

CS 449: Human-Computer Interaction

Spring 2016

Edward Lank

The Flipped Classroom

- This term, this course will be a flipped classroom course
 - Screencast lecture material (typically 3X15 minutes per lecture day)
 - In-class quiz on material, overview+discussion, worked exercise
- Experimental offering, but pedagogically appropriate.
- More details in syllabus.

Group Course

- This course is primarily comprised of group work
 - Self-selected teams of (preferably 3) students
 - Assignments and project are done in teams
- Groups should form at end of this class.
 - Post members of group on piazza this evening
 - No group, post on piazza this evening.
- Please decide on add-drop quickly

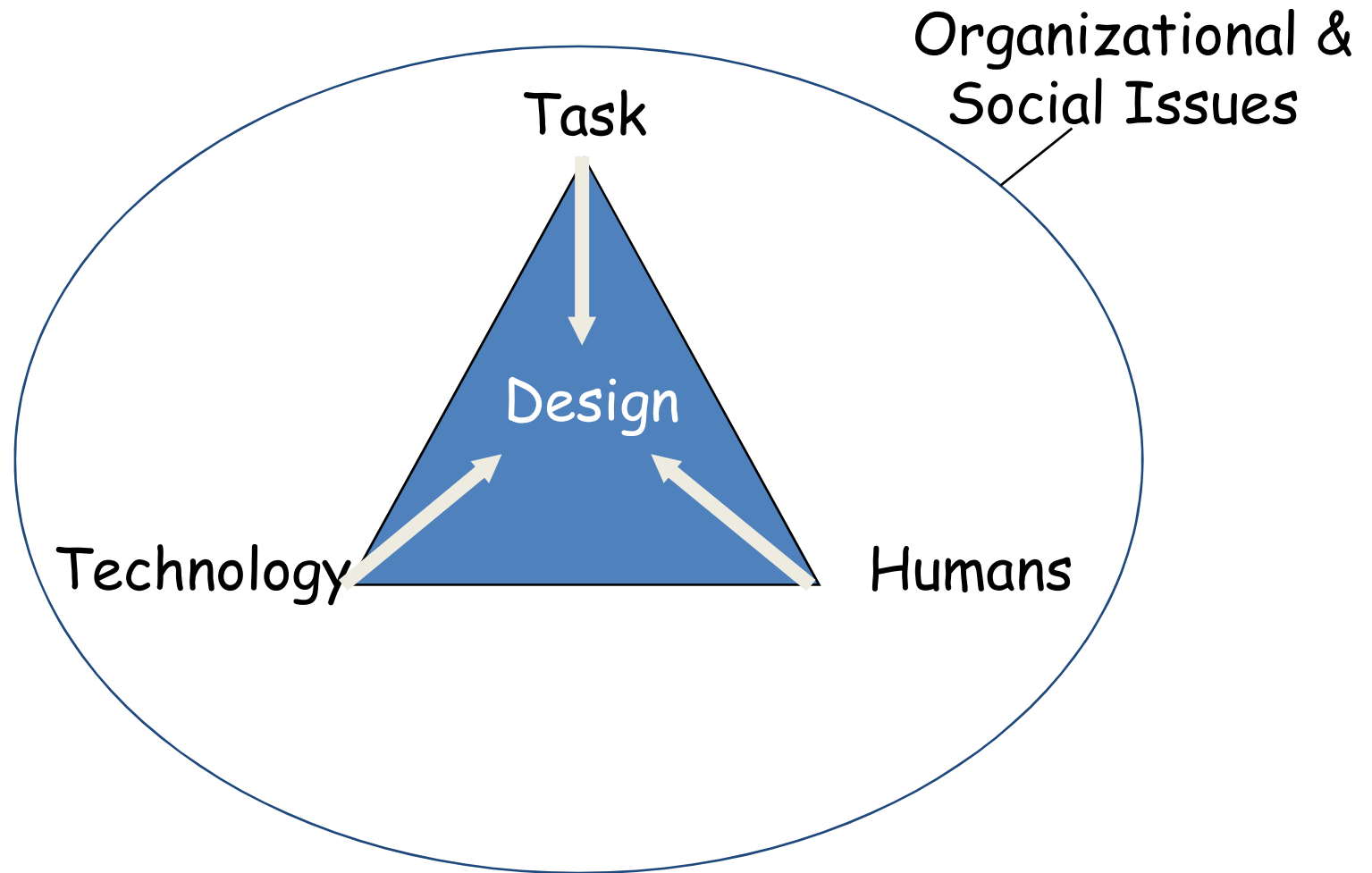
Course Introduction

- Quick course overview
 - What is HCI?
 - Why study it?
 - Understanding the course.
- Overview of Course Syllabus
 - Posted on-line (under development)
 - Course components and due dates

Human-Computer Interaction

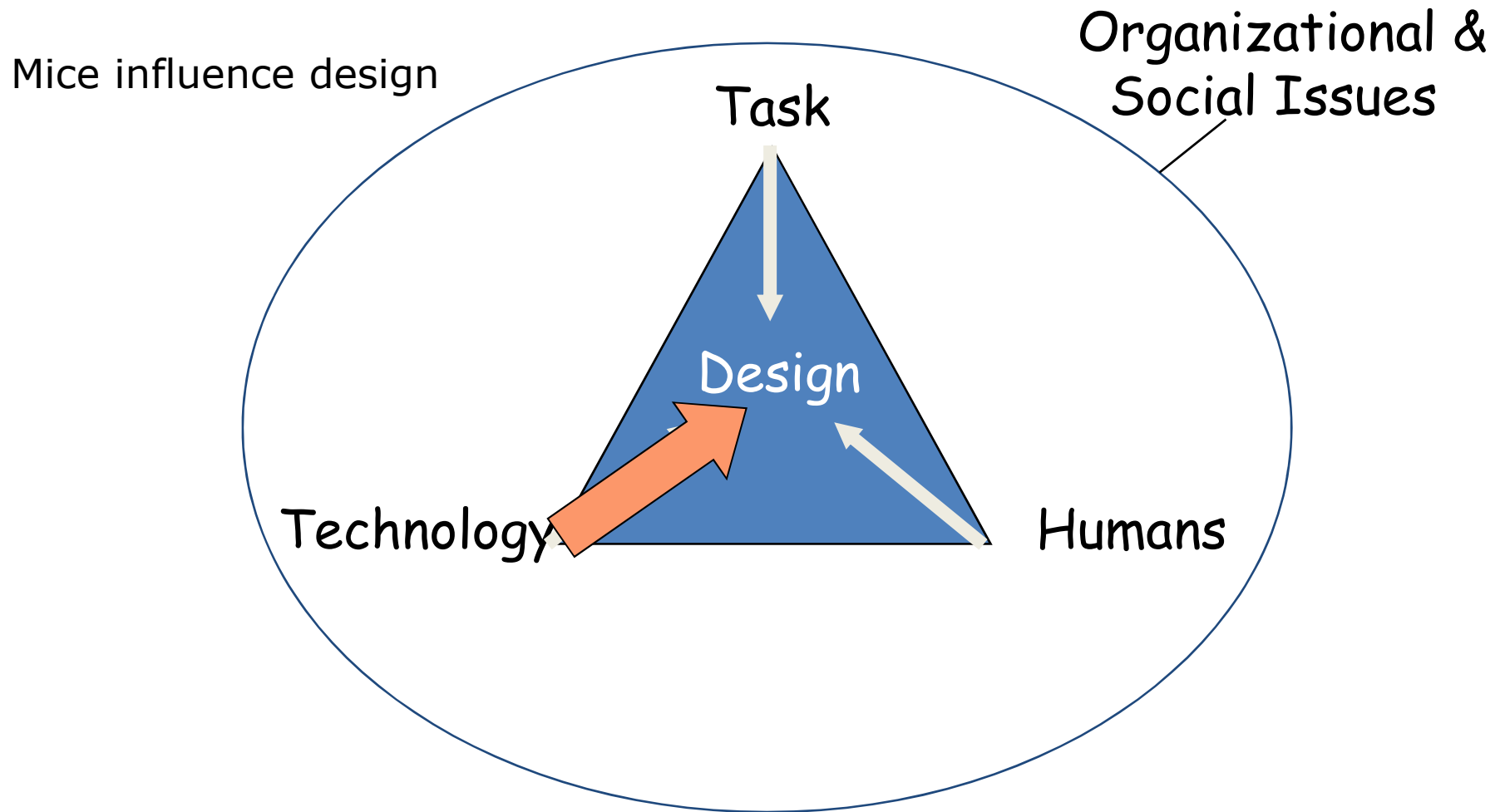
- Human:
 - The user of a software application or hardware device
- Computer:
 - The physical device, artifact, or hardware that provides some service to the human, typically via a computer program
- Interaction:
 - The communication between the human and the computer

What is HCI?

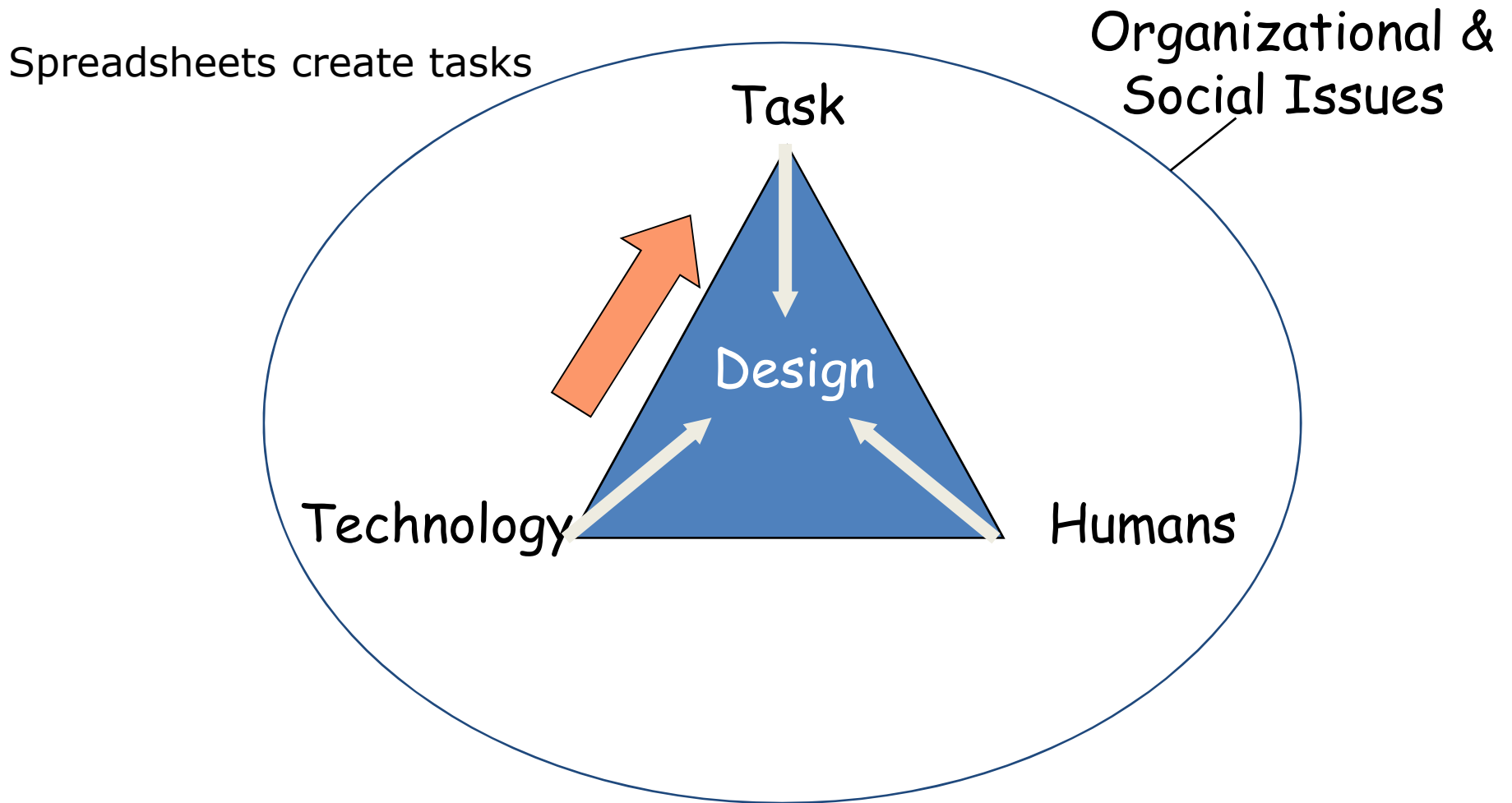


From James Landay

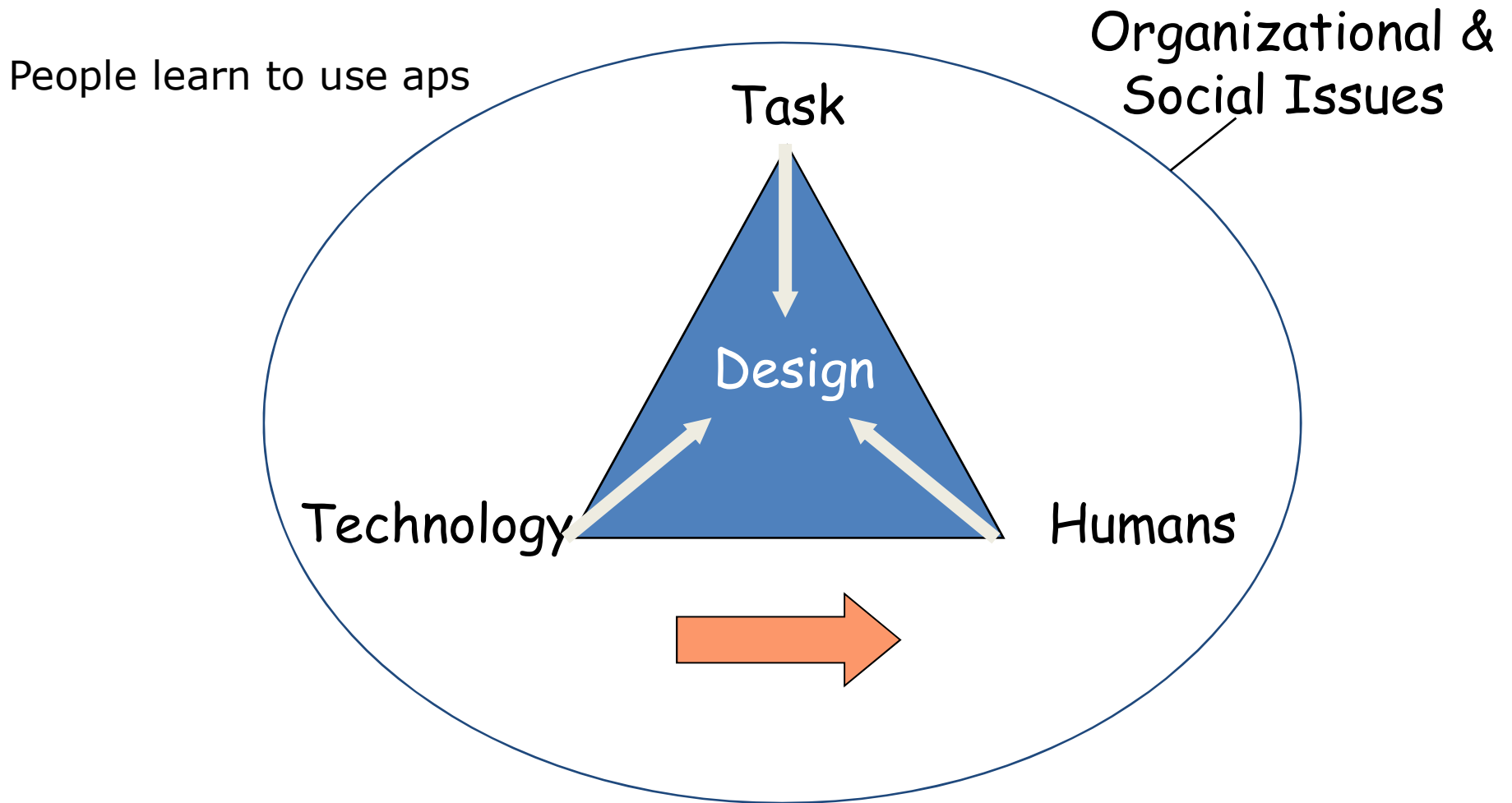
What is HCI?



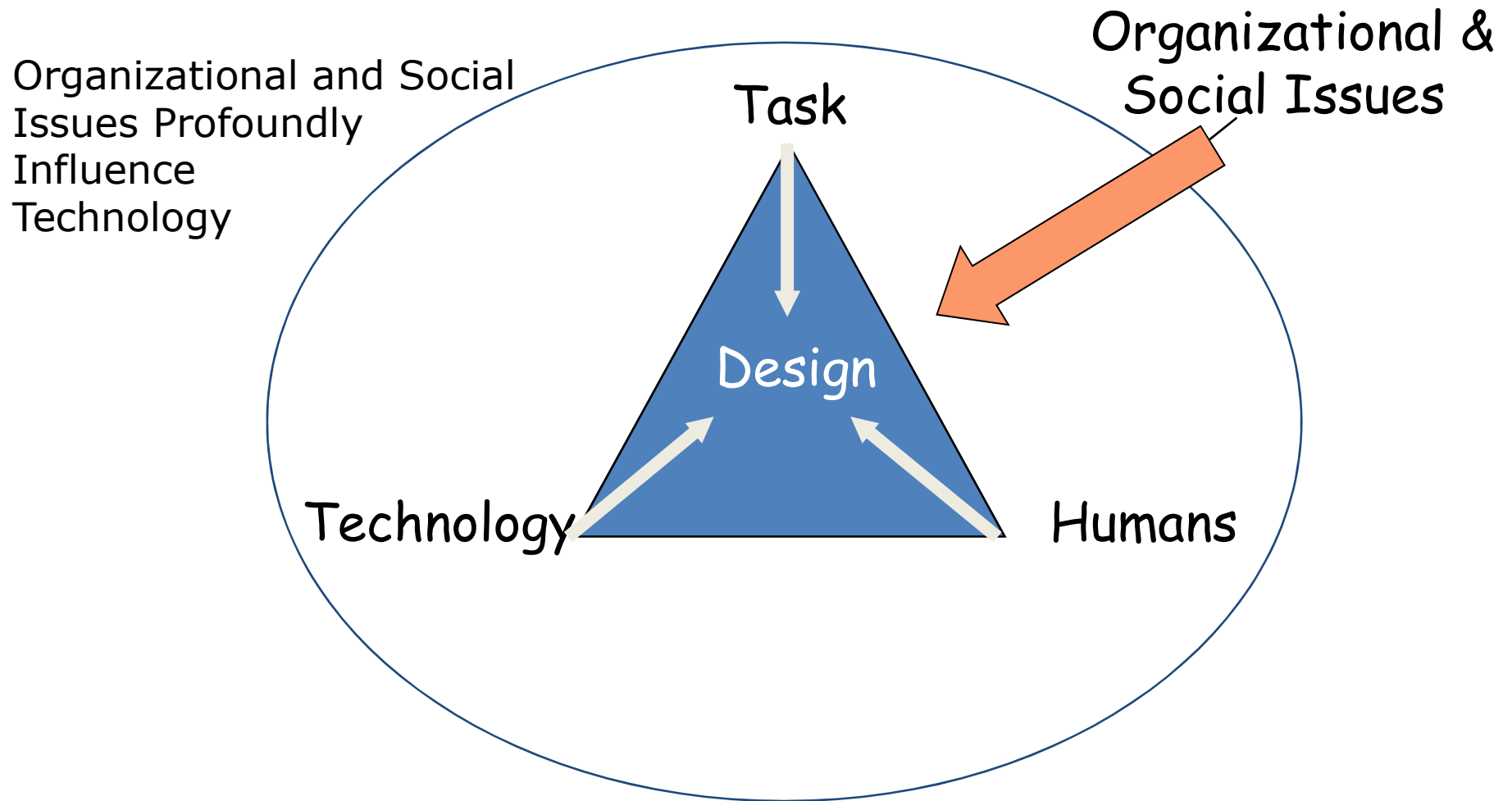
What is HCI?



What is HCI?



What is HCI?



What is HCI?

- The discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.
 - This course focuses on design and evaluation

Design

- Software engineering
 - Given task for software, elicit specific requirements, “design” an application
- Dictionary
 - To plan and fashion the form and structure of an object.
- HCI
 - Precedes “Task identification” stage
 - Figure out what should be built, and how artifact to be built will be used

Why study HCI



- Design is more difficult
- Systems do more and less
- Computers are more ubiquitous
- People neither know nor like computers



Understanding the course

- Distinction between designing a user interface and designing an application
 - UI
 - You know what the application should do
 - You design an interface that is simple and clear
 - Designing an application
 - Need to understand what should be built (and why?) before beginning

IDEO Design Philosophy

What are some characteristics of Ideo's Design Process?

- Capture domain knowledge from experts
- Identify specific breakdowns
- Brainstorm solutions to address those breakdowns
- Cross-pollinate ideas
 - Pull what's good from different design sketches
- Prototype solutions, evaluate, and then try again
- Develop a functional prototype and evaluate “in-the-wild”

Design in this Course

- Step-wise process:
 - Define a new way of working
 - Define how software integrates with that new way of working
 - Evaluate
 - Define and architect the system itself
 - Evaluate
 - Prototype the system at various levels, evaluating at each level
- To do this
 - Need to understand what is done now
 - Need to understand why people do things
 - What are goals and motivations?
- Design = defining a new way of working, supported by technology

Contextual Design

- Explicit process that supports design of software

9 weeks
No computers

- Do contextual inquiry
- Develop models of work for people you study
- Consolidate these models to produce a single picture of your user
- Redesign how user will work with your system as a component
- Define the overall structure of your system to work with user's new work process
- Mock-up and test with customers
- Implement

Course Syllabus

And Questions?

Course Resources

- Professor
 - Edward Lank
- TAs:
 - Edmund Liu
- Textbook (on 1 day reserve)
 - *Contextual Design* by Beyer and Holtzblatt
- Other references (on 1 day reserve)
 - *Rapid Contextual Design* by Holtzblatt et al.
 - *Interaction Design* by Preece et al.
 - *Designing Interactive System* by Benyon, Tuner and Turner
- Web page
 - <http://www.cs.uwaterloo.ca/~lank/CS449/>

Course Components

- Assignments
 - Two small assignments worth 5%
 - Group based
 - Excellent/Pass/Fail
- In-class quizzes
 - Each meeting of the class
 - 5% overall
 - 70% for full marks per quiz
- Course project
 - Main component of the course, worth 50%
 - Small group (3 – 4 students)
- Final worth 40%
 - Scheduled by exam office

Assignment 1

- Posted tonight
 - Select three different accessible groups to study
 - Email me the group, your group members, and how you will obtain entrée for each group.
 - Due May 17th
- Purpose
 - Get you started with your group
 - Ensure everyone stays on track
 - Allow me to guide group selection

Assignment 2

- Posted tonight
 - Observe people paying at self-serve checkout lanes
 - Three-slide PowerPoint on course piazza
 - Sequence model for scanning, sequence model for paying, other observations as list
- Purpose
 - Off-campus with group
 - Begin to identify elements of good and bad design
 - Look critically at each action
 - What is that for? Why do they do it that way? What if they did it this way?
 - Document these observations

Course Project

- Three phases
 - Develop an understanding of user, task, and breakdowns
 - Identify a specific problem, alternative designs, low fidelity prototypes
 - Evaluate prototypes, implement functional prototype
- Each phase has deliverables
 - Phase 1:
 - Models describing work plus 2-page write-up for design
 - Phase 2:
 - UED + Low-fi prototype sketches + evaluation schedule + 2-page executive summary
 - Phase 3:
 - Final write-up describing evaluation + semi-functional prototype system + video of final system design

Course Project

- Select a group to study and design for
 - Good candidates
 - Real estate agents
 - Wet/field scientists
 - By-law enforcement officers
 - Firefighters
 - Grade four school teachers
 - Newspaper editors
 - Volunteer coordinators
 - Etc. ...
 - Think about entree

Course Project

- Unacceptable candidates
 - Software engineers
 - Students
 - Tourists
 - Gamers
 - Project managers
 - Cell phones
 - Kiosks
- Bad candidates
 - Investment advisors (*)
 - Air traffic controllers (*)
 - Restaurant owners (*)
 - Funeral directors (*)
 - Co-op coordinators (*)

CS 449 Projects

- *Must* design to user needs, not to your whims
- *Must* demonstrate how your proposed system will improve users' lives
- Proof-of-concept prototyping means designs can take many forms...
- Must be possible using current technology


Pedals: Tablet-based application to support competitive cyclists



New Journal Entry

Date: Monday , March 19, 2007







Daily:

Sleep Range:  8:45 to 7:15


Resting Heartrate: 80 bpm

Notes: Great!

Food:

Breakfast	Lunch	Dinner	Snacks	Totals	
 4	 1	 3	 2	 1	 0

Training:

- * **Road Bike** -- Location: *Hilton Falls*, Distance: 40 km, Duration: 2:0, Avg. Heart Rate: 140bpm
- * **Mountain Bike** -- Location: *Kanata Trail*, Distance: 30 km, Duration: 2:15, Avg. Heart Rate: 
- * **New Entry...**

Workouts:

- * **Pullups** -- Muscle Groups: *Arms*
- * **treadmill** -- Muscle Groups: *Legs, Torso, Cardio*
- * **New Entry...**

Activities

- * **Squash**
- * **tennis**
- * **New Entry...**

Done

Web-based story manager system for newspaper editors

Create Story List - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost/trunk/CreateStoryList.aspx?Section=Arts

Windows Marketplace Customize Links Free Hotmail Windows Windows Media Untitled Page

Overview of the Week Manage Writers Manage Story List

Arts Story List

Finalize Story List

Sort by: Lead

Bolton Submits Notice End... x
Deadline: 12/5/2006 5:00 PM
Word Length: 500

Holiday Buyers Guide 2006... x
Deadline: 12/5/2006 5:00 PM
Word Length: 500

Kremlin intrigue feeds th... x
Deadline: 12/5/2006 5:00 PM
Word Length: 500

Stelmach's victory surpri... x
Deadline: 12/5/2006 5:00 PM
Word Length: 500

Wi-Lan reaches patent dea... x
Deadline: 12/5/2006 5:00 PM
Word Length: 500

Add a Story

Selected Story:

Lead: Kremlin intrigue feeds theories on poisoned-spy case

Word Length: 500

Deadline:

December 2006						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

 At: 5 pm

Comments:

Save

Done

Tablet-based app. to support catering chefs creating event menu

The screenshot displays a tablet-based application for creating event menus. The interface is organized into several sections:

- Top Bar:** Includes navigation icons for Home, Undo, Redo, Notes, and Calculator. On the right, it says "Solution Editor" and has buttons for "New Event...", "Templates...", and "Checkout".
- Client Info:** A section on the left with a "Client Info" button.
- Event Details:** A central area showing the event date "September 12th, 2006", the number of guests "200 people", and the location "Grand Wayne Center". It also has tabs for "Monday", "Tuesday", "Thursday", "Lunch", and "Dinner".
- Menu Selection:** A section on the left with buttons for "Appetizers", "Entrées", "Beverages", and "Desserts". The "Entrées" button is currently selected.
- Entrée List:** A list of entree options with their prices and a right arrow button for each:
 - Prime Rib \$20
 - Lobster \$32
 - Teriyaki Chicken \$18
 - Créole Chicken \$22
 - Honey Barbecue Ribs \$17
 - Zesty Salmon \$21
 - Grilled Top Sirloin \$32
 - Fillet Classico \$14
- Event Summary:** A section on the right titled "HCI Party" for "September 12th, 2006". It shows a list of selected items with checkboxes, quantities, and costs:

Item	Quantity	Cost
<input checked="" type="checkbox"/> Prime Rib	5	\$100
Notes: _____		
<input checked="" type="checkbox"/> Zesty Salmon	10	\$210
Notes: _____		
<input checked="" type="checkbox"/> Grilled Top Sirloin	6	\$192
Notes: _____		
<input checked="" type="checkbox"/> Fillet Classico	4	\$56
Notes: _____		
Subtotal		\$558

Basketball Scorekeepers

Score: 5
Last Basket: 2 points at 19:47.2

Add:

Last TO: never
TOs remaining: 2

Total Team Fouls: 0

9

13

21

23

67

74

77

81

Next Jump Ball is

Click to toggle

Last Jump: 19:55.9

19:42.9
1st Half

Score: 8
Last Basket: 2 points at 19:50.2

Add:

Last TO: never
TOs remaining: 2

Total Team Fouls: 0

7

14

34

36

45

62

66

69

74

82

Newspaper Section Editors

Photographer View

View or Add Events View Submitted Photos and Workspace Upload Photos

Overall Events List:

Event Name	Date & Time of Event	Section	Due Date	Photos S...
HCI Poster Sessi...	2008-04-01 17:00	Science & Tech	2008-04-03	Y
Toronto Auto Show	2008-04-02 17:00	Sports	2008-04-02	Y
Writeup 3	2008-04-02 17:00	Sports	2008-04-02	N

Add Selected Event as an Event of Interest

Your Events of Interest:

Event Name	Date & Time of Event	Section	Due Date	Photos S...
HCI Poster Sessi...	2008-04-01 17:00	Science & Tech	2008-04-03	Y
Toronto Auto Show	2008-04-02 17:00	Sports	2008-04-02	Y
Writeup 3	2008-04-02 17:00	Sports	2008-04-02	N

Remove Event as Event of Interest

Properties for Selected Event:

Description:
Fishbowl, DC 4:00

Event date & time:
2008-04-01 17:00

Due date:
2008-04-03

Section Editor:
User

Comments:
I would attend but I have class that day!

Photographer View

View or Add Events View Submitted Photos and Workspace Upload Photos

Local Directory:

C:\HCI\Pics1

Browse...

Submitted Photos For:
Toronto Auto Show

Filename: IMG_0208.JPG ★☆☆☆☆

Tags for: Selection Submitted Photos Comments

By:

Section:

Event:

Date:

Preference: ★☆☆☆☆

Nothing selected

Return to Previous Screen

Teachers

Microsoft Excel - mark sheet NEIL

File Edit View Insert Format Tools Data Window Help

V10 =

Upload Data

Auto Check Marks

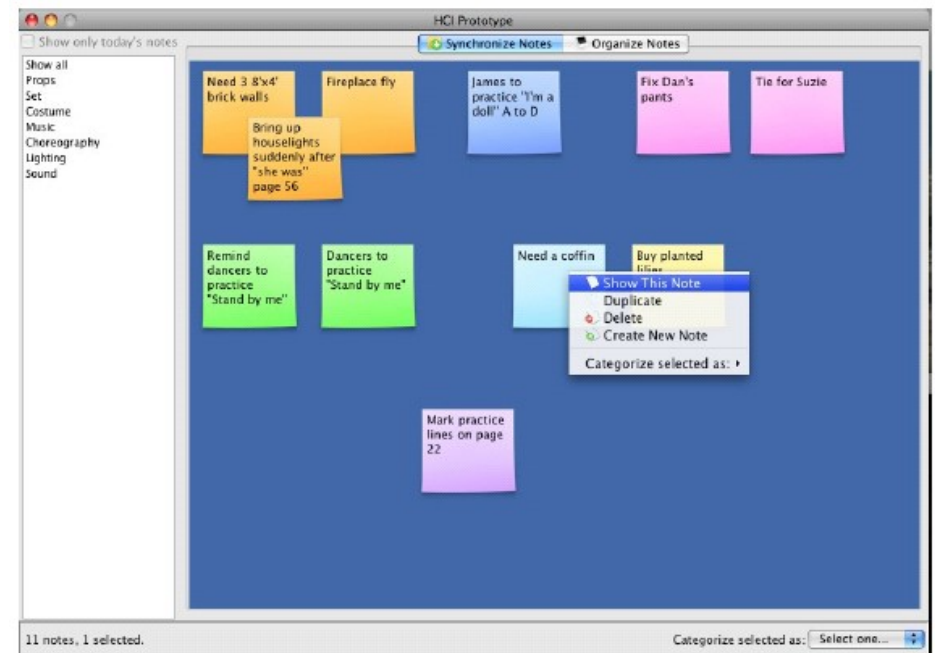
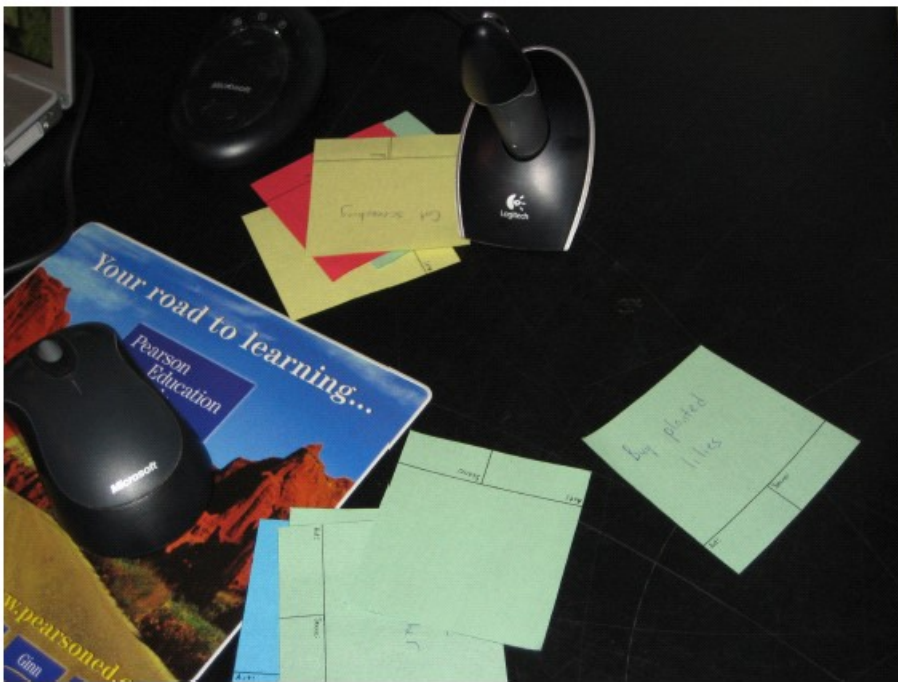
Filter Type Apply

French Gr. 4

	A	B	C	D	E	F	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
							Questions "Le Petit Nicolas"	Evaluation finale	Evaluation Finale	Evaluation Finale	Bonus Presentation	"Je m'appelle"								
							WR	OR	RE	WR	OR	OR								
1																				
2																				
3																				
4							Ackley, Jonhathan	10	9	10	9	10	9							
5							Ahmed, Mo	9	9	9	9	7	8							
6							Avondale, Catherine	4	10	9	2	8	8							
7							Brea, Sheila	7	10	10	7	9								
8							Bronze, Michael	8	10	10	7	10								
9							Brown, Brian	9	8	10	8	9								
10							Chin, Nicole	2	9	9	9	7								
11							Dreary, Leanne	7	10	9	10	8								
12							East, Mary	7	8		8	9								
13							Ferguson, Jon	8	10	8	8	9								
14							Flower, Mike	9	8	8	9	10								
15							Jain, Varun	10	9	10	9	9								
16							Jehr, Matthew	8	7	10	2	10								
17							Jeno, Milena	9	8	10	7	10								
18							Kao, Cristian	7	2	9	7									
19							Kwan, Laetitia	8	7	8	8	8								
20							Lae, Ming	8	7	9	9	9								
21							Lo, Margaret	9	8	10	7	10								
22							Lu, Jay	7	9	8	7	8								
23							Man, Daniel	8	10	10	8	9								
24							Meht, Brock		9	10	9	9								
25							Mildred, Loona	10	8	7	10	10								
26							Mock, Sam	10	9	8	9	10								
27							Newman, Alli	9	7	9	9	10								
28							Ng, Allan	10	8	9	4	9								

French Gr. 4 / test -er verbs / Ackley, Jonhathan /

Stage Managers



Other Projects

- Convenience Store Managers
- Teachers: high school math and science, high school phys ed, grade 4, core french ...
- Recruiters
- Amateur Cinematographers
- Liaison Librarians
- Real Estate Agents
- Admin Assistants in University
- University Safety Officers
- Funeral Directors

More Projects

- High school math and science teachers
- Automotive Service Advisors
- Psychology Researchers
- Engsoc office employees
- Coop field coordinators
- Hobby store owners
- Amateur/Semi-Pro conductors
- Insurance adjusters
- Campus police
- Air traffic controllers
- Investment advisors
- Intermural league coordinators
- Small business owners
- Restaurant owners

Important Dates

- Poster Session 1:
 - May 31st
- Phase 1 write-up + models
 - June 3
- Phase 2 UED + Sketches
 - June 24th
- Poster session 2
 - July 5th
- Phase 2 final UED, Sketches, Evaluation plan
 - July 8th
- Poster session 3
 - July 21st
- Final write-up
 - July 30th
- Design Critiques
 - TBD. See web page.
- Groups will present their project to others in the class
- Goal is to collect feedback
- Attendance at critiques is mandatory
 - Attendance buys you 5% of your project score

Questions?