

# IS4300: HCI

Storyboards, accessibility, evaluation.

Spring 2013

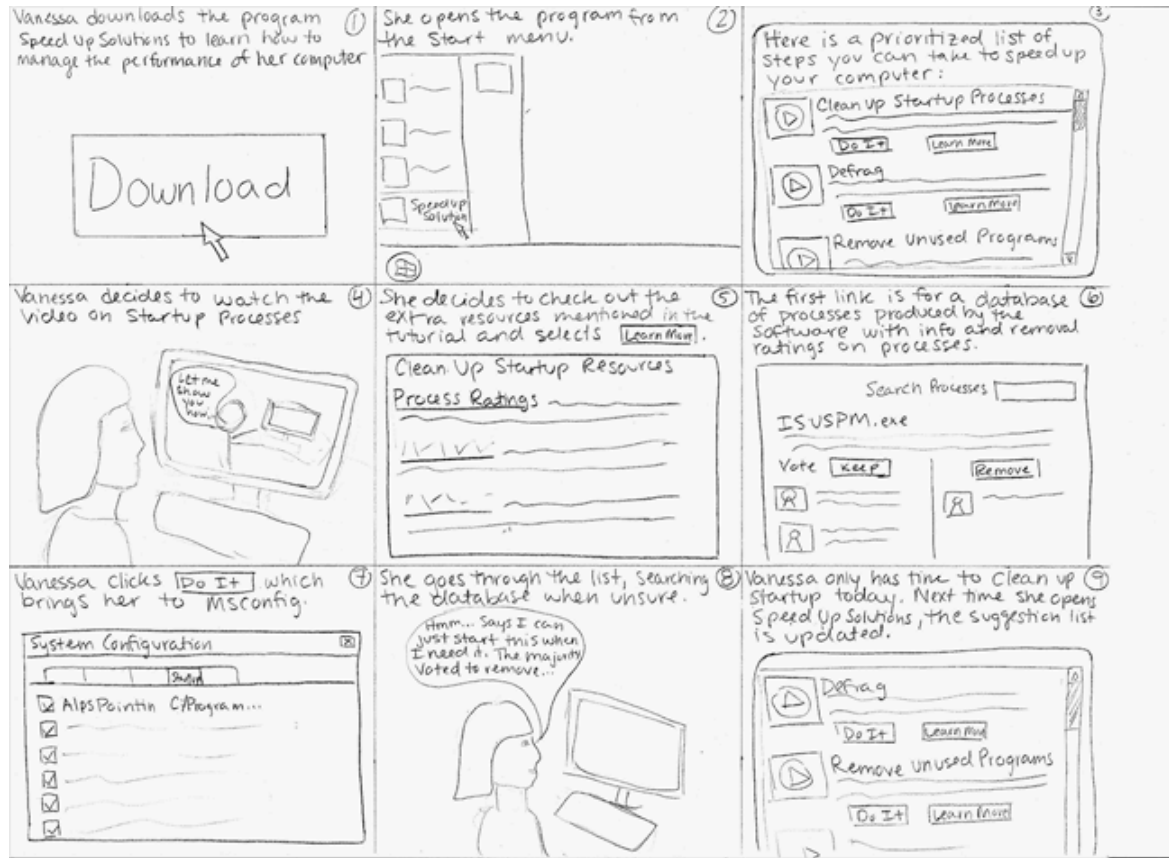
# Schedule changes

- Team Project 4 due **Monday 2/18** by 5 PM.
- Reading 7 is due 2/20 by 5.
  
- T9A (final presentation) due for April 8 & 11.
- T9B (final paper) due April 19th at 5 PM.

# Today's Agenda

- storyboards
- accessibility
- evaluation
- cognitive walkthrough exercise

# **STORYBOARDS**



## Storyboards

A cartoon-like series of scenes

**ACCESSIBILITY**

# Universal Design

- For more than people with disabilities
- Make software and other products as appealing and easy to use for everyone
- Consider age, ability, status
- Compatible with existing assistive technologies, e.g., text readers.



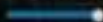


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# W3C Web Content Accessibility Guidelines

- Provide alternatives to auditory and visual content
- Don't rely on color alone
- Use markup and style sheets properly
- Create tables that transform gracefully
- New technology pages transform gracefully

# WCAG 1.0 – Web Content Accessibility Guidelines (2001)

- Succeeded in raising awareness
- Actual impact remains very low
  - Numerous studies
  - Heuristic/Expert evaluation
  - Algorithmic checking
  - User testing with disabled users
- General awareness high, specific awareness of guidelines low
- 30% of websites claiming conformance overstated level of conformance
- 22% of site owners surveyed had no knowledge

# WCAG 2.0 – Web Content Accessibility Guidelines (2008)

- Improved usability of Guidelines themselves
- Most problems remain
  - Web designers still find difficult to use (unable to reach 80% agreement on usability problems by panel of experts)
- Has not improved accessibility overall
  - Study: crawled 30M web pages, under 4% of elements met all standards.
  - Websites that conform to WCAG 2.0 do not have fewer usability problems for disabled users compared to sites that do not conform

# Federal Guidelines for accessibility: Section 508

- If you ever develop anything for the federal government including PowerPoint presentations.
- Regulations cover
  - Software Applications and Operating Systems.
  - Web-based Intranet and Internet Information and Applications.
  - Telecommunications Products.
  - Videos or Multimedia Products.
  - Self Contained, Closed Products.
  - Desktop and Portable Computers.

**EVALUATION**

# What we will cover

- What is evaluation?
- Goals of evaluation
- Styles of evaluation
- Predictive Evaluation
- Formal Evaluation (later in the course)



# Evaluation

Gather data about the usability of a design for a *particular activity* by a *specified group of users* within a *specified environment*

## Goals

1. Assess extent of system's functionality
2. Assess effect of interface on user
3. Identify specific problems with system

# Two forms of evaluation

## Formative evaluation

- Early, continuous. Iterative.
- Evaluating the design

## Summative evaluation

- After a system has been finished. Make judgments about final item.
- Sometimes called an implementation study.

# Experimental approach

Lab studies, quantitative results

- Typically in a closed, lab setting
- Manipulate independent variables to see effect on dependent variables

+ Replicable

- Expensive, requires real users and lab
- Failure risk high

# Other formal evaluation methods

- Questionnaires
- Think-aloud/cooperative evaluation
- Experiment/usability test

To be covered in later classes

# Naturalistic approach

Field studies, informal approach

- Observation occurs in “real life” setting
- Watch process over time
- + Ecologically valid
- + Often provides immediate feedback for design and development
- Not reproducible; not considered as definitive

# Predictive Evaluation

- Expert reviewers often used
- HCI experts (not real users) interact with system, find potential problems, and give prescriptive feedback

Best if they:

- Haven't used an earlier prototype
- Familiar with domain or task
- Understand user perspectives

# Predictive Evaluation Methods

- A. Literature-based Evaluation
- B. User modeling
- C. Cognitive Walkthrough
- D. Heuristic Evaluation (next class)
- E. Discount Usability Testing (next class)

# A. Literature-based evaluation

- Many systems exist and have been evaluated
- Many experiments have shown performance abilities and limits
- Apply what is already known, where applicable



## B. User modeling

- Computer models simulate what users would do, how they would respond
- Good models exist for cognitive and motor processes
- Not so effective at modeling perception
- Fitts' Law as an example of predicting performance by modeling the human

# C. Cognitive walkthroughs

- Formalized way of imagining people's thoughts and actions when they use an interface for the first time.
- First select a task that the design is intended to support.
- Try to tell a 'believable story' about each action for the task.
- To make it believable, motivate each of the user's actions, relying on her general knowledge and on the interface's prompts and feedback. If you can't tell the story, you've located an interface problem.



# Cognitive walkthrough process

- Construct carefully designed tasks from system spec or screen mock-up
- Walk through activities required to go from one screen to another
- Ask user to 'think aloud' and physically interact with the 'system' even if it paper

# What's it good for?

- Question assumptions about what the users will be thinking
- Identify controls that may be missing or hard to find
- Note inadequate feedback
- Suggest difficulties with labels and prompts

# Cognitive Walkthrough Purpose

- Focus most clearly on problems that users will have when they first use an interface, without training
- Not a technique for evaluating the system over time
- Most effective if designers can really create a mental picture of the actual environment of use

# How to do it

Prior to doing a walkthrough, you need four things:

1. A description of a prototype of the interface. It doesn't have to be complete, but it should be fairly detailed. Things like exactly what words are in a menu can make a big difference.
2. A task description (for a representative task).
3. A complete, written list of the actions needed to complete the task.
4. An idea of who the users will be and what kind of experience they'll bring to the job.

# Cognitive Walkthrough methodology

Step through action sequence

- Action 1
- Response A, B, ..
- Action 2
- Response A

For each one, ask four questions and try to construct a believability story

# Cognitive walkthrough believability questions

1. Will users try to produce whatever effect the given action has?
2. Will users be able to notice that the correct action is available?
3. Once found, will they know it's the right action for the desired effect?
4. Will users understand feedback after the action?



# Cognitive walkthrough exercise

In pairs walk through how you would either program a DVR, use a universal remote, or set up a new shared calendar (e.g., google calendar).

- List actions
- Ask the questions

# Cognitive walkthrough believability questions

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2. Will users be able to notice that the correct action is available?
3. Once found, will they know it's the right action for the desired effect?
4. Will users understand feedback after the action?

# Next steps

- No class Monday Feb 18.
- T4 due Sunday at 5 PM.
- Next class: collecting and Analyzing Data. In class paper prototyping rehearsal.
- Feb 21 T5A and R7 due.