HCI: PERSONA

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First, the news…

Persona

- Descriptions of a fictitious people who have a set of traits and requirements you want to design for
- Personas are tools that are used in many parts of interaction design
  - **Requirements**: Understand the requirements and explain them in a clear way
  - **Design**: think through what this persona needs
  - **Evaluation**: identify needs that are or are not being met
  - **Marketing**: target the user needs that have already been identified and designed for
- Main goal of a persona is to help someone envision the intended users of a system

Persona

- Pros
  - Efficient and clear way to express design requirements
  - Helps show the team who they are designing for
  - Easy to explain to upper management
  - Helps you see users as people rather than a set of design requirements
- Cons
  - Viewed as less “scientific” (under debate)
  - You can only use a small number of personas so designing them well is important
  - Can be difficult for some developers to use, design requirements are more functional and personas are more conceptual

Gender Mag Persona Kit

- Tutorial this week uses the GenderMag persona kit
- Researchers in End User Software Engineering observed that programming tools are typically designed for men, and are harder for women to use
- They developed the GenderMag persona kit to help developers envision the different types of people who might use their software
- The personas are all based on extensive research on how men and women approach computer tasks differently

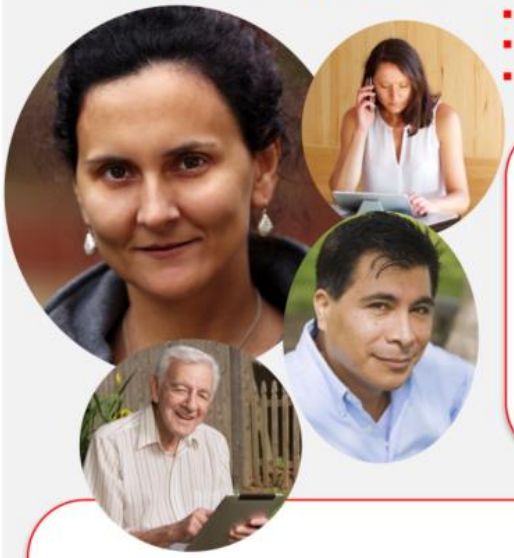
Tutorial: Cognitive Walkthrough

- This week's tutorial involves both personas and doing a cognitive walkthrough as part of a team
- You will be:
  - Using GenderMag personas to evaluate Excell spreadsheet tasks using a team-based cognitive walkthrough
  - Discussing the outcome of the cognitive walkthrough
  - Building part of a task for a cognitive walkthrough
- Learning goals:
  - Understand why personas are so detailed and contain back stories
  - Get some practice with cognitive walkthrough
  - Understand UAR type reports

Tutorial: Cognitive Walkthrough

- Note: For coursework 1 I expect you to do the cognitive walkthrough alone or with one other person. It is not necessary to do them as a team.

Pat (Patricia) Jones[1]



- **43 years old**
- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

Pat loves public transportation and knows at least three routes to get there from home. When she arrives at work, she scans all her emails first to get an overall picture before answering any of them. (This extra pass takes time but seems worth it.) Some evenings she plays computer puzzle games like Sudoku before bed.

Background knowledge and skills

- Pat works as an accountant in a consulting firm. She just moved to this employer 1 week ago, and their software systems are new to her. She describes herself as a "numbers person". She is not a professional programmer but she writes and edits spreadsheet formulas in her work.
- Pat has a degree in accounting, so she knows plenty of Math and knows how to think in terms of numbers. She's never taken any computer programming or IT systems classes.
- Even though she's an accountant and deals with numbers all day at work, she likes working with numbers in her free time, too. She especially likes Sudoku and other computer games that involve puzzling.

Motivations and Strategies

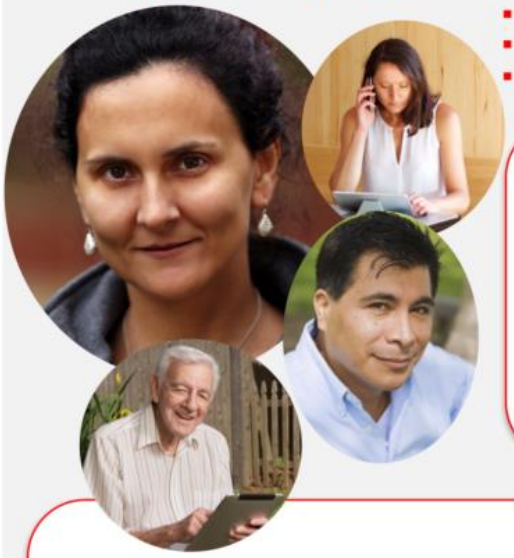
- ***Motivations***: Pat is proficient with the technologies she uses. She learns new technologies when she needs to, but she doesn't spend her free time exploring technology or exploring obscure functionality of programs and devices that she uses. She tends to use methods she is already familiar and comfortable with to achieve her goals.
- ***Information Processing Style:*** Pat leans towards a *comprehensive information processing style* when she needs to gather information to problem-solve. That is, before following any option that seems promising, she first 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.

Attitude to Technology

Pat is generally comfortable using familiar technology, but she does not get a big kick out of obtaining the latest gadgets or learning how to use them. She prefers to stay with the technologies for which she has already mastered the peculiarities.

- ***Computer Self-Efficacy***: Pat has medium computer self-efficacy, meaning that she has some self-confidence in performing computing tasks other than the ones she is familiar with. This has a variety of impacts on how she uses software. For example, she will keep on trying to figure out how to achieve what she has set out to do for awhile; she doesn't give up right away when computers or technology present a challenge to her.
- ***Attitude toward Risk:*** Even so, Pat is risk averse when she uses computers to perform tasks. When confronted with new software features, Pat worries that she will spend time on them and not get any benefits from doing so. She prefers to perform tasks "the safe" (ie, familiar) way if possible, even if less familiar features might promise a more direct solution.
- ***Willingness to Explore and Tinker***: When Pat sees a need to learn new technology, she does so by trying out new features or commands to see what they do and to understand how the software works. When she does this, she does so purposefully; that is, she reflects on each bit of feedback she gets along the way to understand how the feature might benefit her. Eventually, if she doesn't think it will get her closer to what she wants to achieve, she will revert back to ways that she already knows will work.

Pat (Patricia) Jones[1]



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Background knowledge and skills

- Has a new job
- Self-described "numbers person"
- Knows plenty of math

Motivations and strategies

- Proficient with the technology she uses
- Doesn't spend her free time learning new technology

Attitude to technology

- Medium self-confidence in performing computing tasks
- Risk adverse
- Explores new features focusing on how they might help her, if they look like they won't help she will stop trying to use them

Tim (Timothy) Hopkins[1]

- 28 years old
- Employed as an Accoun
- Lives in Cardiff, Wales

Motivations and Strategies

- ***Motivations***: Tim is proficient
  systems he uses, even when
  the same thing. He sometime
  begin with.
- ***Information Processing Sty***
  likes a *selective information p*
  doesn't work out he backs out

Attitude to Technology

For Tim, technology is a source of
software with all the new features.

- ***Computer Self-Efficacy***: Tim
  features. He doesn't give up e
  configure something to do exa
  to work.
- ***Attitude toward Risk:*** Tim do
  challenges because he has tri
- ***Willingness to Explore and***
  internally. He likes tinkering a
  though he plays with features

Background knowledge and skills

- Has a new job
- Degree in accounting and knows plenty of math

Motivations and strategies

- Proficient with the technology he uses
- Likes learning all the available functionality of all his devices even

Attitude to technology

- Technology is fun
- Very confident with use of technology and thinks he is better at it than most people
- Does not give up easily
- Thinks that if he can't fix a problem it is probably the software vendor's fault
- Doesn't mind taking risks
- Likes to tinker and explore, gets easily distracted

Think-pair-share

Building a persona

- Can be used to combine data from other methods
- Based on a combination of real people and design requirements gathered from the client
- Methods like interviews, focus groups, contextual inquiries, and surveys can be used to learn about the target audience
- These should reveal several types of people
- Each type you are interested in can be converted to a persona

Frank Kreuse

Cyber Analyst, EOBU (a defense industry supplier)

Background:

Frank has a B.S. in Information Systems. He specialized in technical writing and has CISSP certification. His training, experience and certification establishes him as an expert computer user.

Work Environment and Information Management:

Frank has access to sophisticated data capture tools but better analytic tools are still lacking. Much of the data that he works with is generated by state-of-the-art network scanning tools. However, he primarily relies on Excel to keep track of the data that is of interest to him so that he can perform analyses such as "what if" queries.

Duties:

Part of Frank's duties is to produce risk analysis reports based on test results derived from system assessment tools such as Tivoli Netview and DISA SRR.

Stoll, Jennifer, et al. "Adapting personas for use in security visualization design." *VizSEC 2007*. Springer Berlin Heidelberg, 2008. 39-52.

User Data			Features
Frank ***Cyber Analyst***	***Terry*** ***Intelligence Researcher***	***Rob*** ***Consumer Safetry Officer***	
"Frank is not always the person required to respond to intrusions. ...he must be aware of and be able to access information about how each incidenct is being handled by the team. ...network monitoring information comes from a variety of tools so Frank needs to know where the information came from."	"Terry must perform her analysis in a highly collaborative environment and the data she receives from the Intelligence support staff comes from many varied sources. ... at times she must do quality control on the information she receives from the newer support staff by making sure they are coming from credible sources."	"Rob works for an agency that utilizes antiquated computer and information systems. One of the daily challenges that Rob faces is keeping track of the many alerts he receives about food safety incidents to be investigated. He relies on where the alert came from to determine priority for investigation."	1. Functional: Need a summary of the metadata about the information being used in analysis.

Stoll, Jennifer, et al. "Adapting personas for use in security visualization design." *VizSEC 2007*. Springer Berlin Heidelberg, 2008. 39-52.

Features	Persona Weights			
	Frank (weight = 40)	*Terry (weight = 40)*	*Rob (weight = 20)*	*Weighted Priority*
1. Functional: Need a summary of the metadata about the information being used in analysis.	**2**	**2**	**2**	**200**
2. Non-functional: Need information change alerts to be rapidly customize-able.	**2**	**1**	**0**	**120**

weight = percentages totaling to 100% or on a scale such as 1-5
score = -1 harms persona
0 does not matter to persona if the feature is there or not
+1 helpful to the persona
+2 is a must-have feature for the persona

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Goals, Operations, Methods, and Selection rules – GOMS

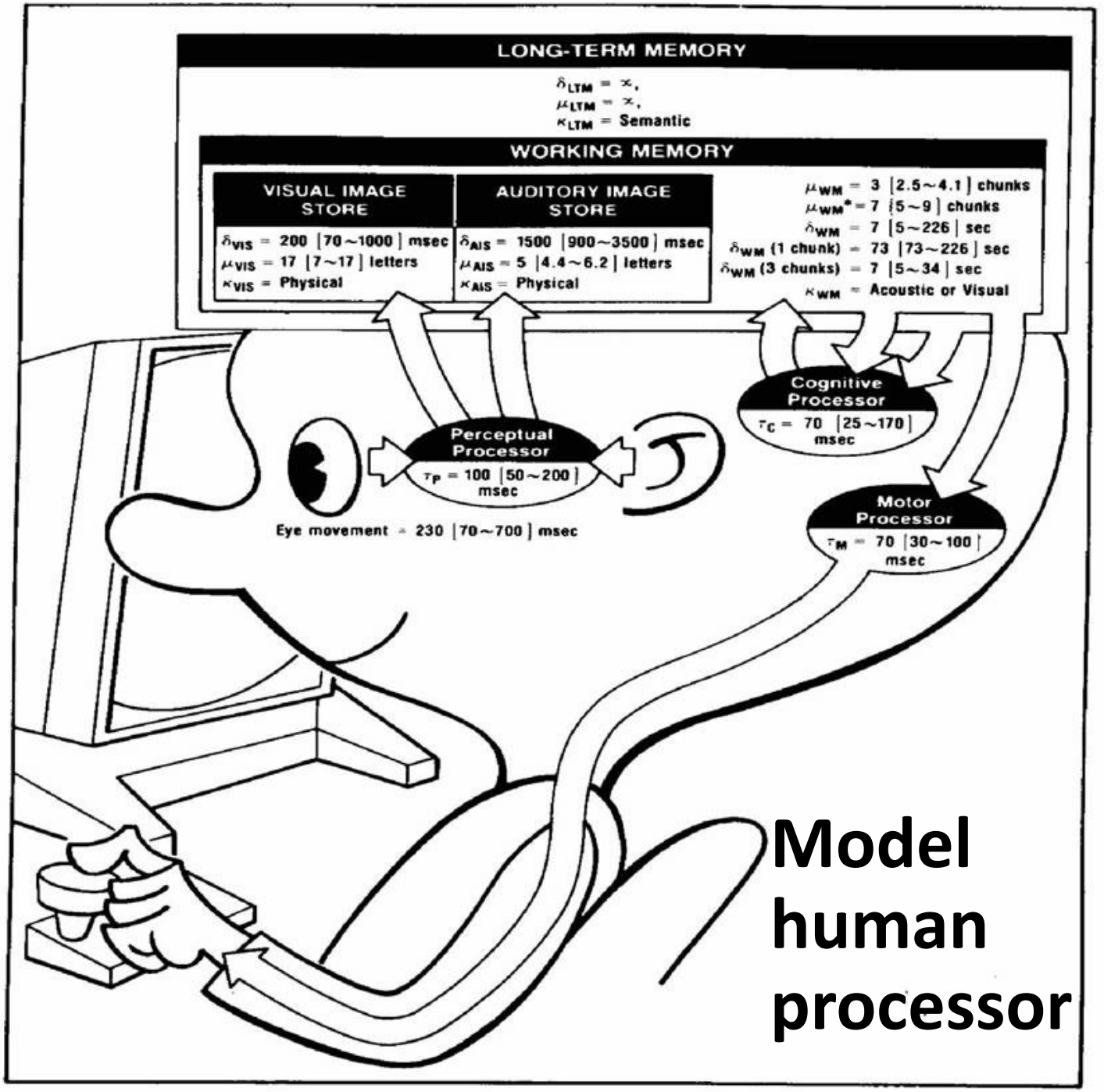
Time-on-task

- How long does it take a user to complete a task or subtask?
- One of the most common measurements of usability
- Basic setup:
  - Give the user a task
  - Start timing them
  - If you have screen capture software you can time their subtasks too
  - When they say “done” stop timing them
- Measure how long the task takes on your software compared to other similar software

Time-on-task

- Pros
  - Easy to understand and easy to measure
  - No fancy HCI stuff needed, web logs will sometimes work if they have the right data
  - Basic statistics like t-tests are well suited for this type of data, so easy to do data analysis
- Cons
  - You must measure a large number of people
  - How many people depends on their variance and how precise of data you need
  - This is NOT a discount usability method
  - Very hard to measure how fast a person will be once they get used to using the system

Idea: Physically humans are similar, could we use that?



Model human processor

GOMS is a method of predicting the time-on-task for an expert user without needing to measure any people

Goals, Operations, Methods, and Selection rules (GOMS)

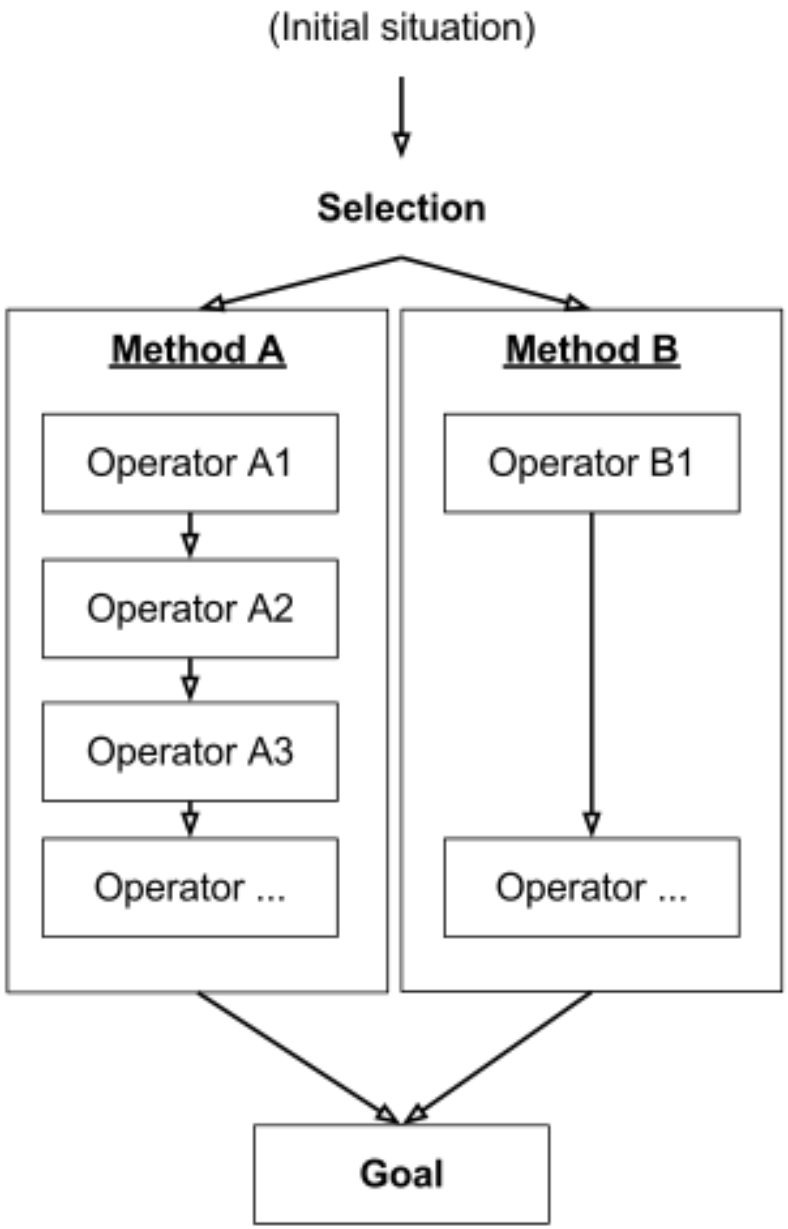
- Pros
  - No need for any experiments
  - Shockingly accurate
  - Can avoid costly mistakes for UIs that will be used regularly (think telephone operators)
- Cons
  - Only predicts how fast expert users will be, not novices
  - Can't identify any standard usability problems
  - Assumes that users are complete experts, always knowing where to go and what to click on or type

Selection

Method

Operator

Goal



Keystroke-Level Model

- **K** keystroking/ keypressing
- **P** pointing with a mouse to a target
- **H** homing the hand on the keyboard or mouse
- **D** drawing a line segment on a grid
- **M** mentally preparing for executing physical actions
- **R** response time of the system

operator	time (sec)
K	total typing test time/total number of non-error keystrokes Guidelines:[11][12] .08 (135 wpm: best typist) .12 (90 wpm: good typist) .20 (55 wpm: average skilled typist) .28 (40 wpm: average non-secretary typist) .50 (typing random letters) .75 (typing complex codes) 1.20 (worst typist and unfamiliar with the keyboard)
P	1.1[11][12]
H	0.4[11][12]
D	$.9n_D$ +. 16 l_D[11][12]
M	1.35[11][12]
R	system dependent[11][12]
suggested operators	
B (mouse button press or release)	0.1[13]
Click a Link/ Button	3.73[14]
Pull-Down List (No Page Load)	3.04[14]
Pull-Down List (Page Load)	3.96[14]
Date-Picker	6.81[14]
Cut & Paste (Keyboard)	4.51[14]
Typing Text in a Text Field	2.32[14]
Scrolling	3.96[14]

https://en.wikipedia.org/wiki/Keystroke-level_model

Compare two designs

Design A: drag the file into the trash can[29]	Design B: use the short cut "control + T"[30]
method encoding (operator sequence)[31]	method encoding (operator sequence)[32]
1. initiate the deletion (M) 2. find the file icon (M) 3. point to file icon (P) 4. press and hold mouse button (B) 5. drag file icon to trash can icon (P) 6. release mouse button (B) 7. point to original window (P)	1. initiate the deletion (M) 2. find the icon for the to-be-deleted file (M) 3. point to file icon (P) 4. press mouse button (B) 5. release mouse button (B) 6. move hand to keyboard (H) 7. press control key (K) 8. press T key (K) 9. move hand back to mouse (H)
Total time	Total time
3P + 2B + 2M = 3*1.1 sec + 2*.1 sec+ 2*1.35 sec = 6.2 sec	P + 2B + 2H + 2K + 2M = 1.1 sec + 2*.1 sec + 2*.4 sec + 2*.2 sec + 2*1.35 sec = 5.2 sec

https://en.wikipedia.org/wiki/Keystroke-level_model

Questions?