

# Informatics 231: What is Design?

October 9, 2012



# IDEO' s Deep Dive

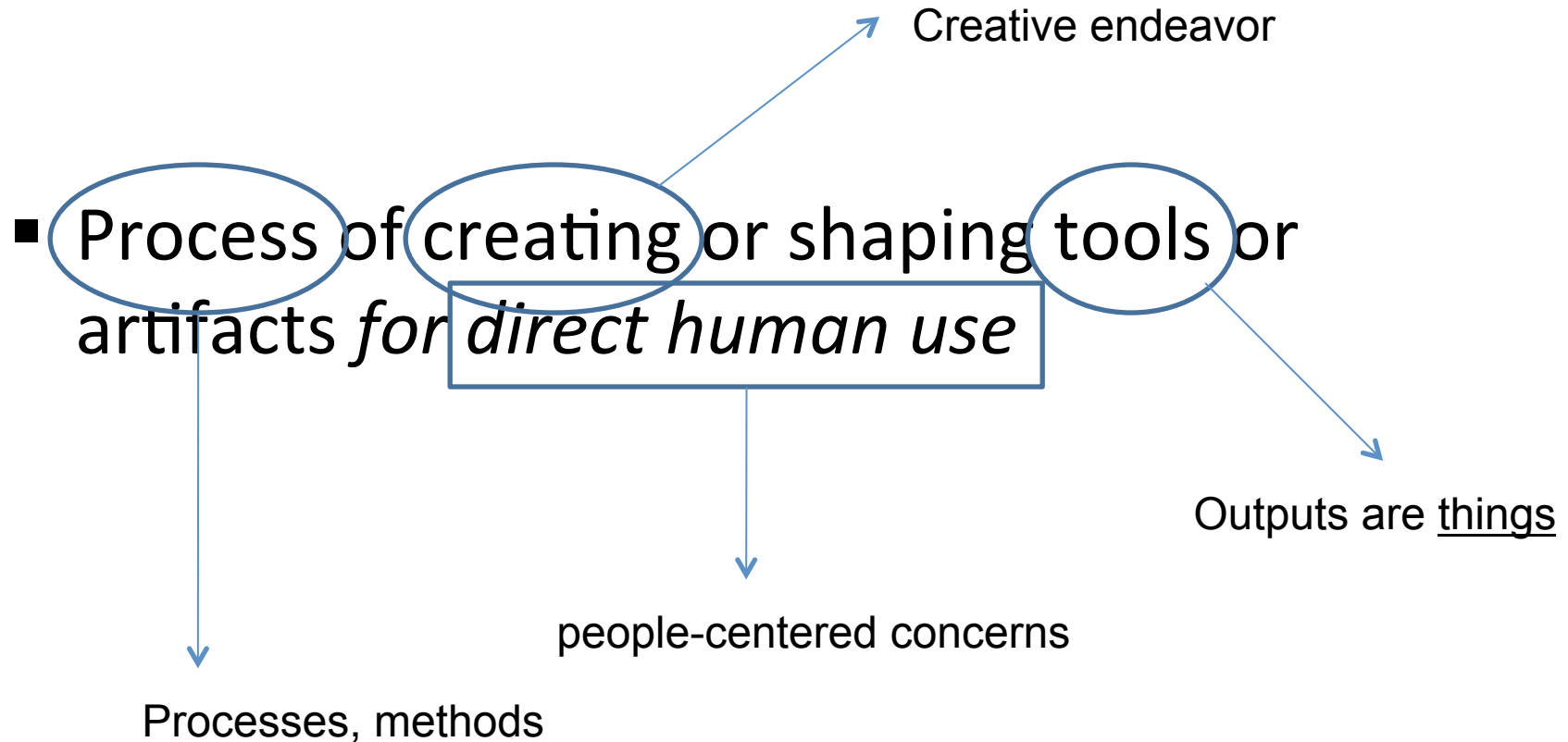
- Excellent example of the user-centered design process
- IDEO' s Deep Dive Video
  - Part 1 - <http://www.youtube.com/watch?v=ooN05Q030Qo>
  - Part 2 - [http://www.youtube.com/watch?v=7\\_sZy-kusw](http://www.youtube.com/watch?v=7_sZy-kusw)
  - Part 3 - <http://www.youtube.com/watch?v=FxO8t9Sonk8>



# Discussion



# What is Design?



# Characteristics of Design

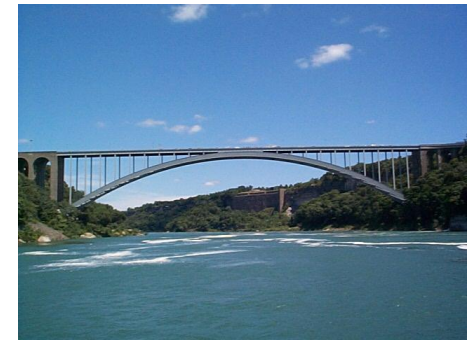
- Design...
  - is conscious
  - keeps human concerns in the center
  - is a conversation with materials
  - is creative
  - is communication
  - has social implications
  - is a social activity



# Design vs. Engineering

- Engineering

- Make a mostly-known outcome possible
- Construct a sturdy bridge based on specifications
- Concerned with *what can be done*
- Reliance on well-established formulae
- Humans may or may not be directly “in the loop”



- Design

- Envision new possibilities, new outcomes
- Determine what outcome *should result among infinite possibilities*
- Reliance on process over formulae
- Humans are central actors “in the loop”



# Design vs. Art

- Design (as we regard it) concerns the creation of something useful and usable
- Art does not require with this restriction
  - The test: how to deem what is “good”?



# Other Contrasts

- Interface vs. interaction design
  - Artifact versus sequence
  - Graphic < interface < interaction < user experience
- Usability vs. user experience (UX) design
  - Evaluation versus holistic design
  - Designing it right vs. the right design





# design vs. Design

- design: the general activity we've been talking about so far
- Design: the formal field, including theory, methods, literature, and practice



# Who Does Design?

- Designers!
- Designers are often...
  - Applied anthropologists
  - Design ethnographers
  - Social psychologists
  - Cognitive psychologists
  - Experimental psychologists
  - Computer scientists
  - Engineers
  - Interface designers
  - Interaction designers
  - Industrial designers
  - Graphic designers
  - Information architects
  - Usability professionals
  - Technical writers
  - Dramatists



# Can Anyone be a Designer?

- Don Norman says “yes”
  - Mostly in the “design” sense
- Bill Buxton says “no”
  - Mostly in the “Design” sense
- What do you think?



Physical design

**INDUSTRIAL  
DESIGN**

**MECHANICAL  
ENGINEERING**

**GRAPHIC  
DESIGN**

**PHYSICAL  
ERGONOMICS**

**PRODUCTION  
ENGINEERING**

**PHYSICAL  
SCIENCES**

Human and subjective

Technical and objective

**WEB  
DESIGN**

**H.C.I.**

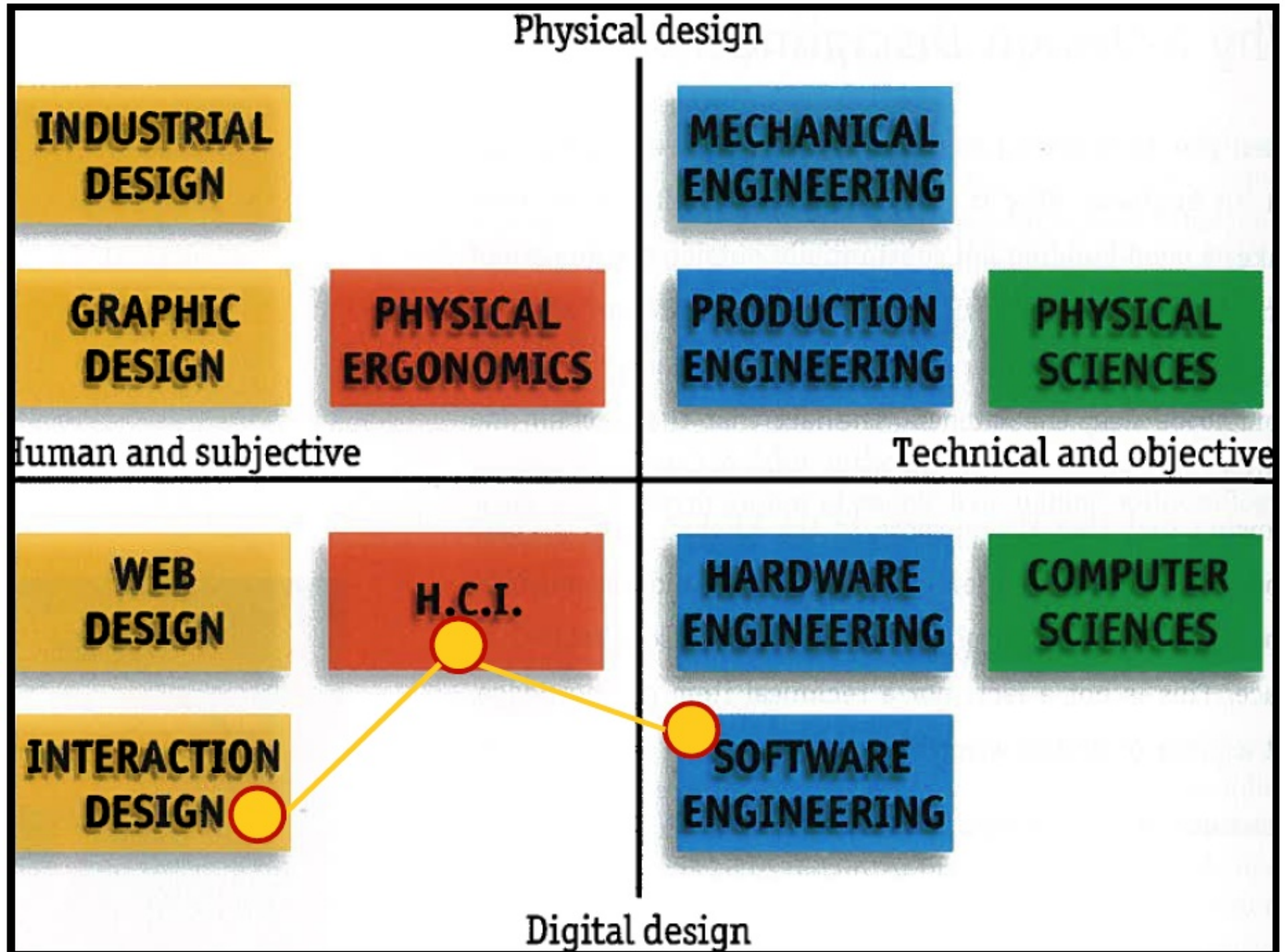
**HARDWARE  
ENGINEERING**

**COMPUTER  
SCIENCES**

**INTERACTION  
DESIGN**

**SOFTWARE  
ENGINEERING**

Digital design



# What is Designed?

- “Look around you. The only thing not designed is Nature.”
  - David Kelley
- Anything consciously intended for human use is designed
  - Often poorly, though :(





# Why is Design Hard?

- Interface design is multidisciplinary
- Judging/predicting which designs will be successful and which will not is difficult
- It is simply hard to come up with good solutions
- All design involves making tradeoffs
- Humans are unpredictable
- Humans make errors
  - Mistakes
  - Slips



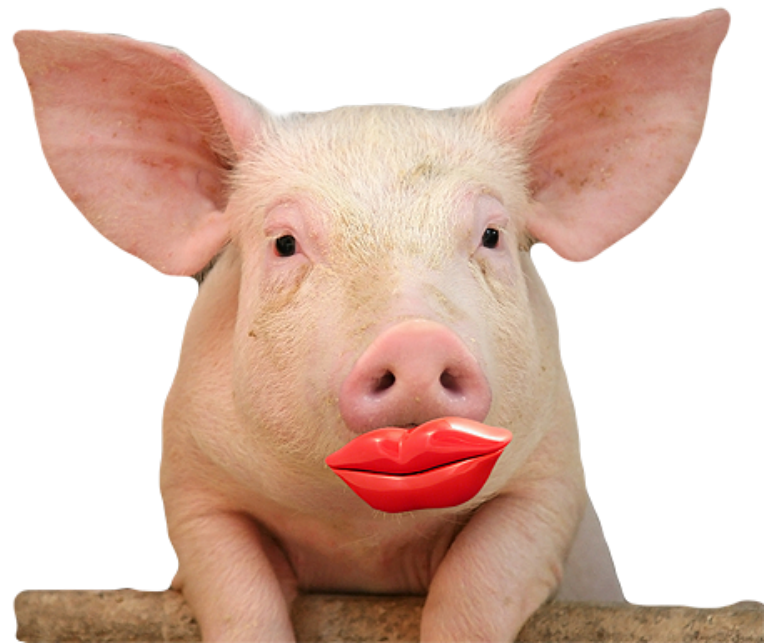
# Core Skills of Design

- To synthesize a solution from all of the relevant constraints, understanding everything that will make a difference to the result
- To frame, or reframe, the problem and objective
- To create and envision alternatives.
- To select from those alternatives, knowing intuitively how to choose the best approach.
- To visualize and prototype the intended solution



# Design is not just “lipstick on a pig”

- Not just changing how things look
- Or making things pretty
- Or designing graphics





# Interaction design mantras

- “The user is not like me.” –Don Norman
- “The best way to have good ideas is to have lots of ideas.” – Linus Pauling
- “Fail often to succeed sooner.” – IDEO
- “Enlightened trial-and-error succeeds over the careful planning of the lone genius.” – IDEO



# “The user is not like me”

- Why not? (from Norman)
  - Designers are much more familiar with the interface and with the problems being solved than users.
  - Designers are confident. Users are often fearful.
  - Designers work in settings that are different than the context in which the product may be used.
  - Designers may have different skills than users (e.g., perceptual, cognitive, or domain skills).





# DESIGN QUESTIONS



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# What is a Design Question?

- Usually asks how something which doesn't already exist can solve a problem
- Often starts with “How can...?”
- Examples:
  - How can technology help reduce stress surrounding everyday home life?
  - How can we design something to help keep up with home maintenance?



# Design Questions vs. Research Questions

- These are all *design questions*
  - How can technology promote healthy sleep habits?
  - How can we reduce information overload?
  - How can college students manage their many distractions and find time to concentrate?
  - How can mobile technology promote leisure activities?
  - What is a way to support individuals while on vacation?
  - Why type of technology can promote meditation and focus and reduce stress?
- The answer to them is a **thing (artifact, system, policy, etc.)**
- *Research questions* are different
- The answer to these are **knowledge**
  - How do people currently relax?
  - What are things that people bring with them on vacation?
  - What are the major sources of distraction for college students?



# Research Questions

- Write these after you've determined your design question
- More in a few minutes



# Specificity -> Scope

- How specifically you word your design question will affect how much you need to do and how many people you need to design for
- For your project, you'll need to scope your design problem to something you can complete this quarter
- This can be done by choosing a **part of the problem** and/or narrowing it down to a **more specific audience**



# Evolution of Questions

- Your question may not stay exactly the same throughout the project
  - Your user research may show that it's not actually a problem, or that technology is not the solution
  - You may find that your scope is too large or too narrow
- Your design question can evolve over time, and become more or less specific, but you should always have a current design question your whole team agrees upon





# Be Picky About your Design Questions

- Once you have a draft of a design question, take a look at each word
- How do you define it? Is it necessary? Would a different word or phrase make it more clear or change the scope?



# Discussion: Pick Apart these Design Questions

- How can mobile technology promote leisure activities at home?
- How can technology support pet care?
- How can technology can promote a safe and secure home?



# Research Questions

- Remember, the answer to these is “knowledge” as opposed to “a thing”
- What do you need to know in order to come up with the answer to your design question?
  - Often who, what, when, where, why, how...
- Good general research questions:
  - What is the current practice?
  - Who is going to use this?
  - What are their needs?
- Again, specificity will help make your life easier



## Discussion: What are some research questions for...?

- How can technology help reduce stress surrounding caring for a sick child?
- How can we design something to help keep up with home maintenance?
- How can we keep a separation between home and work life?





# Project Information



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# Project Components

- P0: Design Question, Team Form – 1%
- P1: User Research & Personas – 14%
- P2: Ideation & Sketching – 5%
- P3: Prototype – 10%
- P4: Design Spec w/ Evaluation – 10%



# P0 – Design Question & Team Form

- Determine your project design question & at least 3 research questions
- Complete team form
  - This is a single sheet of paper
  - Typed
  - Names, email addresses, and photos (where I can see your face!) of everyone in your group
  - Project team name (does not necessarily have to have anything to do with your project)
  - At least one time that you all commit that you will be available to each other every week
  - 3-5 research questions you need to answer to make progress
  - A short 2-3 sentence statement about who you think interested stakeholders in your project are
- Due THURSDAY!



# P1: User Research

- Define stakeholders
- Choose 3 user research methods and apply them to your problem
  - e.g., interviews, contextual inquiry, survey, observations, diary studies
- Come up with design requirements





## P2: Ideation & Sketching

- As a group, brainstorm at least 15 ideas for potential solutions to your users' problem
- Use methods from class to help narrow down the sketch ideas to the best three



# P3: Prototype

- Construct a prototype or prototypes of your most promising ideas
  - Can be whatever method you choose
  - We will discuss numerous types in class
    - Paper, software, interactive, video, etc.



# P4: Final Report & Evaluation

- Develop & write up an evaluation plan.
- Conduct a pilot evaluation with your target users (if available) using the prototype from P3. Incorporate changes you would make to your final eval plan based on this experience.
- Write up a final design spec outlining details of your design solution and the rationale behind them



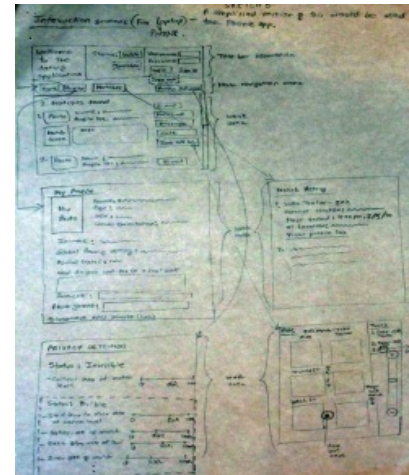
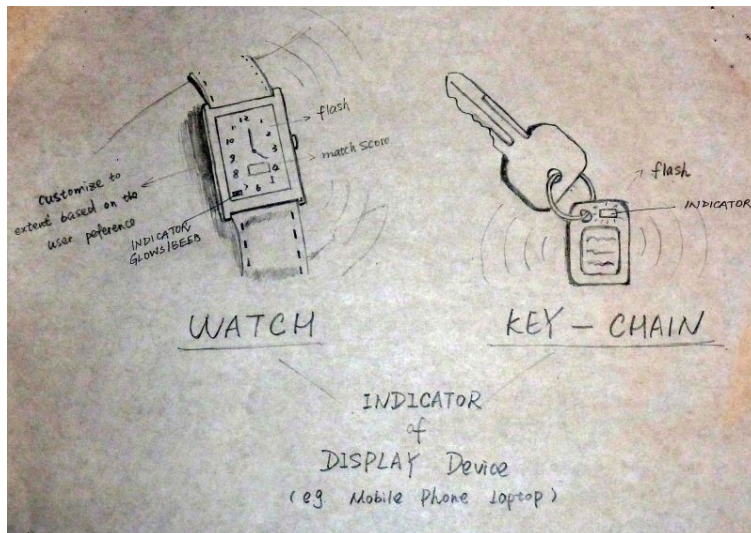
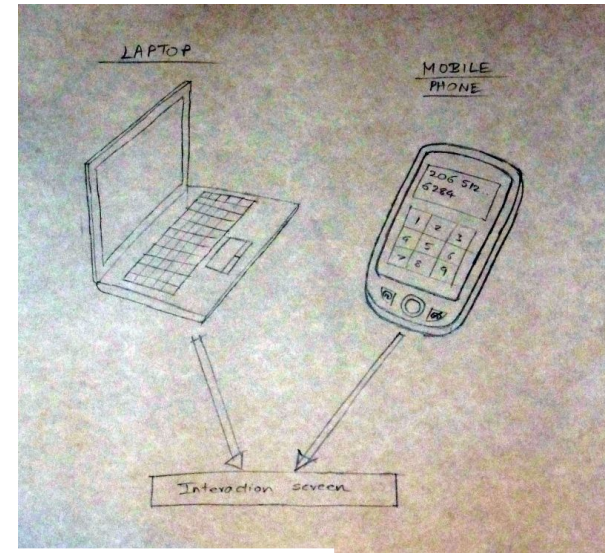
# Example – Instant Date Match

- Community: Singles
  - Problem: Connecting people who are shy
- P1: User Research: Contextual Inquiry, Interviews, and Survey with people currently single and recently connected



# P2: Ideation & Sketches

- Came up with 25 sketches
- Narrowed it down to 3

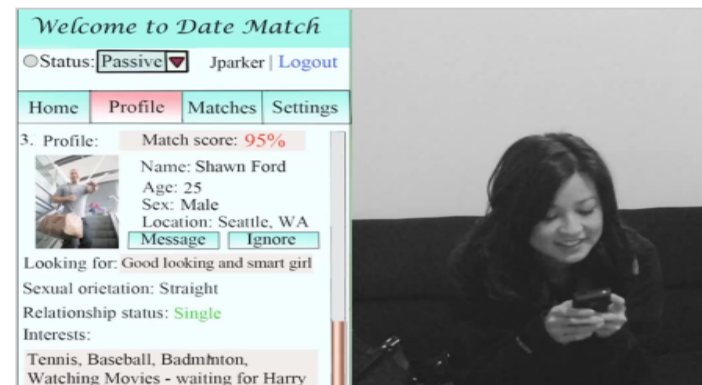
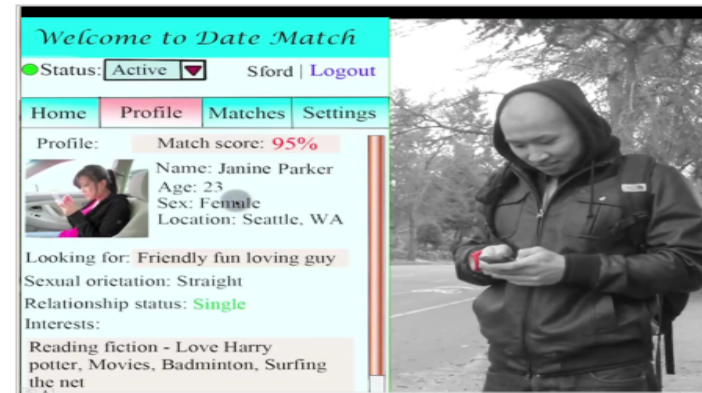


# P3: Video Prototype & Mock Ups



Figure 8: The finalized design prototype

<http://www.youtube.com/watch?v=DQRlvTudTg8>



# P4: Evaluation

- Users shown video prototype & screen mockups
- Interviewed and surveyed afterwards to provide feedback and opinions
- A bit high level, but still provided valuable feedback



# General Advice

- Spend a lot of time gathering information
- Do what makes sense, not what you know how to design for
- Look for ways to leverage stakeholder's interests
- Face time is worth a lot, try to work with other group members around if you can
- Have a specific stakeholder, design for someone in particular





# Break

- Talk amongst yourselves about potential groups
- Exchange contact information
- Talk about possible project ideas



# Upcoming

- The User-Centered Design Process
- Obtain a sketchbook
  - Sketch 3 sketches on whatever you want (open-ended)

