



# Design Process and User Research

Lecture 4, Week 2  
January 14, 2015  
CSC318HIS  
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# Announcements

## **Piazza**

We will be using the Piazza platform for discussions. All of you should have received an invitation to join.

**Assignment 1** is due Wednesday at 6 pm.

## **Tutorial rooms**

Tutorial room assignments will happen right now! Please go to your assigned tutorial room on Friday.

# Tutorial Room Assignment

We will split the lecture theatre into three sections.

Each section will go to a different tutorial room on Friday at 11 am where groups will be chosen.

Look around. If someone you absolutely want to work with is in a different tutorial, go sit in their section.

BAB024	WBI19	LM157
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# Tutorial Room Assignment

It is important that you get recorded as present in the tutorial room I assigned you.

Please remember and write down your tutorial room now.

BAB024	WBI19	LMI57
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# Challenges

# Challenges in ID

- **Communication**  
to group members, users, the general public
- **Design**  
follow a process, create effective and delightful interfaces
- **Research**  
ascertain user needs and evaluate your designs

# User Characteristics

**Physical** (age, gender, size, reach, weight)

**Environmental** (sound levels, table height, software)

**Perceptual abilities** (hearing, vision, heat sensitivity)

**Cognitive abilities** (memory span, reading level, tech skills)

**Personality/social traits** (likes, preferences, patience)

**Cultural traits** (language, symbols, dialog box flow)

**Psychological traits** (attitude & motivation, style)

**Job/role characteristics** (mandatory vs discretionary use, level of training, turnover rate, task importance)

# User Needs

## Maslow's hierarchy of needs



Understand what kind of need you are fulfilling for your users.

Make sure your design does not threaten a lower-level need while solving a higher-level one.



# The Designer's Challenge

*"To discover **real needs** that even the people who need them cannot yet articulate!"*

*... Understanding end-user **unmet unarticulated** needs"*

Don Norman, *Emotional Design*, pg. 74

# Research challenges

# Data Types

## Quantitative

numerical variables, measurements, statistics

***E.g., "Participants typed at an average rate of 66 WPM with a 3% error rate."***

## Qualitative

descriptions, anecdotes, rich data in context

words, pictures, observations

***E.g., "The cheap plastic-y feeling of the keyboard made users uncomfortable and hesitant to type at full speed."***

# Data Types

## Objective

observed facts, statistical evidence, impartial

***E.g., "Users scored 78% better on system aptitude tests after a company-wide ban of social media sites."***

## Subjective

opinions, intuition, bias

***E.g., "It feels cheap to me, I don't know. Did you say it was made in China?"***

Lots of debate surrounding these categories.

Which is important?

# Evaluation Methods

## Sample survey

Obtain a representative sample of a population in order to understand population-wide trends and preferences. Great for **generalizability**.

## Laboratory Experiment

Perform fine measurements of user performance in tightly controlled laboratory conditions. Great for **precision**.

## Field Study

Understand underlying user needs in the wild by observing them in their environment. Great for **realism**.

# Field Study Techniques

**Naturalistic observation:** no involvement, observation only

**Questionnaires:** wide distribution, many responses

**Interviews:** great detail, adapt to responses

**Focus groups and workshops:** multiple participants, consensus

**Studying documentation:** existing process/system

**Diaries/logging:** details on duration of usage and performance

# Phase I and Assignment 2

# The Design Challenge

We are following the prompt for the CONNECT:  
EnAbling Change 2015 Student Design Competition.  
Full details here:

<http://www.dx.org/index.cfm?id=58548>

*"Students are asked to submit projects that illustrate the idea of design for all: In that the design of products and environments is **usable by all people to the greatest extent possible, without the need for adaptation.***

*The competition is open to all design disciplines, but in 2014-15, **emphasis is on accessibility in design for web and digital platforms.***"



# The Problem Space

A **problem space** or **problem domain** is an area in which you have chosen to look for problems and create solutions.

This term's problem spaces will somehow relate to our design challenge prompt of being "usable by all people ... without the need for adaptation". The TA's and myself will approve your problem spaces before you continue working.

Problem spaces are not problems, and they do not presuppose solutions.

Beware of making the problem space too broad (e.g., "learning") or too narrow (e.g., "ordering pizza faster").

# The Project Stages

- Introduce yourselves (**A1**) and form groups.  
Come up with a problem space (**Phase I**)
- Conduct background research (**A2**) and submit a research plan and instruments for ascertaining user needs (**Phase II**)
- Administer research instruments (A3) and aggregate results into a set of design requirements (Phase III)
- Design prototype solutions (A4) and come up with a plan for evaluating your group's consensus solution (Phase IV)
- Evaluate another group's prototype (A5), then submit your final project as an abstract, poster and presentation.

# Phase I: Problem Space (5%)

You will have to submit a single document consisting of five parts:

Problem **space** (not suspected problem/s)

Target audience / User Group

High-level user research plan

Group details form

Group photos

# A2: Literature Review (10%)

In order to understand the problem space and finalize your research plan, you will need to find out what aspects of the problem space have been explored already and where your work fits into a broader context.

As a group, divide your problem space into researchable aspects or chunks and assign them amongst group members.

Each group member will submit summaries of three academic works relevant to their problem space aspect. These should be peer-reviewed publications from reputable sources (e.g., the ACM digital library).

Use [scholar.google.com](http://scholar.google.com) to find and the U of T library website to access publications.

# Good and Bad Design

# Example

## Tesla Model S





# Example

## 2015 Audi TT



# Air Inter Flight 148 (1992)

- Computer of the Airbus A320 only had two 7-segment digits indicating setting and two modes: angle of descent and rate of descent in feet.
- Pilots believed they were entering a descent angle of -3.3 degrees into the on-board computer (800 feet/min).
- Display had no indication of which mode was selected and accepted a rate of 3300 feet/min instead.
- Result: 87 deaths

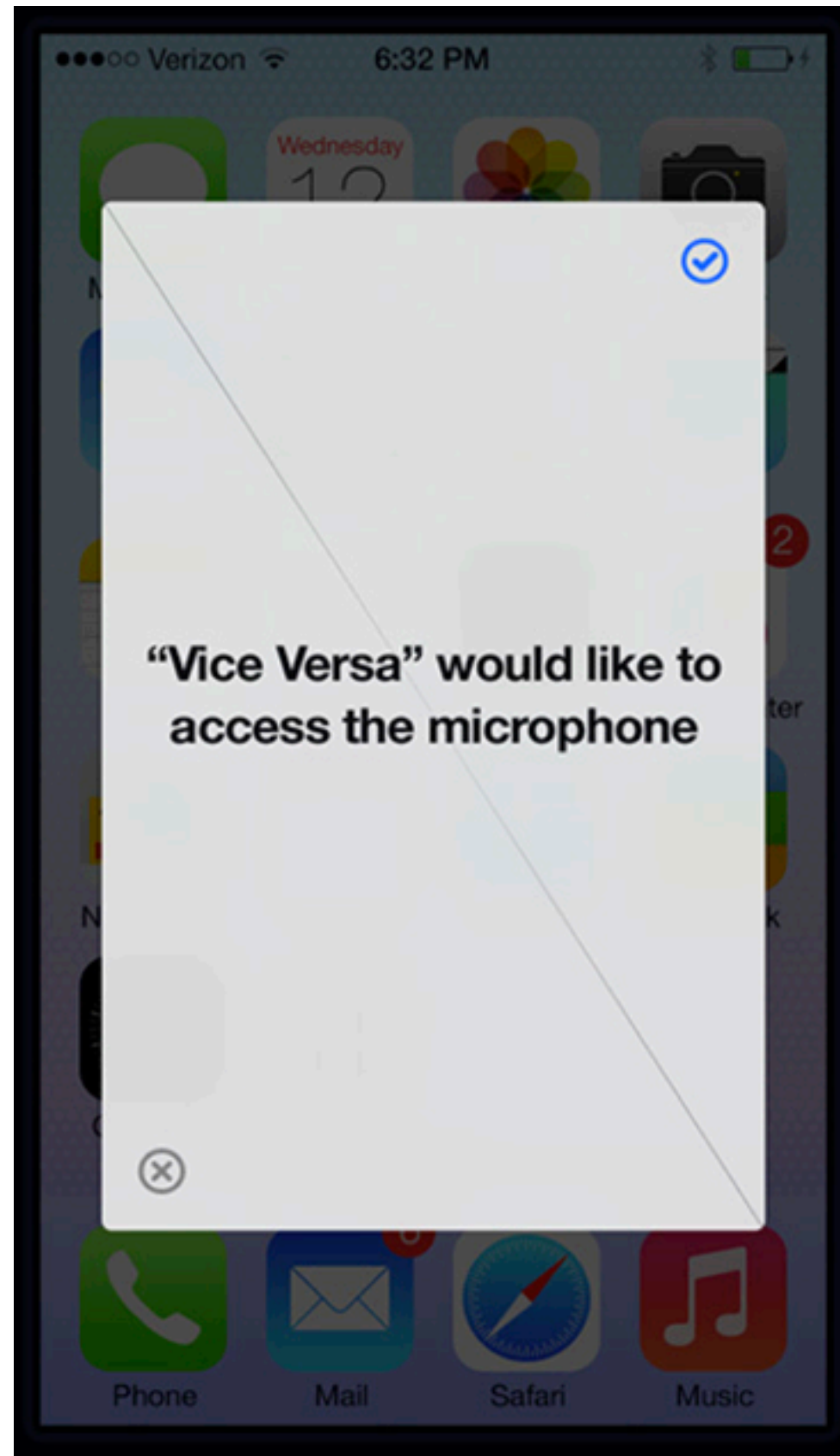




# Kennedy app



# VICE VERSA



# Questions?

# More group work!

This lecture is based on slides and content by:  
ILONA POSNER

Materials from:

*Interaction Design: Beyond Human-Computer  
Interaction.* Rogers, Sharp and Preece. 2011

## **References:**

*Requirements Engineering.* Kotonya & Sommerville, 1998

*Emotional Design.* Don Norman, 2005