



Paper Prototyping

Oregon State
University



Today's class

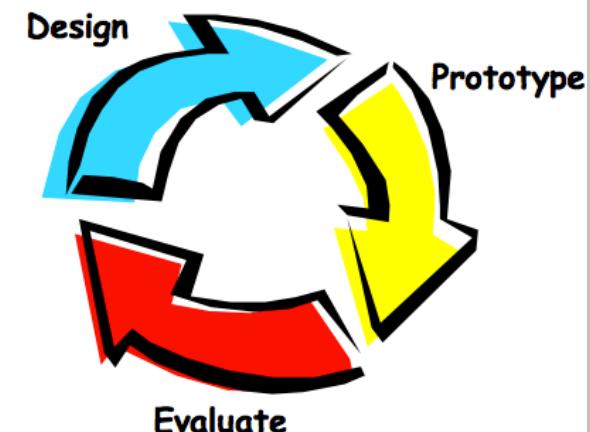
- Paper prototyping
- Quiz
- Class exercise
- Discuss Sprint 2

Next Week

- Diagramming notations - UML
- Thursday - Game day
 - Quiz (online - Canvas) - comprehensive
 - Open book - but timed
 - More weight than the in class quizzes

Paper Prototyping

- Depict what you think the system should look like
 - Experiment with alternate design
- Test the prototypes with users
 - Get feedback faster
- Fix the prototypes (repeat) then implement the real system
 - Keep design centered on user



What are paper prototypes?

- Hand drawn sketch of a user interface
- Not an “pretty” artistic representation, should be simple
- User interface reduced to only the most important elements

Sketch

Wireframe

Graphic design

Prototype



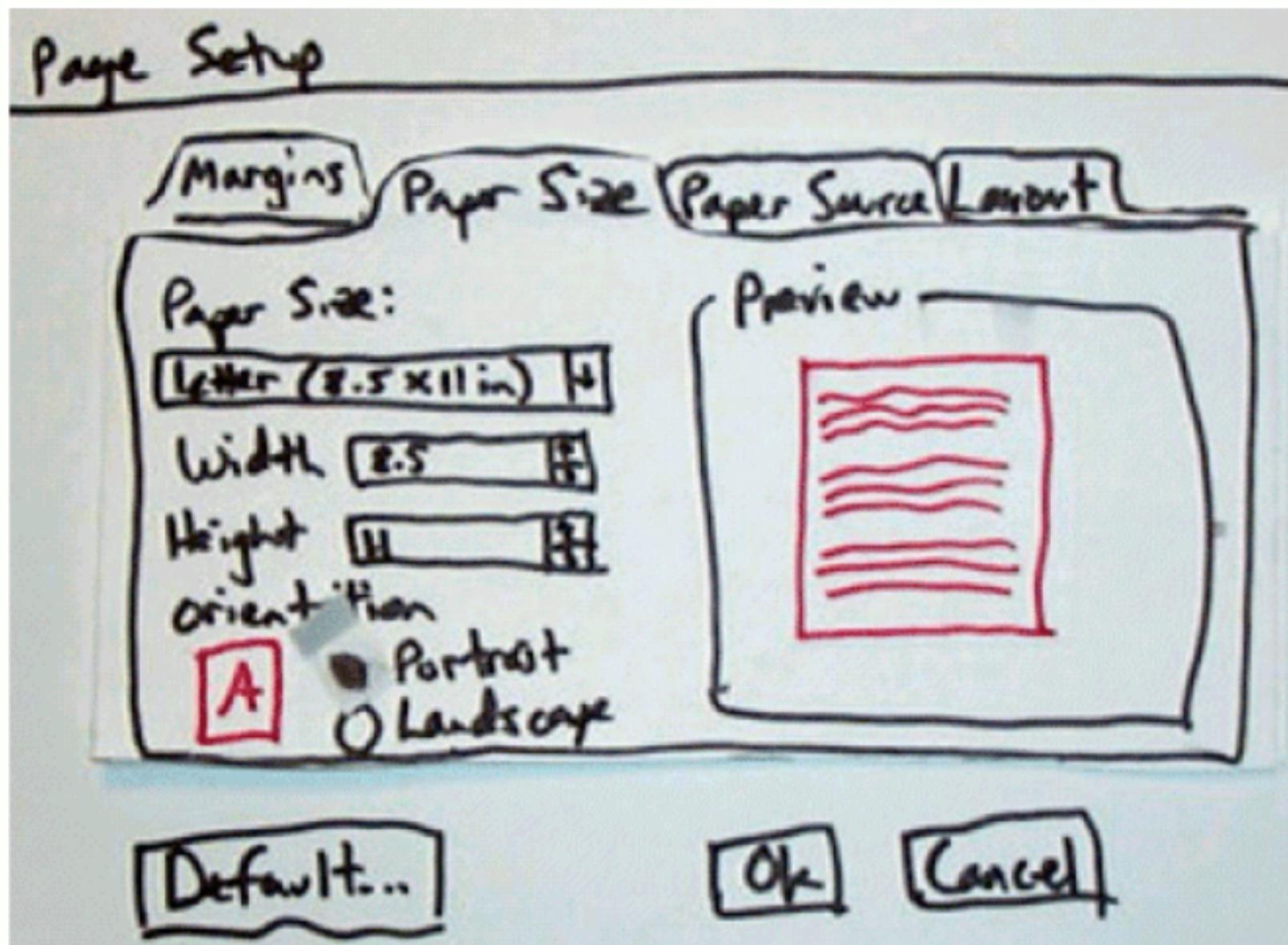
test & develop

test & develop

test & develop

<https://www.thoughtworks.com/insights/blog/providing-just-enough-design-can-make-agile-software-delivery-more-successful>

Examples





<http://davewrightjr.com/work-npr-planet-money.html>

Misconceptions

- I can't draw well enough to create a paper prototype
- Wireframes are the same as paper prototypes
- Users behave differently with paper prototypes
- I can't prototype interactivity

<http://www.userfocus.co.uk/articles/paperprototyping.html>

Paper Prototype Elements

A hand-drawn paper prototype of a course scheduler. At the top left is a menu with the following items:

- + Add a course
- Drop a course
- Search for a course
- View Requirement
- ? Help
- Preferences
- Print
- Update telebears
- Save
- Logout

Below the menu is a grid representing a weekly schedule from Monday to Friday, with time slots from 8-9 to 5-6. The grid has 5 columns (Monday-Friday) and 9 rows (8-9, 9-10, 10-11, 11-12, 12-1, 1-2, 2-3, 3-4, 4-5, 5-6). A small orange pushpin is visible at the bottom right of the grid.

A hand-drawn paper prototype of a welcome screen for the ESP (EECS Schedule Planner). The title "ESP" is written in large blue letters with a yellow underline. To the right, the text "EECS Schedule Planner" is written vertically. Below the title, a message reads:

Welcome to ESP.
Your Telebears session
is Tues. Sept. 21 @ 10am

Your current schedule
is empty. Please click
on Add a course to
continue.

- + Add a course
 - Drop a course
 - 2 Search for a course
 - 3 View Requirement
 - ? Help
- » Preferences
 - » Print
 - » Update schedule
 - » Save

ESP

EECS
Schedule
Planner

Add Menu

Help - Add Menu

- ▷ Select Department from drop down menu.
- ▷ Enter course number.
If you don't know course number, press SEARCH button.
- ▷ PRESS ADD to continue transaction.
- ▷ CLICK CANCEL to end transaction.

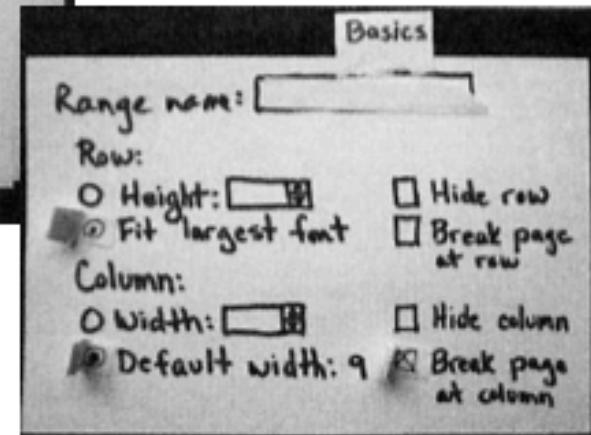
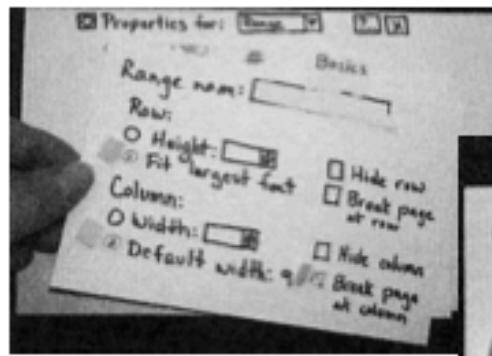
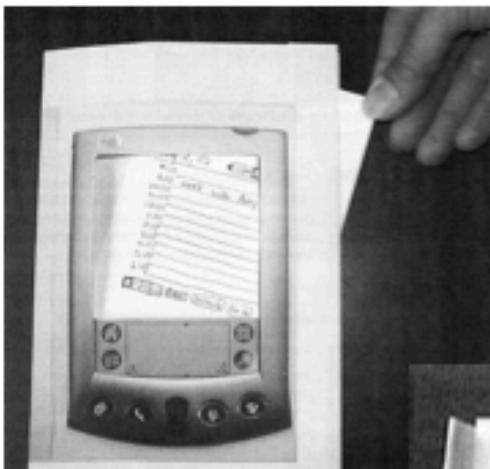
CLOSE

Search

if you don't know
the course number.

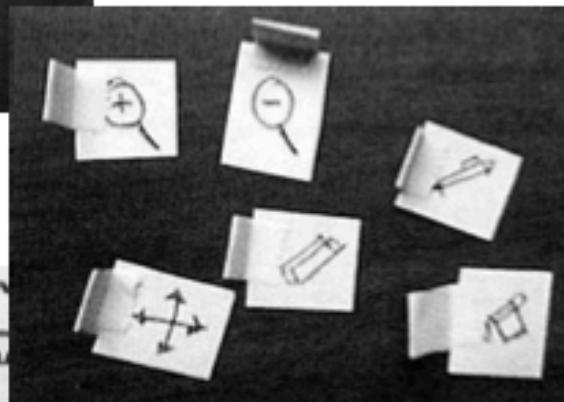
HELP

te



2. Select the Actions for your rule:

- Copy it to the specified folder
- Delete it
- Forward it to people
- Highlight it with color

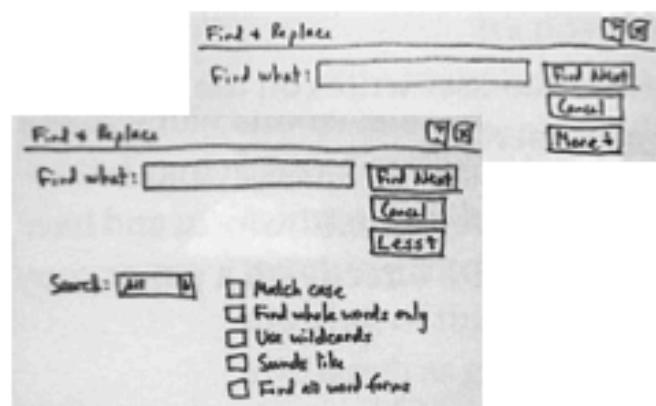


3. Rule Description (click underlined value to edit):

Apply this rule after the message arrives

where the from line contains: Craig Duncan

Highlight it with color



Tools for prototyping

- White poster board (11"x14")
 - For background, window frame
- Big (unlined) index cards
 - For menus, window contents, dialog boxes
- White correction tape
 - For text fields, checkboxes, short messages
- Overhead transparencies
 - For highlighting, user “typing”
- Photocopier
 - For making multiple blanks
- Pens & markers, scissors, tape

Fidelity in prototyping

- The level of detail

Hi-Fidelity – looks like the real thing

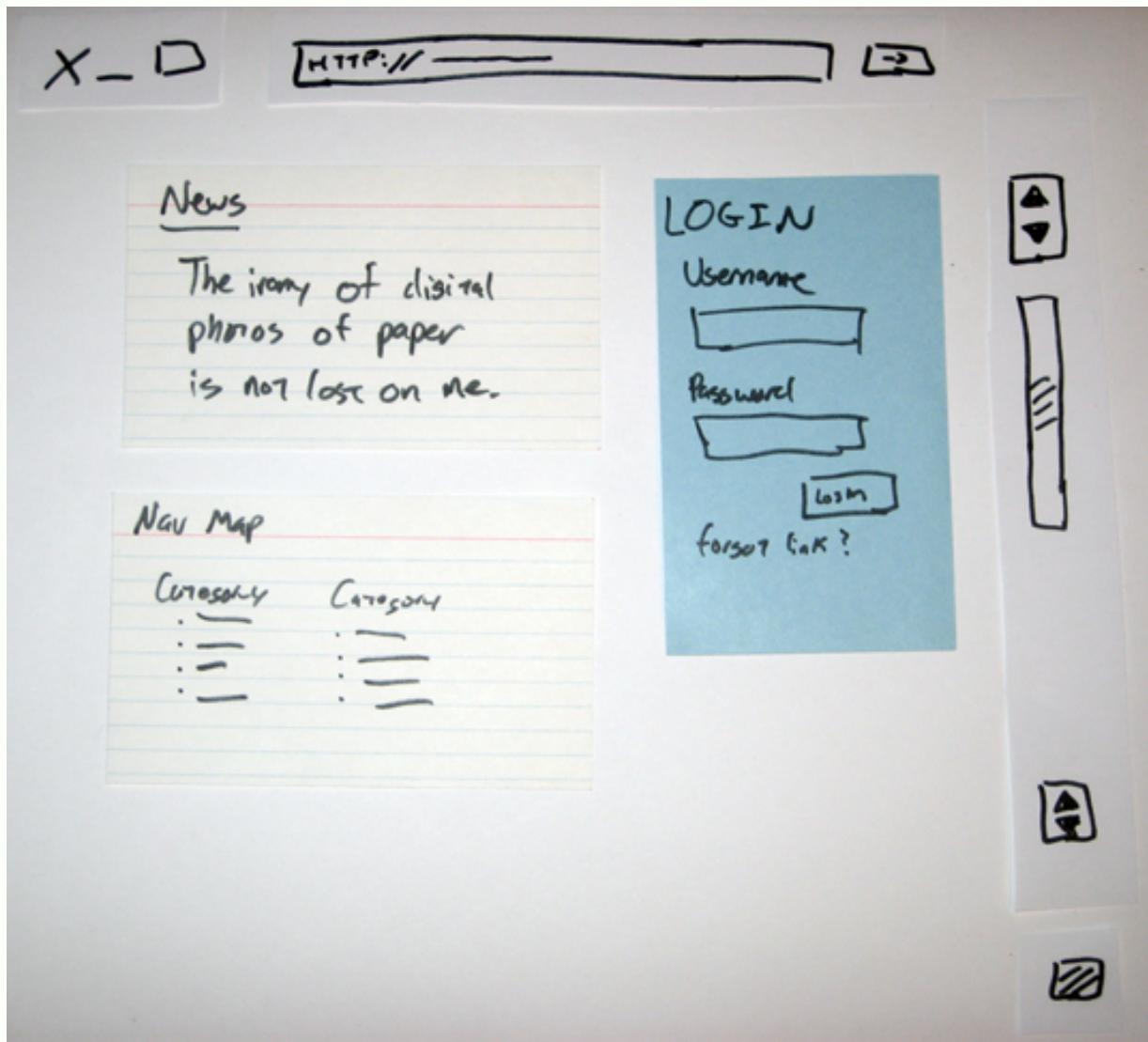
The screenshot displays the SAP mySAP.com intranet homepage with a blue header featuring the SAP logo. The main content area includes:

- Outlook Inbox:** Shows messages from users like Doll, Georg; Lessmann, Carsten; Gehring, Heidi; and Brito, Nelia, with subjects related to SAP University Info Session, RE: Rebecca, FW: Important Information about ITS!!!, and Neues Buch ABAP Objects erschienen.
- Design Corner:** A banner with the headline "Design More Effectively!" by Mark Rolston, Creative Director, Frogdesign, Inc. It includes sub-headlines: "Learn How the Right Use of Text Can Design Better Websites", "in order to: Make the medium the message! Entice, Involve, and excite users!", and "Communicate Information proactively!".
- News Headlines:** A section titled "Top News Story" featuring the headline "UN Workers to Quit East Timor". Below it, there's a "Related Stories" section with links to "Indonesia Rejects U.N. Force" and "Bomb Blamed for Fatal Moscow Blast".
- ExternalLinks Linklist:** A list of available links: Joe Cartoon, SAP Markets, Intranet, Muster Powerpoint, and a link to "www.sap.com".
- Pocket Jukebox:** A media player interface showing "BBC - Radiot Live" as the current channel, with a progress bar indicating "Now Connecting...".

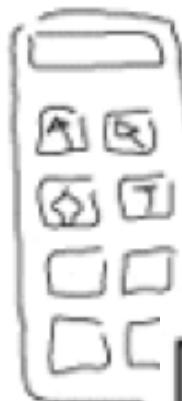
The left sidebar contains a "Toolbox" with links to "SAP Markets" (marked as currently active), "Developer", "Information" (Developer, SAP Markets, Intranet, Muster Powerpoint), "Development" (Employee, SAP Markets, Intranet, Muster Powerpoint), "Testing" (Cost Manager, SAP Markets, Intranet, Muster Powerpoint), and "Employee" (Information, Employee, SAP Markets, Intranet, Muster Powerpoint). A note at the bottom says: "Moving the mouse over the channel buttons displays the options for this channel."

on State
rsity

Low-Fidelity – keeps only the essence



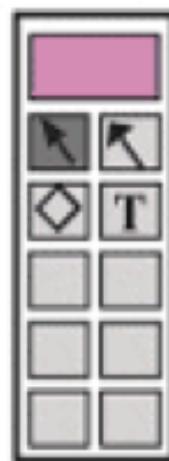
Don't make things look done



Rough Sketch

Scanned from a hand-drawing, made with a drawing app and a tablet, or using the Napkin Look and Feel skin.

"Maybe the tools should be context-specific..."



Visio, Powerpoint, etc.

Illustrated using a professional drawing or ~~p~~ **Feedback** **Image** **on** tool.

"I don't like the ~~blue~~ blue font tools."



Looks Done

Mocked up in Photoshop, a multimedia program (Director, Flash, etc.), or a GUI builder (NetBeans, Visual Studio, etc.)

"Can you change the font on that "T"?"

← Not sure I like the bevel line weight..."

Feedback: detailed tweaks to specific features. Very focused and incremental.

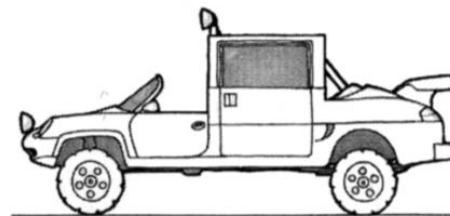
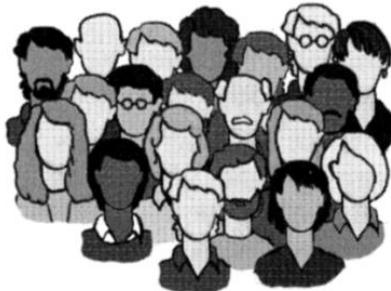
Personas



Personas

- A fictional character created to represent the different user types that might use a design
- A role played by a character

Why do we need persona?



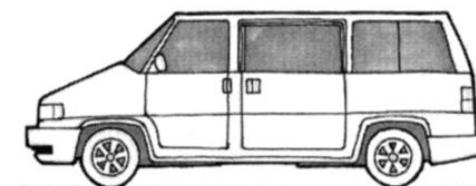
Alessandro's goals

- Go fast
- Have fun



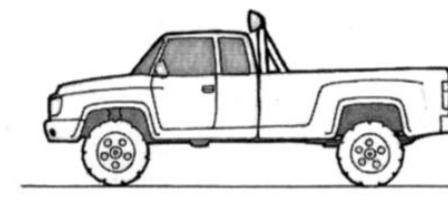
Marge's goals

- Be safe
- Be comfortable



Dale's goals

- Haul big loads
- Be reliable



Specifying persona

- Identify major clusters from multiple user interviews/inquiries
- Synthesize their goals
- Check for completeness and specificity

Abby Jones¹



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

Abby has always liked music. When she is on her way to work in the mornings, 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 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 know 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.

¹ Abby 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://eusesconsortium.org/gender/gender.php>

A close-up, slightly blurred portrait of a young woman with dark brown hair and bangs. She has green eyes and is smiling broadly, showing her teeth. The background is a soft-focus green foliage.

Abby Jones

age 28
accountant
Springfield

A close-up photograph of a young woman's face, focusing on her eyes and upper lip. She has brown hair and is looking directly at the camera with a slight smile. The background is blurred green foliage.

Abby Jones

proficient with technology
learns what she needs,
uses what she knows
gathers information
before acting

A close-up, slightly blurred portrait of a young woman with dark brown hair and bangs. She has green eyes and is smiling. The background is a soft-focus green foliage.

Abby Jones

new job 1 week ago

“numbers person”
enjoys numbers & logic

A close-up, slightly blurred portrait of a young woman with dark brown hair and bangs. She has green eyes and is smiling broadly, showing her teeth. The background is a soft-focus green, suggesting an outdoor setting.

Abby Jones

comfortable with familiar
technology
uses “the safe way” to
get things done
step-by-step tutorials



Abby Jones

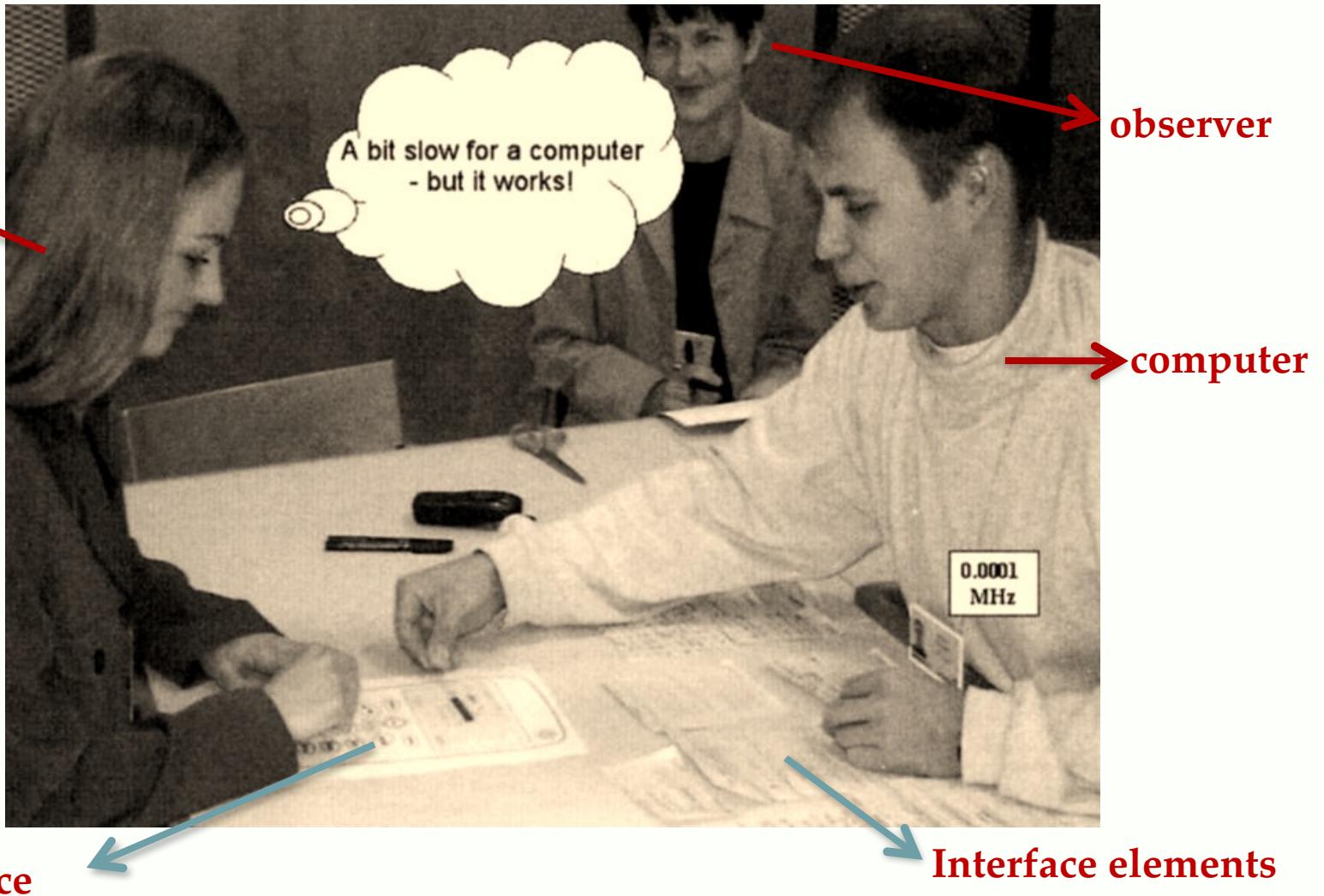
doesn't “waste time
learning new features”
doesn't try stuff out for fun
not confident at new tasks
gives up & blames herself

Why do we need persona?

- Build Empathy
- Develop Focus
- Communicate and form consensus
- Make and defend decisions
- Measure effectiveness

Usability Testing

- Paper prototypes can also be used perform usability testing
- It is a low-cost way to help figure out if your design is suited to perform specific tasks
- Often includes a sequence of sketches
- Use as a tool to manage risk



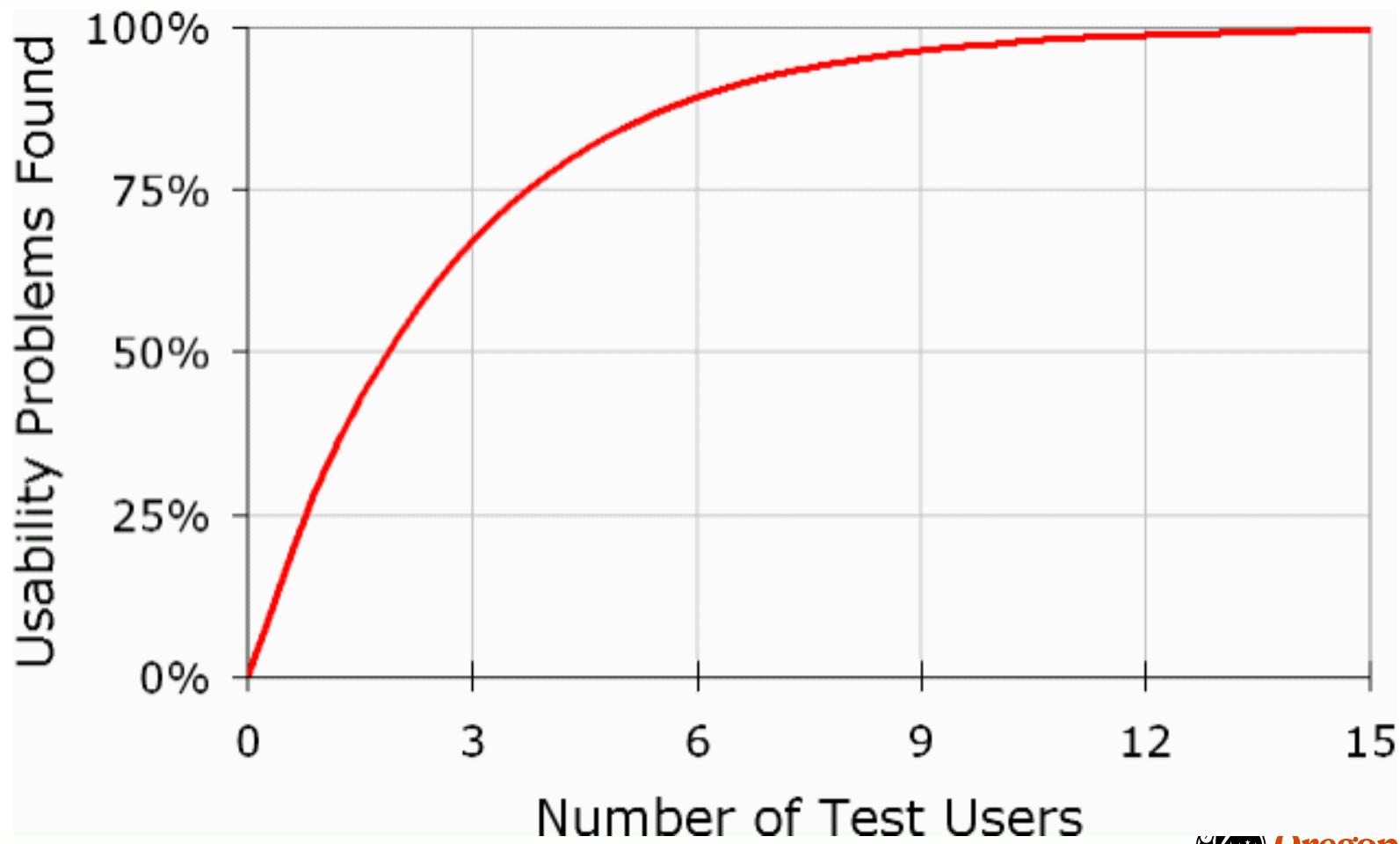
Roles

- Facilitator:
 - Gives instructions
 - Encourages user to speak
- Computer
 - Simulates response of system
 - Can't speak / help the user
- Observer(s)Take notes

Questions we can answer

- Are end-users doing **what you want** them to be doing?
- Are they doing **what you expected** them to do?
- Did they become **confused** while trying to reach their goals?
- Did you really think through **all possible paths** through the application?
- Did they have a **preferred path**?
- Are some **paths unused**?
- Are some paths used in ways that **weren't intended**?

Does user testing really work?



QUIZ

- *Get your clickers*
- *Channel 62*
- *5 questions*
- *Time = 45 seconds per question*

Class Exercise - 15 minutes

Create Paper prototype for the following (online bank) user story by keeping Abby's persona in mind:

Abby:

- Learns tech to get things done, not for fun
- No spare time to learn things she doesn't need
- Gathers information before acting
- Learn through process and not tinkering
- If tech goes wrong blames herself
- (notes: never say women are this...say individual differences that cluster by gender) Fewer women like to learn by tinkering than men

GET INTO PAIRS

Evaluate the paper prototypes to see Abby will be able to use it



Oregon State
University

Brainstorming



4 rules

1. **Go for Quantity:** “quantity breeds quality”
2. **Withhold Criticism:** by suspending judgment, participants will generate unusual ideas
3. **Welcome Wild Ideas:** if you are not generating bad ideas, you are not doing a good job brainstorming
4. **Combine and Improve Ideas:** “1+1=3”

Brainstorming Needs

- We need a way to quickly and cheaply generate ideas, yet still be able to communicate them clearly.
- Pencil and paper is
 - Fast
 - Cheap
 - Clear

Class Exercise

Develop ~~two~~ four paper prototype per person

- Online Bank example
- User already registered
- Wants to deposit a check

Must include some “bad” out of the box ideas