



Human-Computer Interaction IS4300

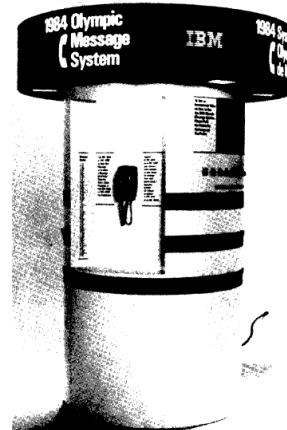


P8 – Finish Project & Do User Testing – Due 12/7

- Complete enough of your implementation to support user testing
 - Should be fully functional unless you have a compelling rationale
- Complete user testing
 - Exactly as you did in Paper Prototyping, but with your software prototype
 - 3+ users, 3+ tasks
 - Briefing
 - Can demo system on additional task first
 - At least one usability metric
 - Semi-structured interview
- Redesign
 - Sort severity problems by severity
 - Describe how you would address as many as possible
- Document everything in usability.gov brief usability test report.

Olympic Message System

- 1987 – usability still in infancy
- Case study of design methodology
- Voice messaging system
 - 35 computers, 8 month development



OMS Methodologies that we have used





OMS Design Principles

- Early focus on users and tasks
- Empirical
- Iterative design
- Integrated usability design



Business Case for Usability

- How would you put together a cost justification for usability testing?
- Costs?
- Benefits?

Nielsen Ch 1 – Case Studies

Example Benefits of Usability

- Rotary dial telephone – 1 hour usability test sped up dialing by 0.15s/digit = \$1M/yr savings
- \$100K usability test of an insurance form = \$563,023 savings in labor for staff to manually fix errors
 - Previously customers made 7.8 errors/form
- Reduction of Boeing 757 flight crew from 3 to 2
- Reduction in operating instructions for pager from 3,000 words to 150 words

Benefit:

Preventing late changes

- Your users will do usability testing even if you don't!
- Change requests 100x more expensive than problems corrected during development





Historical Costs of Usability Testing for Entire Product Development Efforts

- Average usability budget for software development projects = 1.5 person-years (ideal = 2.3)
- Published study: average cost is \$128,330 (\$253,347 in today's dollars)



Discount Usability Engineering

- Usability doesn't need to cost so much!
- User & Task observation
- Scenarios
 - Narrative
 - Paper prototype
 - Software prototype
- Thinking aloud (formative usability test)
- Heuristic evaluation

Handbook of HCI

Cost Justification – Bias, et al

- Impacts of more usable systems
 - Lower development cost (problems found early)
 - Less documentation required
 - Less training required
 - Less time required by User

Test Budget

- Personnel
- Tester compensation
- Computers
- Lab
- Special equipment (e.g., gaze tracker)
- Video/audio tapes

- Estimate: \$3k + \$1k/user for typical industry test
 - 1993 \$, ~+150% now



Example cost justification

TABLE 62.1. Usability Cost-Justification Software

Manufacturer	Year			Total
	1	2	3	
Cost				
Usability lab	(\$33,000)			
Usability lab projects	(\$179,974)			
Total cost	(\$212,974)	\$0	\$0	(\$212,974)
Cost savings				
Customer support	\$168,000	\$168,000	\$168,000	
Software development	\$15,050			
Additional sales				
Total cost savings	\$183,050	\$168,000	\$168,000	\$519,050
Net	(\$29,926)	\$168,000	\$168,000	\$306,074



Final Exam

- Tue, 12/14, 1-3pm, Forsyth 236
- Coffee & donuts if you all turn in TRACE reviews!
- Closed book
- Cumulative / Integrative
- No questions on:
 - Java Swing (but conceptual questions, possible pseudocode)



Final Exam

- 20% Concepts
- 15% UI Critique (focus: web, mobile & desktop)
- 25% Design problems
 - Design for web, mobile, desktop
- 40% Analyzing & Reporting Usability Test Results
 - Given a situation in which usability testing is important, design a test plan
 - Given a study plan and resulting data, analyze & sketch report
 - Critique a study plan
 - Quantitative and qualitative components



Concepts (20%) - usability

- Define X.
- Give an example of Y.
- Given the situation Z, which of Nielsen's usability concepts does this relate to?
- What is an interface metaphor?

- *Heavily sampled from Nielsen & Norman.*

Concepts - other

- What is a 'p' value in comparison eval?
- Given a comparison study description, would you use between or within subjects?
- You invite a user to join your design team – what do you call this?
- What are the different classes of users?

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UI Critique (15%)

- Critique the following UI, using concepts from Nielsen & Norman.

Charges	Discount	SubTotal	Accessorial	FSC	Total	Balance
791.50	0%	791.50	0.00	2.57%	839.58	839.58

Units	Description	Ships	Rate	Discount	Total	Charge
1 CHATE	CHATE	81	97	25.00	97	40.00
10 MAN	MAN PLD				40.00	40.00
2 CHATE	CHATE	500	1,426	10.45	1,426	50.00
					0.00	0.00

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Usability test design

- Given a test opportunity
- Decide among
 - Expert methods
 - Heuristic evaluation
 - Cognitive walk through
 - Modeling (e.g., KLM)
 - User methods
 - Formative, qualitative, e.g., think aloud
 - Summative, quantitative, experimental



Usability test evaluation

- Sociodemographics
- Descriptive statistics of quantitative data
- Thematic analysis of qualitative data



Usability testing (40%)

- You want to evaluate an early prototype of a PC game. Write the usability test plan.
- You want to conduct an ethnographic study of Pixar animators. Write the interview guide.
- You want to compare your new iPhone app against the competitor's, using time to complete a set of standardized tasks for naïve users. Write the analysis plan.
- Given test data, write the usability test report.


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Designing for the Web

- Differences from desktop GUIs?
- How to provide location info.
 - CSS look and feel; breadcrumbs
- How to provide navigation.
 - Link to home; site map; search
- Design/development methodology
 - How to map info structure to pages
 - How to do usability/heuristic testing


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Designing for mobile

- Differences from desktop UIs?
- Development methodology
- Importance of simplicity, external consistency
 - How to simplify the UI

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2013 Final Exam



To do

- Finish P8 – Usability Testing & Report
- Prepare P9 – Oral presentation – next class
 - 1 min – Problem description
 - 2 min – Demonstration
 - 4 min – Evaluation summary

- **7 min max**
- 1 min to swap, Q&A



Final Report – due 12/12

- Summarize all work on team project
- Mostly cut-and-paste, but
 - Emphasize process
 - Emphasize design alternatives considered
 - A few paragraphs reflection on methodology
- Minimum 6 pages. Suggest ACM CHI format.