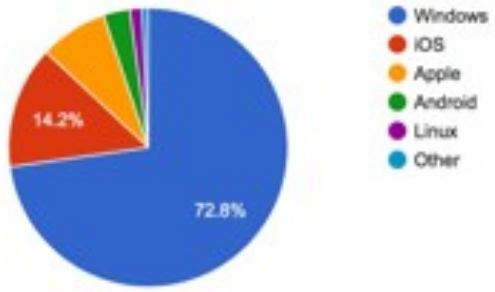
How to document users?

Documenting users

- Surveys
- Interviews

- **But how to keep track of user data?**

Operating System



Operating System

Operating System	# of Respondents	% of Respondents
Windows	1,304	72.8%
iOS	254	14.2%
Apple	141	7.9%
Android	55	3.1%
Linux	25	1.4%
Other	13	.7%

Operating system data above was detected from the system used to complete the survey. Respondents using iOS and Android nearly tripled since 2015. Respondents without disabilities were almost 4 times more likely to use Apple than respondents with disabilities, whereas users with disabilities were more likely to respond using iOS devices.

Documenting users

- Surveys
- Interviews

- **But how to keep track of user data?**

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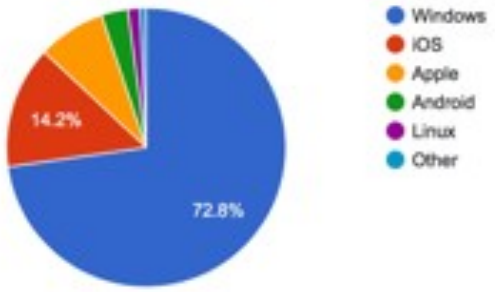

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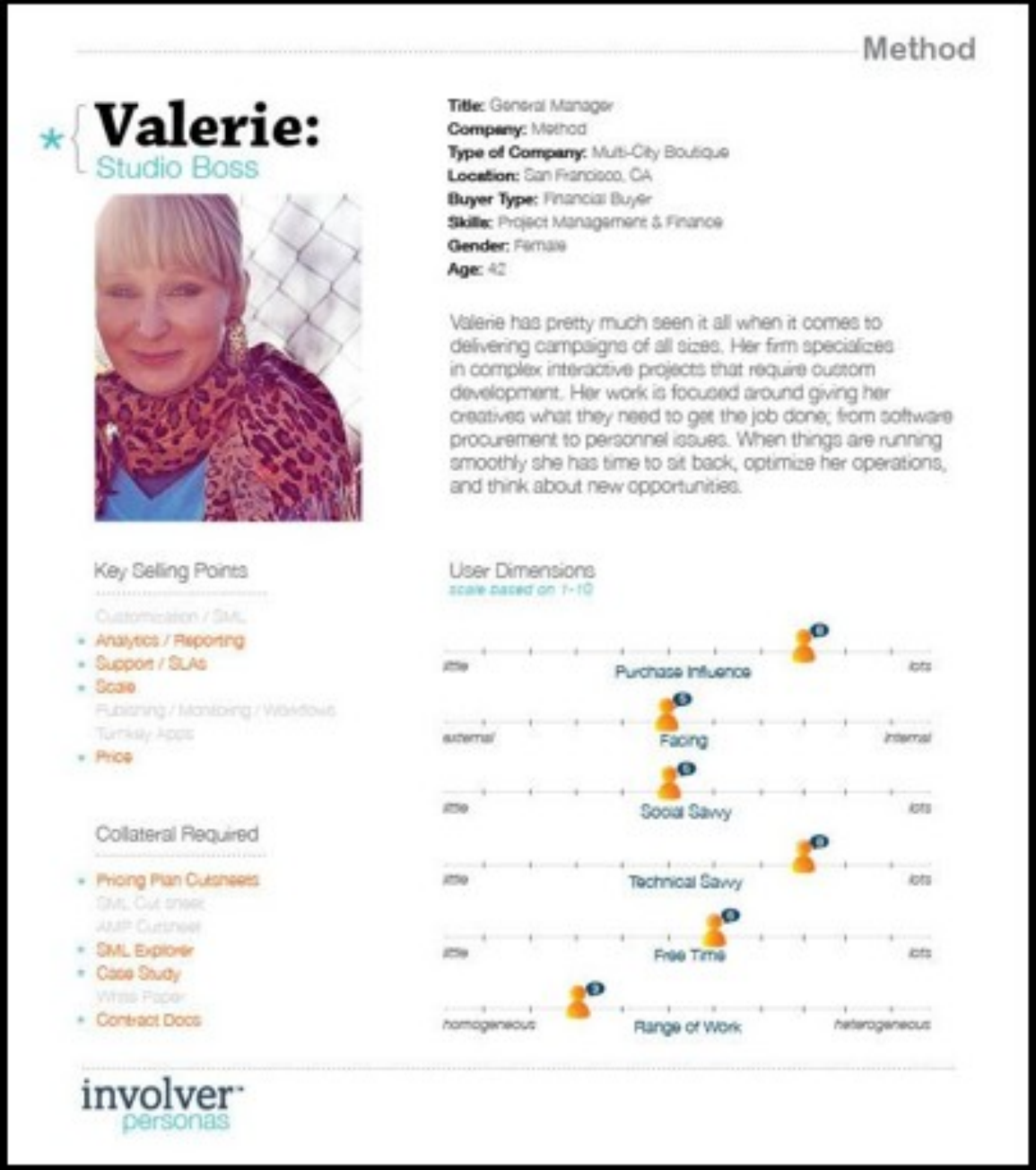
Facebook :1 billion users

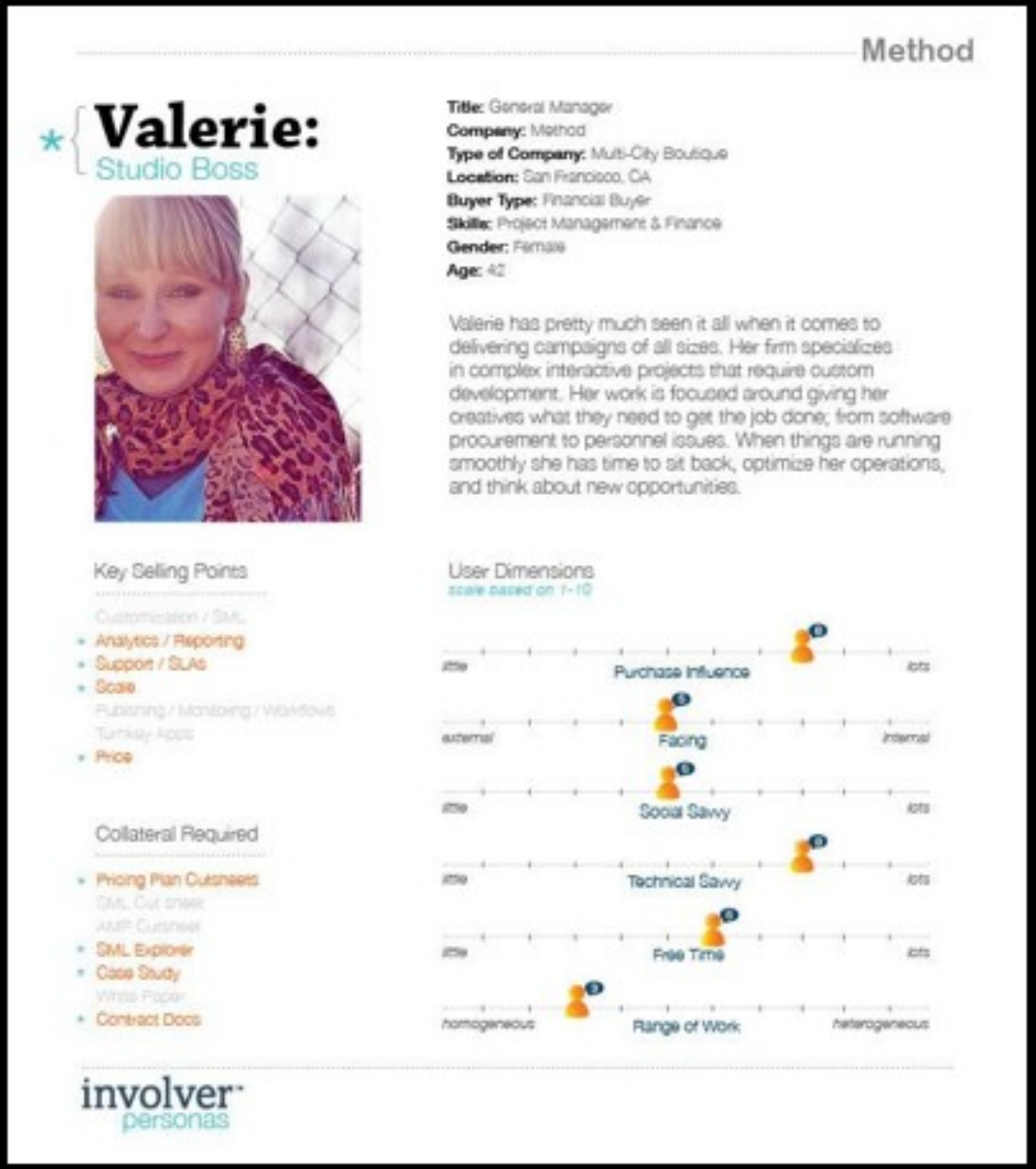
Image: https://webaim.org/projects/screenreadersurvey7/

Personas method



Personas method

http://rolandsmart.com/2012/12/sample-personas-from-involver/#jp-carousel-3815



Personas

- Fictional people that represent user characteristics from your data
- Identify trends and similarities in your **data**
- Based on data, but you may combine or mix up attributes
- Have a name, background

Beatrice

39 years old

Lives in Boulder

Owns an apple farm

Is worried that her dog is not keeping up w/ neighbors'

practice-and-theory.pdf

Why personas (probably) work

- They allow you to document important attributes of your users (and not forget them)
- Ability to extrapolate from a persona to a design decision ("would Beatrice use this feature?")
- Can prevent "analysis paralysis" or overgeneralization
- Provides shorthand for talking and thinking about users

From Pruitt and Grudin, Personas: Practice and Theory
https://www.microsoft.com/en-us/research/wp-content/uploads/2017/01/personas-

Using personas in design

1. Collect relevant data about your users
2. Condense these into 3-10 personas
3. Document your personas in text, images, video, etc.
4. Keep personas in a prominent place—on paper or digitally
5. Update as necessary

Alan Cooper, who made this method popular, suggests 3-12 personas
https://www.amazon.com/Inmates-Are-Running-Asylum-Products/dp/0672326140

What goes into a persona?

- **Key attributes for your application**
- **Name, photo, background**
  - Much easier to say "Philippe" than "teenage smartphone users in Indonesia"
  - Photos humanize them
- Other standard components
  - Demographic data can be useful
- Make them interesting
  - You'll spend a lot of time with them
- Represent typical users and interesting outliers

Example Personas

- Personas from Christina Ghiem
- Older adult personas for designing technology in the home, by Francine Gemperle

- Web user personas from “A Web for Everyone” by Sarah Horton and Whitney Quesenbery

www.christinanghiem.com/images/persona-01.jpg
www.nngroup.com/articles/why-personas-fail/

UX DESIGN CONTRIBUTOR PERSONAS

PERSONA PROFILE

"I want to get as many of my images out there to make a name for myself in this creative industry."

Jade The Emerging Creative

Age: 29
Occupation: Commercial Photographer
Location: Chicago, IL

With three years of experience in commercial photography, most experts would consider Jade a fresh face in the industry. She's tired of the label and wants her work to be more recognized.

Jade's been building her portfolio with unique and edgy photoshoots with marketing appeal that she sends to clients and Corbis Images. She does it all on the creative side, from creating the concept, working with the models, and editing photos. Jade enjoys the post production work the most, as she is able to utilize the latest technology, from touching up subjects to incorporating computer generated elements to her photos. While Jade enjoys the artistic aspect, she dislikes dealing with administrative tasks such as model releases. Jade wants her clients to trust that her creative photography can help sell their product, but that trust comes with building a reputable name in the industry.

Jade's Questions

- I am looking to diversify my portfolio. How can I learn about the latest trends in creative photography?
- How can I portray the message of my images to those who view and purchase my work?
- How can I efficiently communicate with my editor to generate ideas?
- What is a simple way to complete administrative tasks such as model releases?

Jade's Goals

- I want to make a name for myself in the creative industry. I am looking to develop my prestige and reputation.
- There are many steps to a successful photo shoot and I would rather not deal with the complicated administrative tasks. I want something that can streamline these tasks into my workflow.
- I enjoy thinking outside of the box and having someone to generate ideas with.

		LOW	MID	HIGH
NEEDS	Speed	■		
	Adaptability	■		
	Editor	■	■	■
TASKS	Upload	■	■	■
	Input Info	■	■	■
	Royalties	■	■	
	Communication	■	■	
KNOWLEDGE	Technology	■	■	■
	Trends	■	■	■
	Contracts	■		
	Image Editing	■	■	■

It has a formal representation of the user. Goals, questions.

1 MAUDE

Maude in her home, she'll dress up and wear a hat for almost any occasion.

Maude is 87 years young, she continues to live in the family home where she has resided since her marriage in 1942. Her home is full of so many years worth of living, Her family is gone now.

Maude seems frail but she talks a good game, she has dozens of medications to keep track of and medical appointments on her calendar. She is barely able to manage this. Her youngest son lives nearby and he checks on her regularly. She is not too concerned about managing her health, she believes she has had a long and wonderful life and is open to its upcoming conclusion.

Maude believes in staying active, although she can no longer go out alone, she jumps at any chance to socialize. Religion is very important in her life and she attends church and church functions. She gets rides and help from neighbors who are also in her church community.

Maude's home is filled with antiques that were new when she bought them. Her rooms are still ready for large family get togethers, although there hasn't been a family there in some time.

This humanize a population that is often overlooked; or we only focus on their medical needs.

4 LUCY

Lucy shows off her many walker accessories in her kitchen

Lucy is 82 years old. She lives in a very small apartment in a high-rise populated entirely by retirees, mostly women from the neighborhood.

Lucy has had more health problems than she can remember, her medications and doctors visits got to be too much for her, she employs a caregiver service that comes weekly to help her mange the pill counting and scheduling, the visiting nurse is kind and Lucy really looks forward to her visits.

Lucy's children live far away, and she communicates with them by telephone. Most of her time is spent on the regular maintenance of her body, if she is not eating, sleeping or bathing you can be sure she will be found watching television or on the telephone with somebody. She sits in her favorite chair most of the day.

The community of women in her high rise is tight and they all check on each other regularly and meet over cookies almost daily. Lucy uses a walker and can speak at length about the merits of different walker designs. She and her friends

1 MAUDE

Maude in her home, she'll dress up and wear a hat for almost any occasion.

VS.

4 LUCY

Lucy shows off her many walker accessories in her kitchen

How would these ladies approach using a new ride sharing service?

1 MAUDE

Maude in her home, she'll dress up and wear a hat for almost any occasion.

VS.

4 LUCY

Lucy shows off her many walker accessories in her kitchen

How would these ladies approach using a new ride sharing service?

Lucy might need support from family, local friends.

Personas can help

- Before we could say, “OK so some people are more comfortable with technology, but we need to support people who are a little comfortable or not comfortable at all, …”
- Now, “We can use this feature to support Maude, and this will support Lucy.”

This can help us get unstuck

Jacob

Blind, a bit of a geek

The right technology lets me do anything.

http://uxmag.com/articles/book-excerpt-a-web-for-everyone

Jacob is a paralegal in a large law firm. He reviews cases and writes summaries, cross-referencing them to the firm's own cases and clients. He's building expertise in his area of law and is hoping to go to law school in a year or so.

As far as Jacob is concerned, it's the technology that's handicapped, not him. When everything is in place, he can work just as fast and just as effectively as anyone in his office.

He's a bit of a gadget geek, always trying out new tools, looking for a little edge and something new. The last few years have been a lot of fun with all the new apps, and VoiceOver on his Mac and phone lets him use most of them pretty well. He likes the challenge of learning new tools.

His other challenge is running. He's training for a 10K run, running with a club in his neighborhood and using an app to plan his routes and track his distance.

He's just started to use The iPhone app, Passbook, and uses it to get train tickets and other travel. The regional rail system has an app, so he can just pull up the barcode and scan it at the ticket office. No fumbling for the right printed card—total independence. Same phone as everyone. Same app as everyone, and it all just works.

This combines a humanistic portrait with actionable attributes.

Snapshot of Jacob

- 32 years old
- College graduate, legal training courses
- Shares an apartment with a friend
- Paralegal, reviews cases and writes case summaries
- Laptop, braille display, iPhone

The A's

- Ability: Blind since birth with some light perception
- Aptitude: Skilled technology user
- Attitude: Digital native, early adopter, persists until he gets it

Assistive Technology

- Screen reader (JAWS on his laptop, VoiceOver on his phone)
- Audio recorder (to take notes)
- Braille display

The Bigger picture (Source: World Health Organization, Census)

- People with visual disabilities make up about 2.6% of the world's population (about 0.6% are blind).
- In the U.S., about 1.8 million people can't easily see printed words.
- Only about 10% of people who are blind can read and write braille.

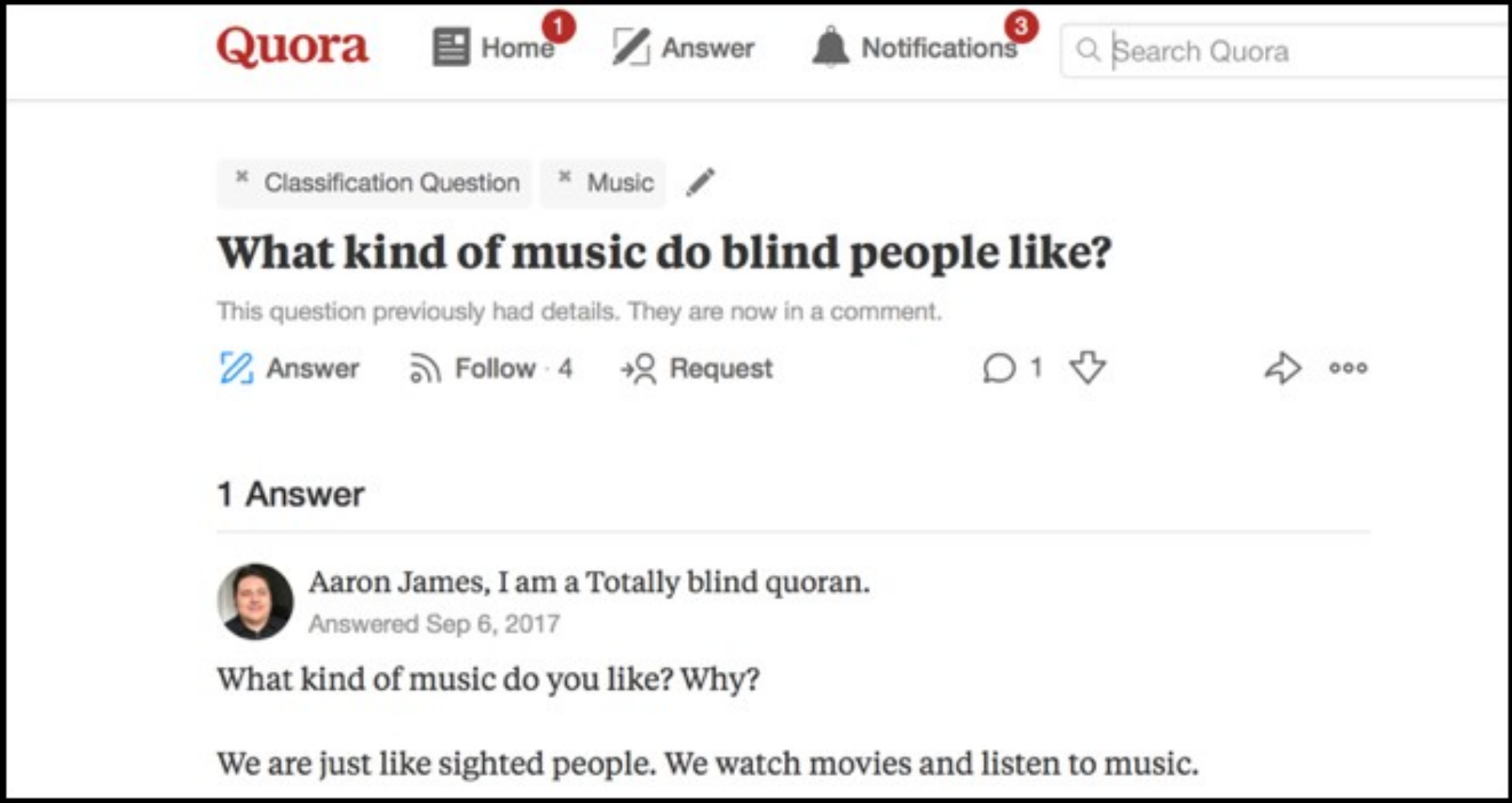
Considering ability

www.dreamstime.com/stock-photo-stairs-to-reception-building-entrance-business-image73593313

- Often not 100% can use stairs vs 100% can't
- May be "stairs when I'm not tired" or "stairs when I'm with friends" or "stairs when I'm in a hurry"

http://aaramps.com/ramp-rentals/wheelchair-ramp-rental/

Different users ≠ aliens



www.quora.com/What-kind-of-music-do-blind-people-like

Choosing attributes

- What characteristics are important about your user?
  - What will affect how they interact with the technology?
  - What differentiates them from each other (and from others)?
- Can then combine these (a la bootlegging)
- May include attributes directly related to the system, and other attributes for flavor

What attributes?

- Let's consider a safety device for preventing elementary school students from getting lost

- What attributes should we consider? What do we want to know?

Attributes

Choosing key attributes

Social Navigator *(C20, D3)*

Lives in typically sunny suburb where navigation routes are fairly routine and pedestrian. Not afraid to ask for help, however, especially at the complex intersection on his route to work. On unfamiliar routes, he likes to explore using iPhone apps that announce what s around and/or talking with other people. The suburb is not too crowded but there are generally pleasant people around for casual conversation.

© Daniel Oines

Exp Attitude	Tech Attitude	Tech Adoption	Mobility Aid
Confident	Cautious	Conservative	White Cane

Conscientious Owner *(D6, D7)*

Loves having a guide dog but it adds complexity. A standalone navigation device was great with a cane, but needs to carry more with a dog, so now she uses an iPhone. But the phone is not as easy to use so doesn't really use at all. Switches to cane when dog may be bored, or when traveling on airplane for work. Switching to cane is difficult and causes more reliance on human guide.

© Sarah Stierch

Exp Attitude	Tech Attitude	Tech Adoption	Mobility Aid
Apprehensive	Moderate	Limited	Guide Dog

Michele A. Williams, Amy Hurst, and Shaun K. Kane. 2013. "Pray before you step out": describing personal and situational blind navigation behaviors. In Proceedings of the 15th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '13). ACM, New York, NY, USA, , Article 28 , 8 pages. DOI=10.1145/2513383.2513449

What to do with personas?

- Hang them up
- Bring them to meetings
- Discuss them with clients
- Write scenarios about them

Pitfalls of personas

- When they reinforce (incorrect) preconceptions
  - Should be based on data whenever possible
- Missing important issues or perspectives
  - Much of the work of creating personas involves choosing what to include/not include

Balancing design needs from different user groups

- Must decide when to extend features vs. when to focus

- Novice vs. expert is a common tension

Scenarios

Review

- **Personas:** stories about who are users are
  - Help us keep track of user characteristics that we care about
- **Scenarios:** stories about what users do
  - Help us keep track of tasks and important context
  - Scenarios can feature our personas

Scenarios

- A story that represents a user interacting with the system
- Can show use of existing technology, or new technology (including what you're developing)
- Can show unsuccessful or successful use; first-time or export use
- Can be represented as text, drawn storyboard, video

Why use scenarios?

- We don’t want to get sidetracked thinking about our design as just screens and buttons
- Document users’ goals, context
- Document flow through the system; avoid gaps

What to include

- The user's goal / problem
- Context (environment, current activity)
- Technology used
- Steps taken
- Whether they are successful;
  and what they do next

One template for scenarios

- Sentence 1: Persona and goal
- Sentence 2: what they try
- Sentence 3: what is the problem? Can they avoid the problem?
- Sentence 4: Happy/sad ending

Example scenario

Sal awakens: she smells coffee. A few minutes ago her alarm clock, alerted by her restless rolling before waking, had quietly asked "coffee?", and she had mumbled "yes." "Yes" and "no" are the only words it knows.

Sal looks out her windows at her neighborhood. Sunlight and a fence are visible through one, but through others she sees electronic trails that have been kept for her of neighbors coming and going during the early morning. Privacy conventions and practical data rates prevent displaying video footage, but time markers and electronic tracks on the neighborhood map let Sal feel cozy in her street.

Glancing at the windows to her kids' rooms she can see that they got up 15 and 20 minutes ago and are already in the kitchen. Noticing that she is up, they start making more noise.

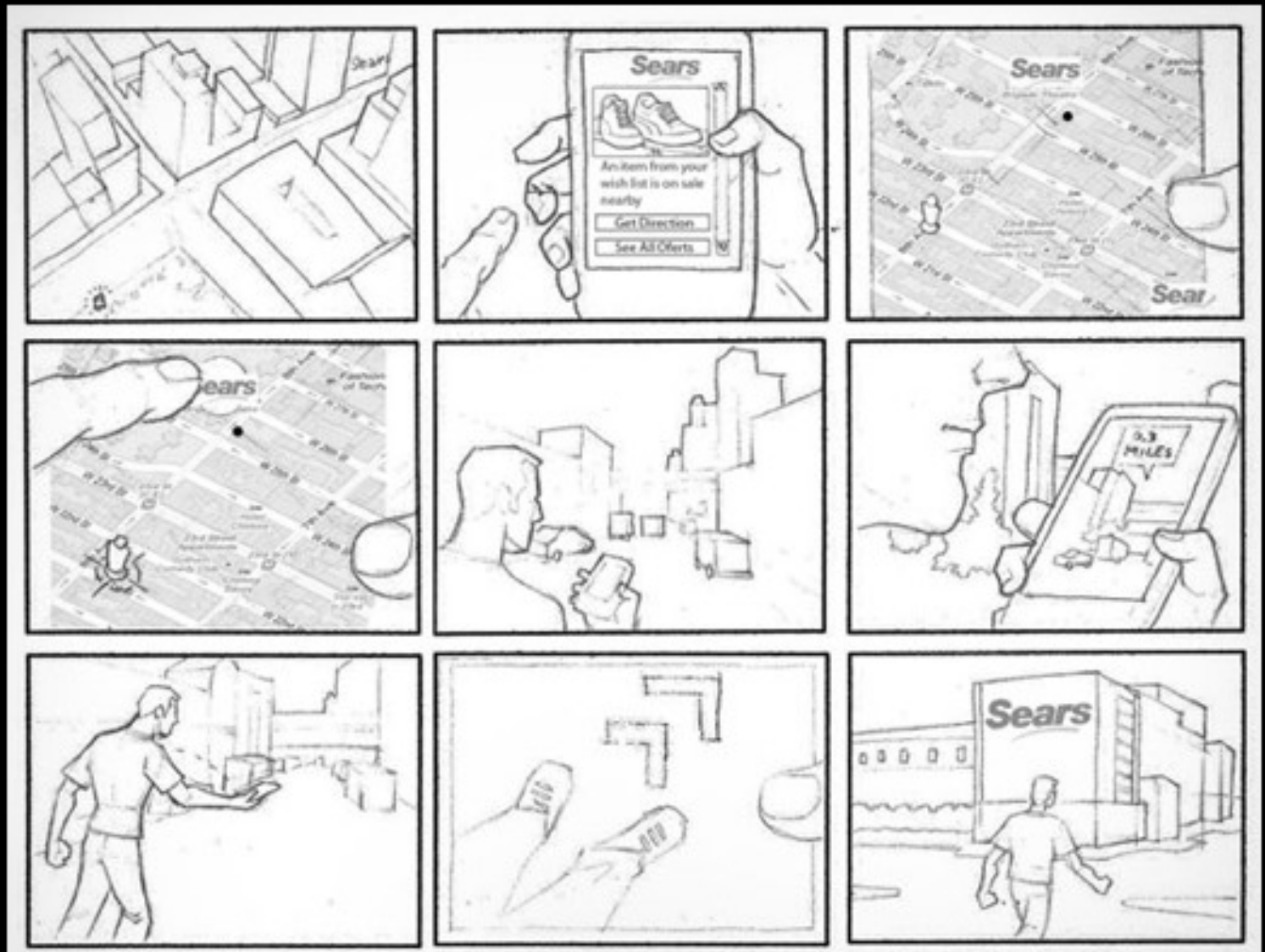
At breakfast Sal reads the news. She still prefers the paper form, as do most people. She spots an interesting quote from a columnist in the business section. She wipes her pen over the newspaper's name, date, section, and page number and then circles the quote. The pen sends a message to the paper, which transmits the quote to her office.

Weiser, M. (1991). The computer for the 21st century. Scientific American, 265(3), 94-104.
http://wiki.daimi.au.dk/pca/_files/weiser-orig.pdf

Data-driven scenarios

- Like with personas, we want our scenarios to reflect the real world
  - Realistic tasks and contexts
- How to find out what is correct?
  - Observe or interview users
  - Examine existing use (of your product or similar products)
  - May revise as we learn more

Scenario as storyboard



http://www.fabiangarzon.com/Images/mobile_deals/storyboard/storyboard_1.jpg

Personas + scenarios

- Serve as a semi-formal documentation of design goals
  - Tasks to be supported by your design
  - User groups that should be supported
  - Key user attributes (and how diverse they may be)
  - User goals
  - Contexts of use (and how they may affect interaction)

- Can check back with these as design proceeds (and change design, or personas/scenarios, as appropriate)

Further reading: scenarios

- Jeff Sauro, Measuring Usability. Seven Tips for Writing Usability Task Scenarios. http://www.measuringusability.com/blog/task-tips.php

- Bødker, S. (2000). Scenarios in user-centred design—setting the stage for reflection and action. Interacting with computers, 13(1), 61-75. http://potoulis.edc.uoc.gr/application/scenarios_in_user-center.pdf

One more (fun) technique

- **Pastiche scenarios:** Fiction-driven personas and scenarios

- Blythe, M., & Wright, P. (2005). BRIDGET JONES' IPOD. In *Home-Oriented Informatics and Telematics* (pp. 291-302). Springer US.
- http://markblythe.me.uk/MarkBlythe/Pastiche_Scenarios_files/BridgetJones'iPod.pdf

Example

The following scenario pastiches Bridget Jones' diary:

Gah! Almost missed train. Got on in nick of time but had no choice of seat. Just one left next to quite nice looking bloke but opposite nasty looking youth in baseball cap. Said youth plugged in v. loud headphones almost immediately so had no choice but to play nice new iPod. Took this out below table with some care. Wanted nice chap to see it (advertise self as successful young professional) but not youth in cap (must not see self as very much worth mugging.)

Non-targeted use & stakeholders

Users vs. stakeholders
(or primary vs. secondary users)

- Remember that the primary user is often not the only person who interacts with a computing system

- Consider a new electronic door lock system for CU dorms
  - Who is the primary user?
  - Who else might interact with the system?

Non-targeted use

What do you use the camera on your phone for?

Targeted vs. non-targeted use

- Users will not always use technology for intended tasks
  - Use cell phone camera as flashlight, mirror (to check teeth), periscope
- Some use technology for nefarious purposes

Why do we want to understand these?

Why do we want to understand these?

Protect against unintended nefarious use
May become targeted use

Why do we want to understand these?

- Protect against unintended nefarious use
- May become targeted use
  (phone camera flash as flashlight)

Image: https://ios.gadgethacks.com/how-to/secret-turning-your-flashlight-off-faster- ios-7-your-iphone-0150121/

What to do about non-targeted use?

- May decide to support it
  - Many flashlight apps
- May decide to block it
- Either way, useful to understand it