

Understanding what's already been done in your problem area

CS4784: HCI Capstone

Virginia Tech

Instructor: Dr. Kurt Luther

Preview

- Literature review
- Competitive analysis
- Upcoming milestones

CHCI Hack+Snack

- Every Friday, 2-5pm (hack) and 5pm+ (snack)
- Learning Studio, Moss Arts Center
- HCI undergrads, grad students, faculty welcome



Literature review

- What have researchers learned about the area you're working in? The problem you may be trying to solve? Failed attempts and solutions?
- Three broad sources to consult
 - Computer science research (tools, algorithms)
 - Research in your application domain (tourism, games, photo sharing)
 - HCI research combining the above (if you're lucky!)

Lit review starting points

- Digital libraries
 - ACM Digital Library, IEEE Xplore Digital Library (both free on campus)
 - Big HCI conferences: CHI, CSCW, UIST
- “Survey” articles
- Personal websites of experts, professors, grad students
- Online course syllabi
- Research blogs—often present complex research in a more digestible way
- YouTube—lots of research papers include short video figures
- News articles

Annotated bibliography

- A list of (mostly primary) sources cited in the appropriate format (ACM format preferred)
- Each source has an annotation provided by you
 - *Summarize*: Paraphrase (don't copy verbatim) the key information—methods, findings, etc.
 - *Assess*: Is this a useful source? Is it biased?
 - *Reflect*: How does it relate to your project? What did you learn from it or how did it change your thinking?
- Not all entries need to be super useful—also a record of what you read and can safely ignore

Competitive analysis

- A way to compare feature sets across a market
- Often used by marketing in determining requirements for a product release
 - See what competition is doing, and match it
- Careful: competitive analysis makes an implicit assumption that:
 - Features are important (instead of goals)
 - The features competitors choose are good ones

Finding competitors





- Searching online
 - Generate a set of keywords that describe the service you intend to offer
 - Search these keywords online
 - Look for at least 10 unique “best of” articles and make a list of the products/services mentioned
 - If results are too diffuse (no clear winner) then keywords might be too unusual or vague
 - If results are too similar (everyone agrees) then your keywords might be too conventional or narrow
- Ask experts in the field

Source: [Nielsen and Mack](#)







































































Competitive analysis

- Using tasks (or scenarios), walk through competitors' products and record:
 - Features included in the product
 - Any new and insightful innovations
 - Any problems you immediately see with competitors' basic frameworks
- Use a grid (Excel, HTML table, etc.), record a visual representation of each step or key point through the UI
- As you look at more products, go back and fill in missing info from previous products

Competitive analysis

	CNN	msNBC	News.com	Savannahnow
				
Search mechanism	Simple search located on the top/left of the main page	Simple search located on the right/center of the main page	Directly on top/right of the main page; offers search of news, cnet or all of the internet	None on the main page; forces user to the left nav, and then offers "power search"
Advertising	Banner on the top; integrated push content from partners (Time, Business 2.0, Sports Illustrated)	Banner in the center; huge take-over ads prevent reading of content; ads for NBC everywhere	Banner on the top	Ads everywhere; border on the top, right and left of ads limits content to a small area

Source: John Kolko

					
Patient Data Access					
Patient Data Input					
Dictation Support					
Cloud Storage					
Staff Communication					
Sterilizability					
Durability					
Ease of Use					
Lightweight					
Security					
Cost					
Battery Life					
Consumer Feedback					

LEGEND

-  Great
-  Good
-  Satisfactory
-  Unsatisfactory
-  Unacceptable
-  N/A or Varied

Source: [Swift](#)

	Forums					Content Management					User Interactions					User Experience					Score							
	Search	Rating	Organized Threads	RSS	Stickies	Photos	Videos	Article Postings	Links	RSS	Collaborative Editing	Static Pages	Profiles	Real Names	User History	Role in Community	Private Messages	"Friends"	Chat	Groups	Intuitive Interface	Visual Appeal	Visible Dialogue	Non-commercial	Simple installation/set-up	Server Hosting Provided	Open Source	
phpBB	●		●		●								●	●	●		●				●	●	●	●			●	13
Wiki	●					●	●	●	●	●	●	●	●		●		●				●	●			●	●	●	15.5
IRC													●				●	●	●					●	●	●	●	8
AIM													●		●		●	●	●			●	●		●	●		9
Google Groups	●		●	●		●	●	●	●	●	●				●	●	●	●	●	●			●		●	●		20
Basecamp	●		●			●		●	●	●	●			●		●	●				●	●		●	●	●		15
Twitter				●					●				●		●		●	●	●	●				●	●	●	●	11.5
Blogger						●	●	●	●	●	●		●	●		●					●	●	●	●	●	●	●	14.5
Wordpress						●	●	●	●	●	●		●	●		●					●	●	●	●	●	●	●	14.5
Ning	●		●	●		●	●	●	●	●	●		●	●	●	●	●	●	●	●				●	●	●	●	22.5
Facebook	●		●			●	●	●	●				●	●	●	●	●	●	●	●				●	●	●	●	18
List-serv						●	●	●	●					●			●				●			●	●	●	●	11
Joomla	●		●		●	●	●	●	●	●	●		●			●	●		●		●	●	●	●		●	●	17.5
Drupal	●		●	●	●	●	●	●	●	●	●		●			●	●		●		●	●	●	●		●	●	18.5

Source: [Adam Williams](#)

SWOT matrix

- Strengths, Weaknesses, Opportunities, Threats
- Developed by Albert Humphrey in the 1960s
- Can be applied to yourself, your product, your organization, or the competition
- Only use precise, verifiable statements
- Prune long lists of factors, rank the ones you keep, and focus on the top ones

SWOT matrix

- Strengths
 - What advantages does your organization have?
 - What do you do better than anyone else?
 - What unique or lower-cost resources can you draw upon that others can't?
 - What do others see as your strengths?
- Weaknesses
 - What could you improve?
 - What should you avoid?
 - What are people likely to see as your weaknesses?

SWOT matrix

- Opportunities
 - What good opportunities can you spot?
 - What interesting trends are you aware of?
 - Changes in technology, policy, social patterns...
- Threats
 - What obstacles do you face?
 - What are your competitors doing?
 - Is technology changing in a way that threatens your position?

TOWS strategic alternatives

	External Opportunities (O) 1. 2. 3. 4.	External Threats (T) 1. 2. 3. 4.
Internal Strengths (S) 1. 2. 3. 4.	<p>SO <i>"Maxi-Maxi" Strategy</i></p> <p>Strategies that use strengths to maximize opportunities.</p>	<p>ST <i>"Maxi-Mini" Strategy</i></p> <p>Strategies that use strengths to minimize threats.</p>
Internal Weaknesses (W) 1. 2. 3. 4.	<p>WO <i>"Mini-Maxi" Strategy</i></p> <p>Strategies that minimize weaknesses by taking advantage of opportunities.</p>	<p>WT <i>"Mini-Mini" Strategy</i></p> <p>Strategies that minimize weaknesses and avoid threats.</p>

Source: [MindTools](#)

Upcoming milestones

- Lit review / annotated bibliography
 - Minimum 30 sources with annotations
 - Minimum 75% must be scholarly sources
 - Deliverable is written document with annotated bib plus 2-3 page written summary of overall findings
- Competitive analysis
 - Minimum 10 products/services
 - Minimum 10 dimensions
 - Deliverable is comparison matrix plus 2-3 page written summary of overall findings

Next class

- Monday: Service design
- Due this week
 - Final group membership due this Friday
 - First press release due this Friday midnight
- Due next week
 - Lit review and competitive analysis due next Friday
 - Meeting with sponsor due next Friday