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

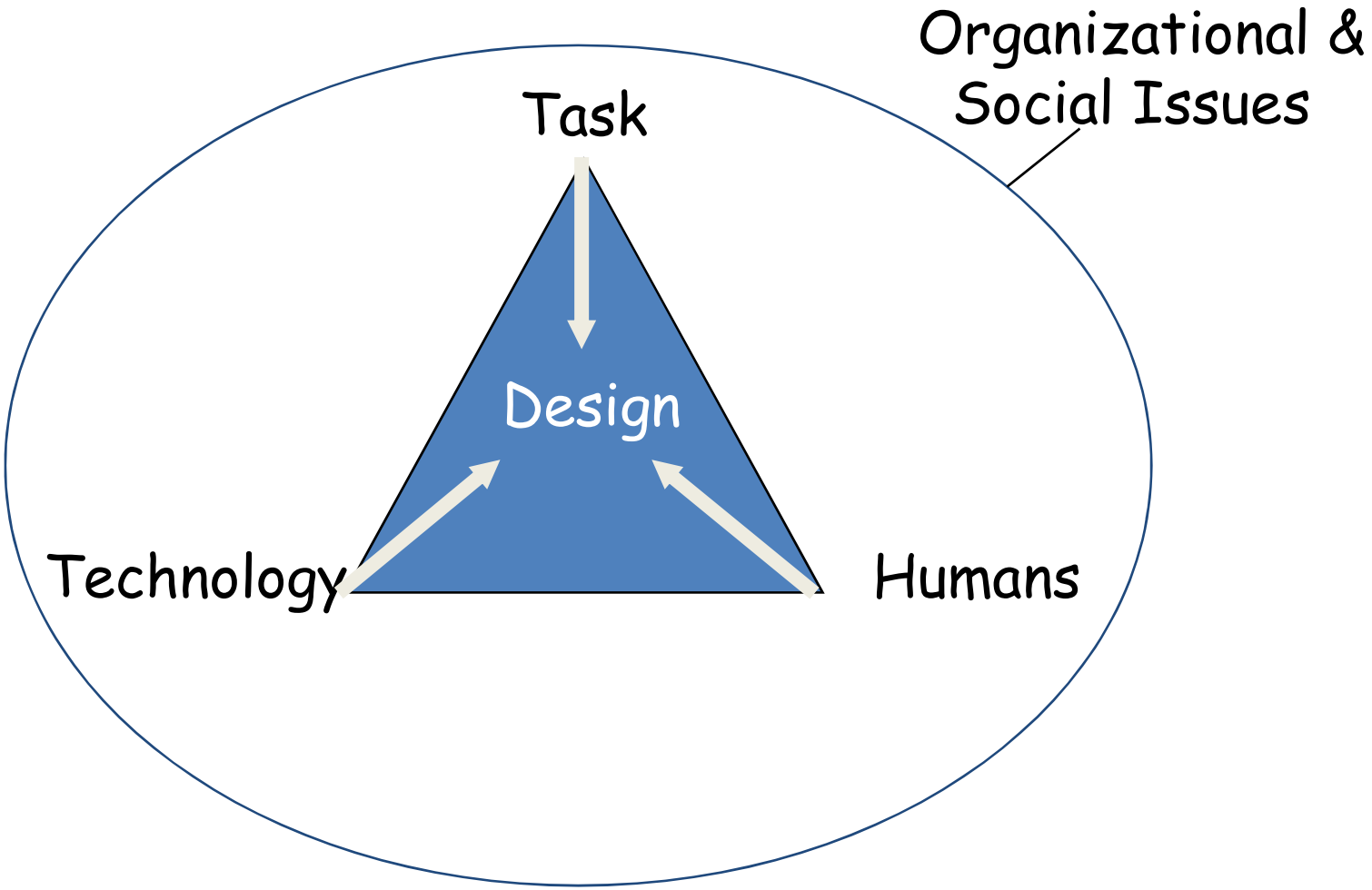
Course Introduction

- 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

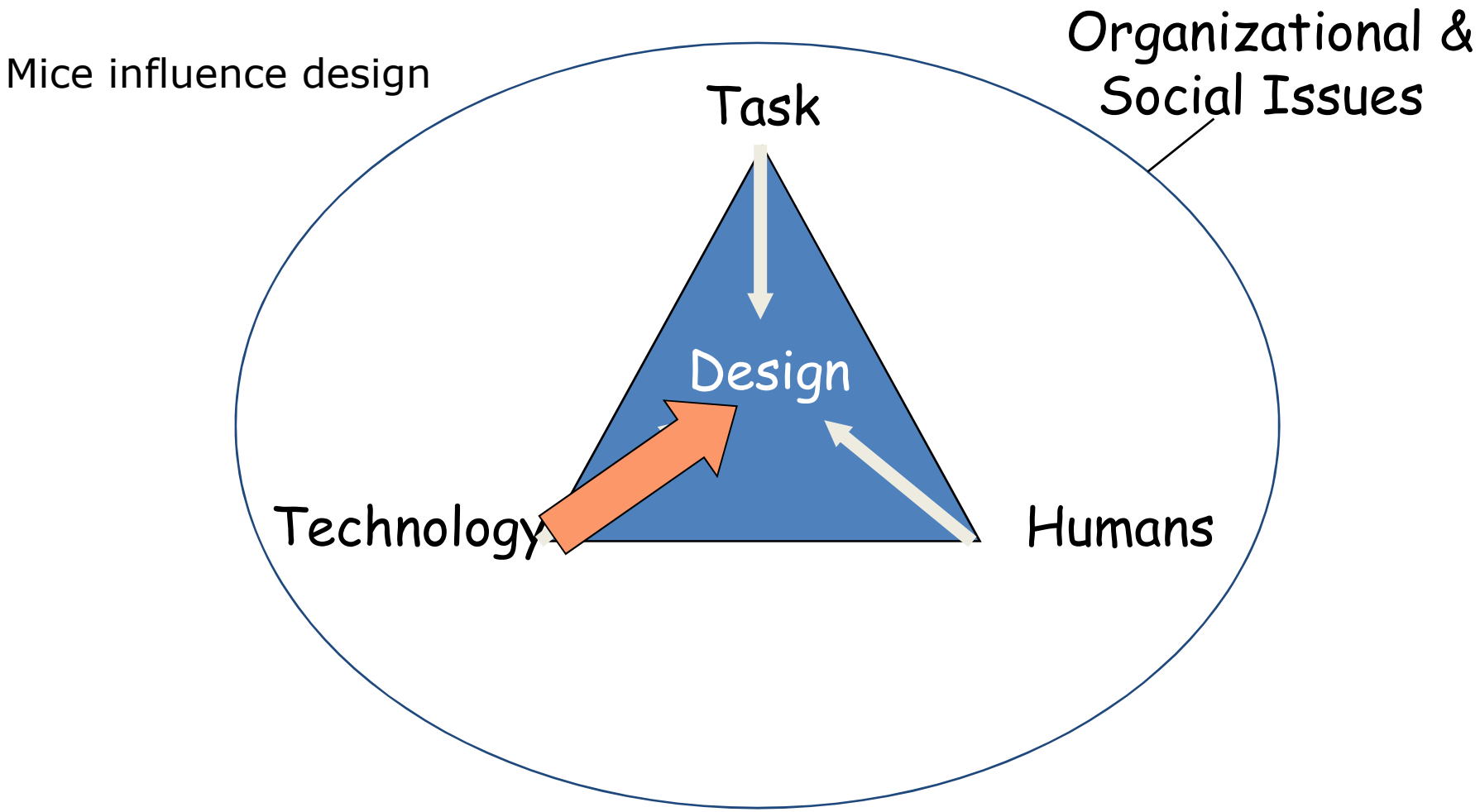
- Human:
  - The user of a software application or hardware device
- Computer:
  - The physical device, artifact, or hardware that provides some service to the human, typically via a computer program
- Interaction:
  - The communication between the human and the computer

What is HCI?

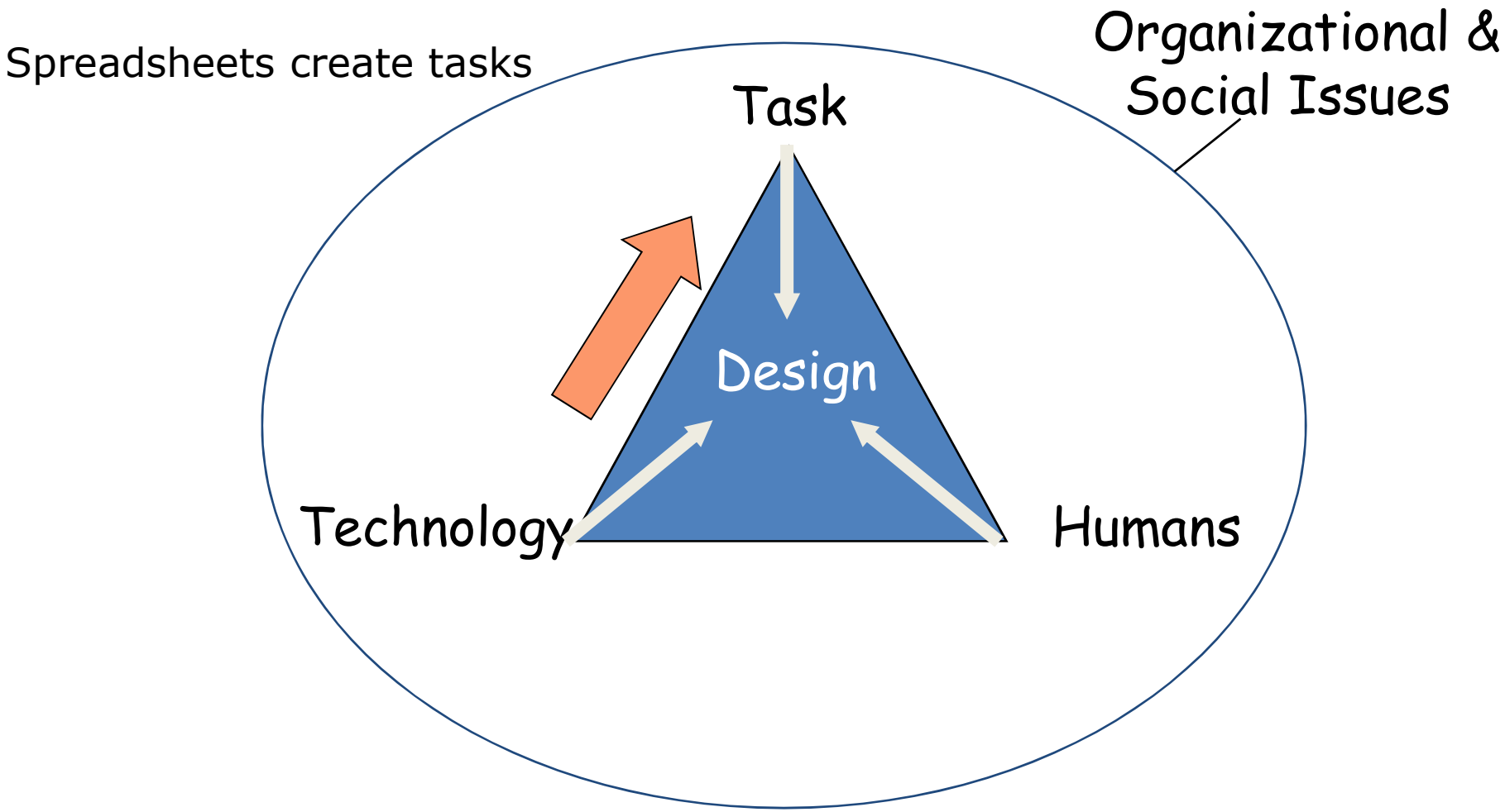


From James Landay

What is HCI?

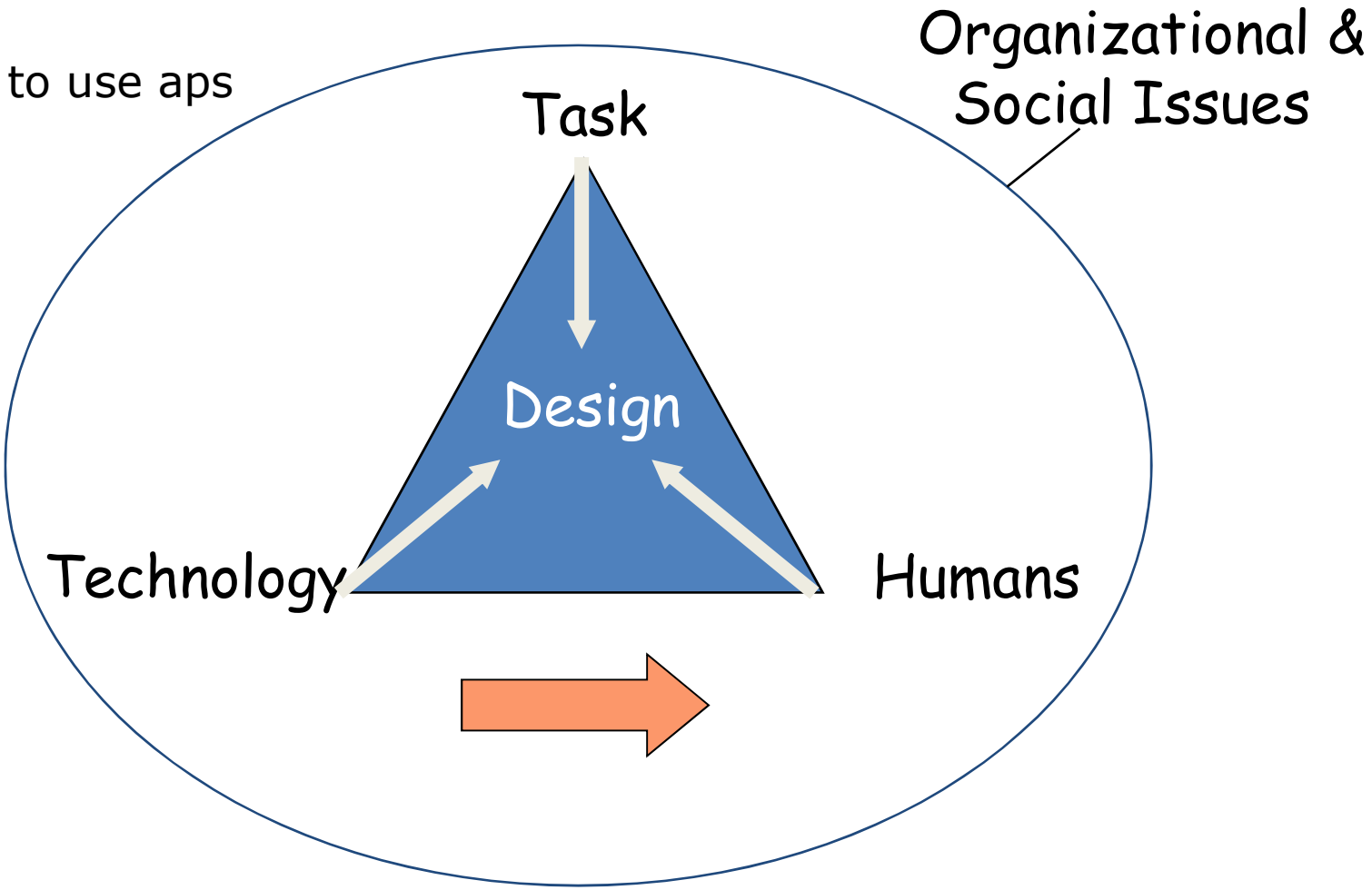

Mice influence design
Organizational &
Social Issues
Task
Design
Technology
Humans

What is HCI?


Spreadsheets create tasks
Organizational & Social Issues
Task
Design
Technology
Humans

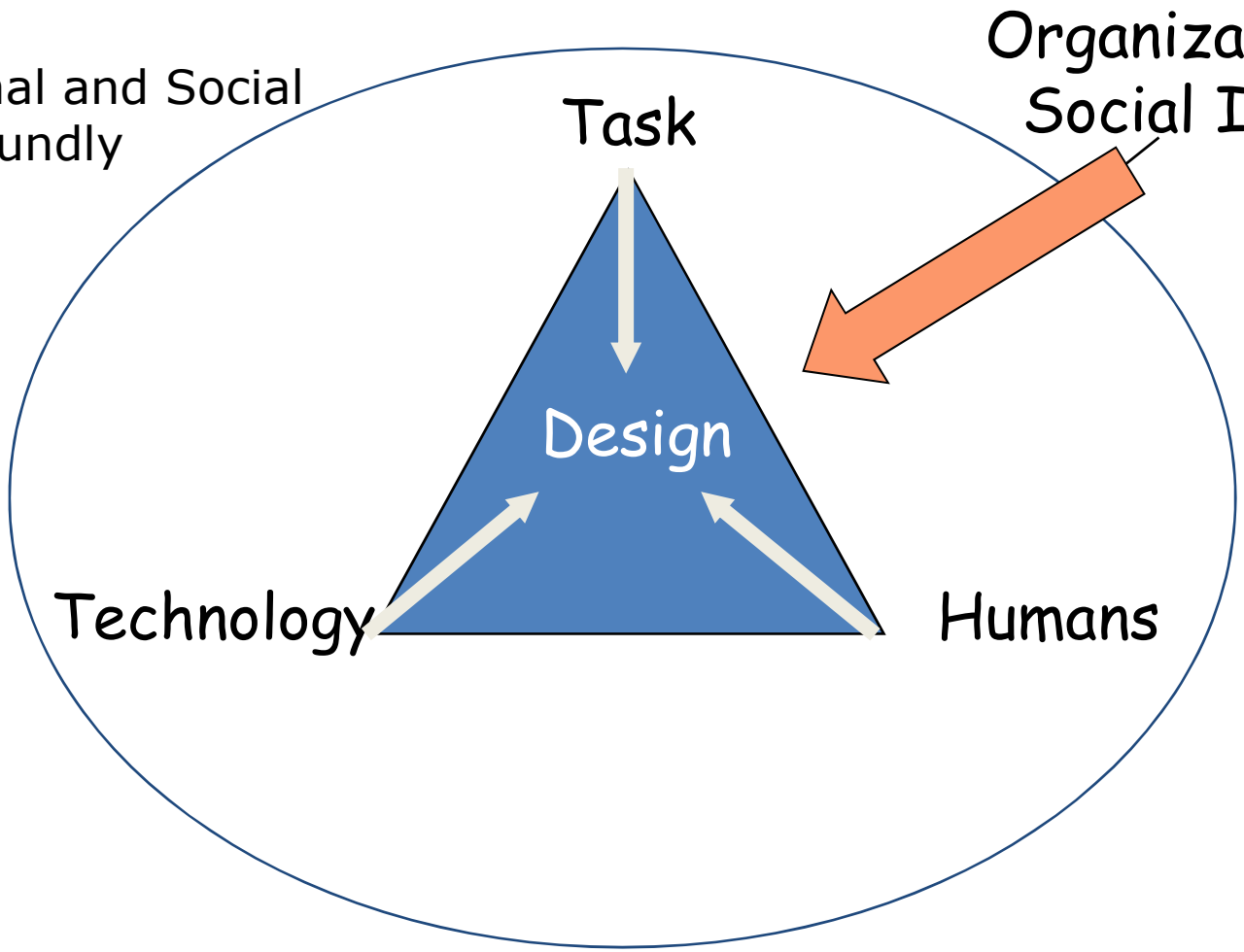
What is HCI?

People learn to use aps



What is HCI?

Organizational and Social Issues Profoundly Influence Technology



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
  - 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

9 weeks
No computers

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

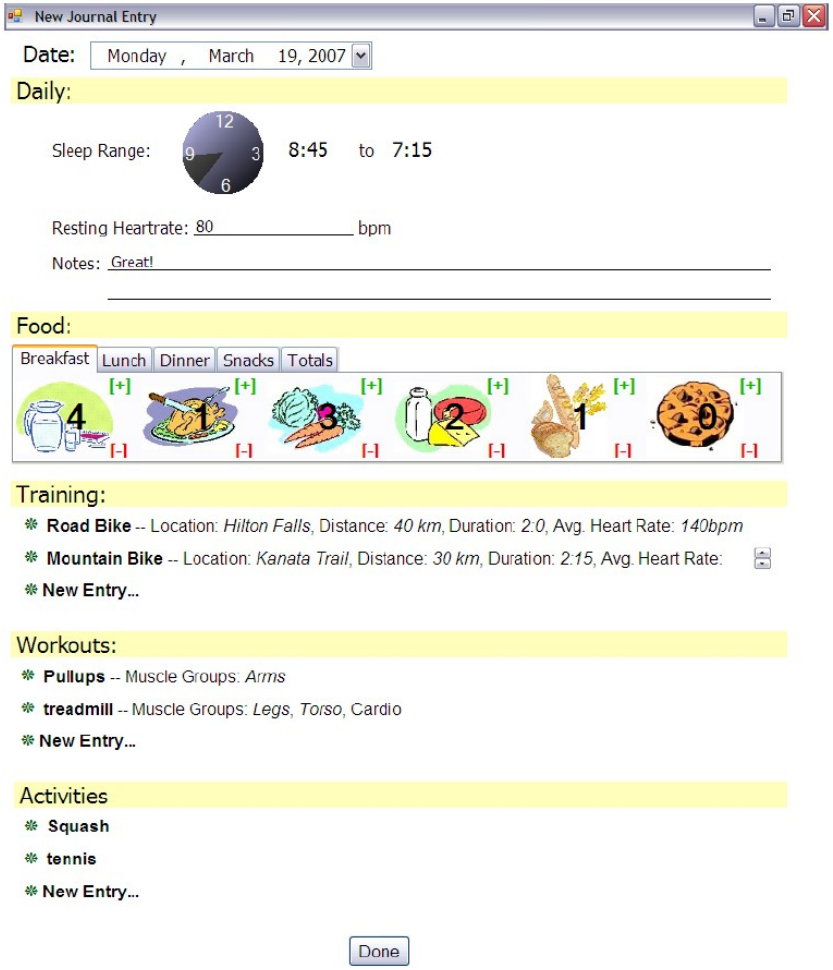
Course Project

- 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 (*)

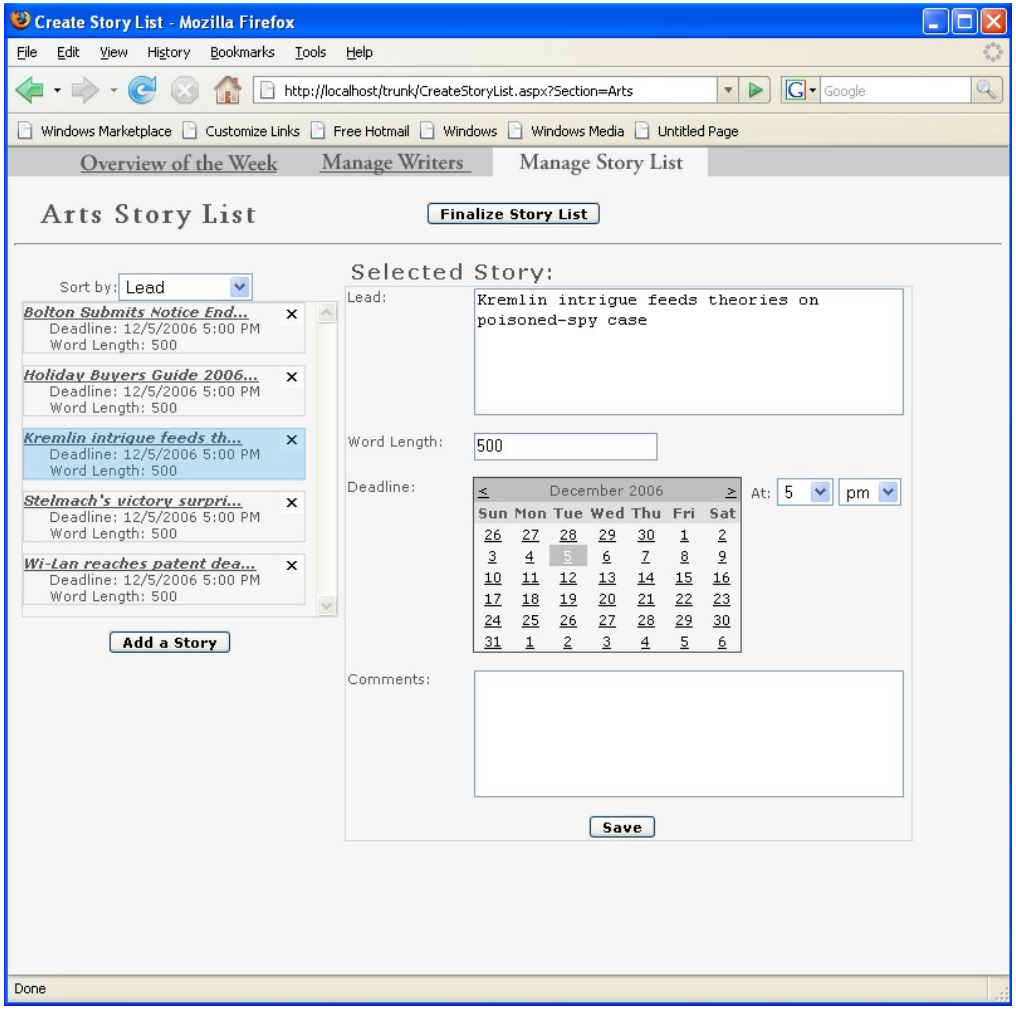
CS 449 Projects

- *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

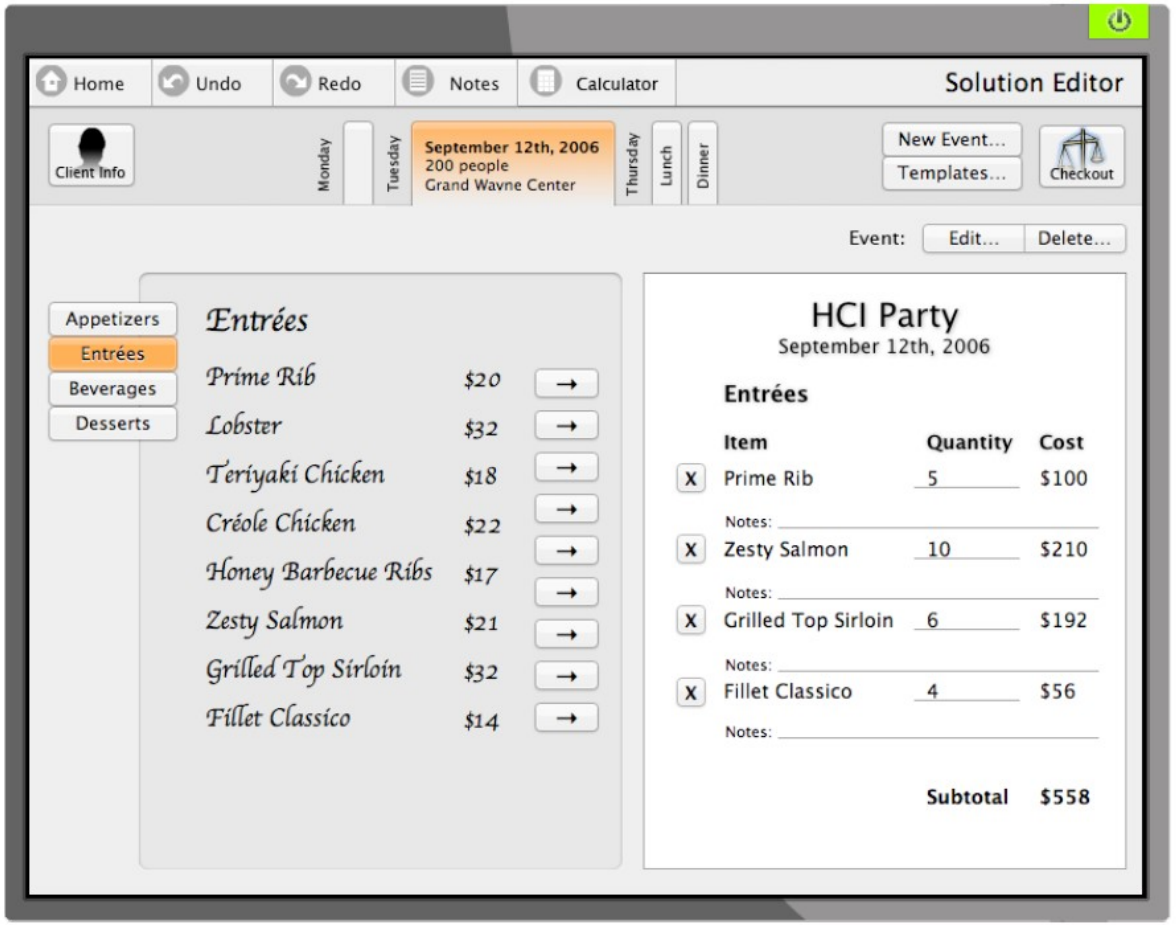
Pedals: Tablet-based application to support competitive cyclists



Web-based story manager system for newspaper editors

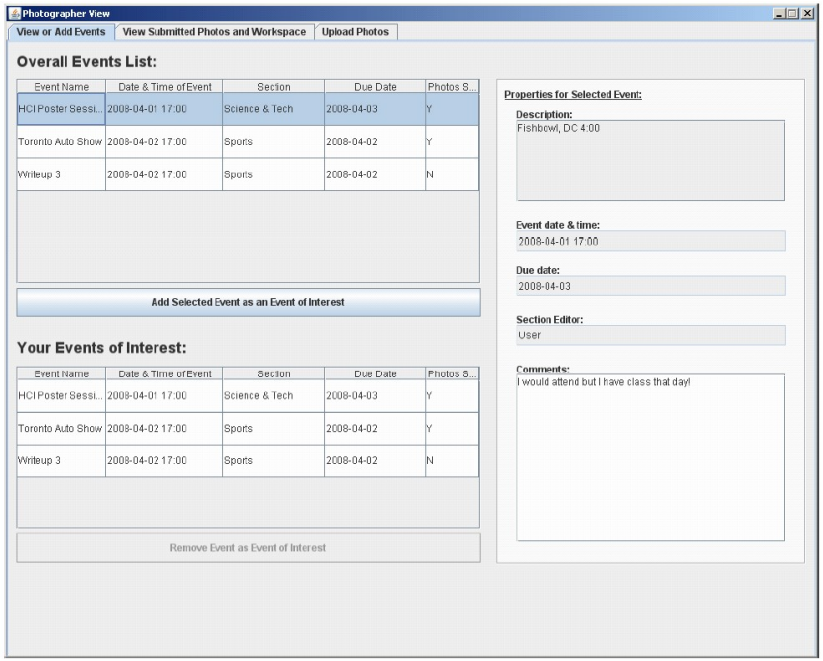


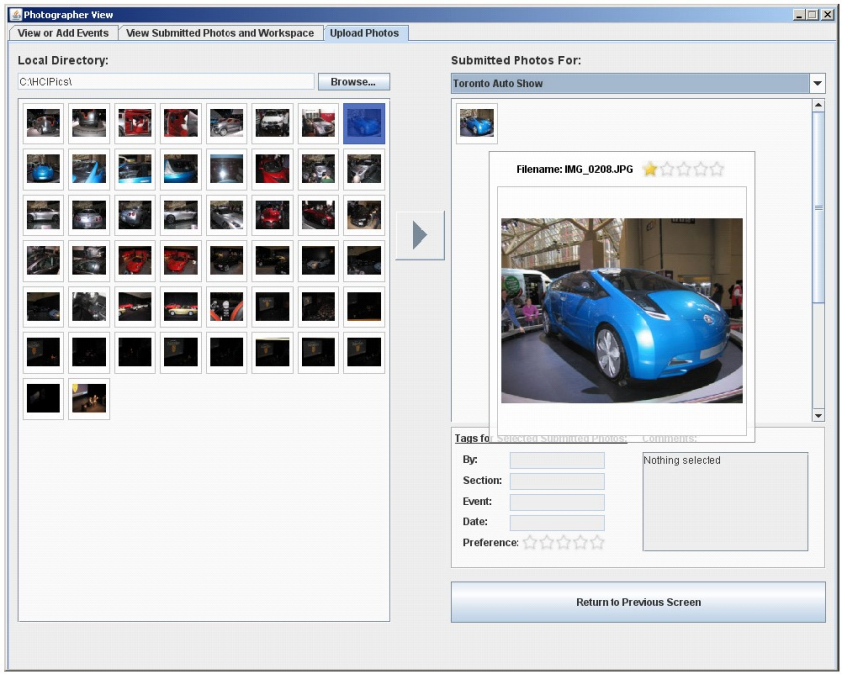
Tablet-based app. to support catering chefs creating event menu



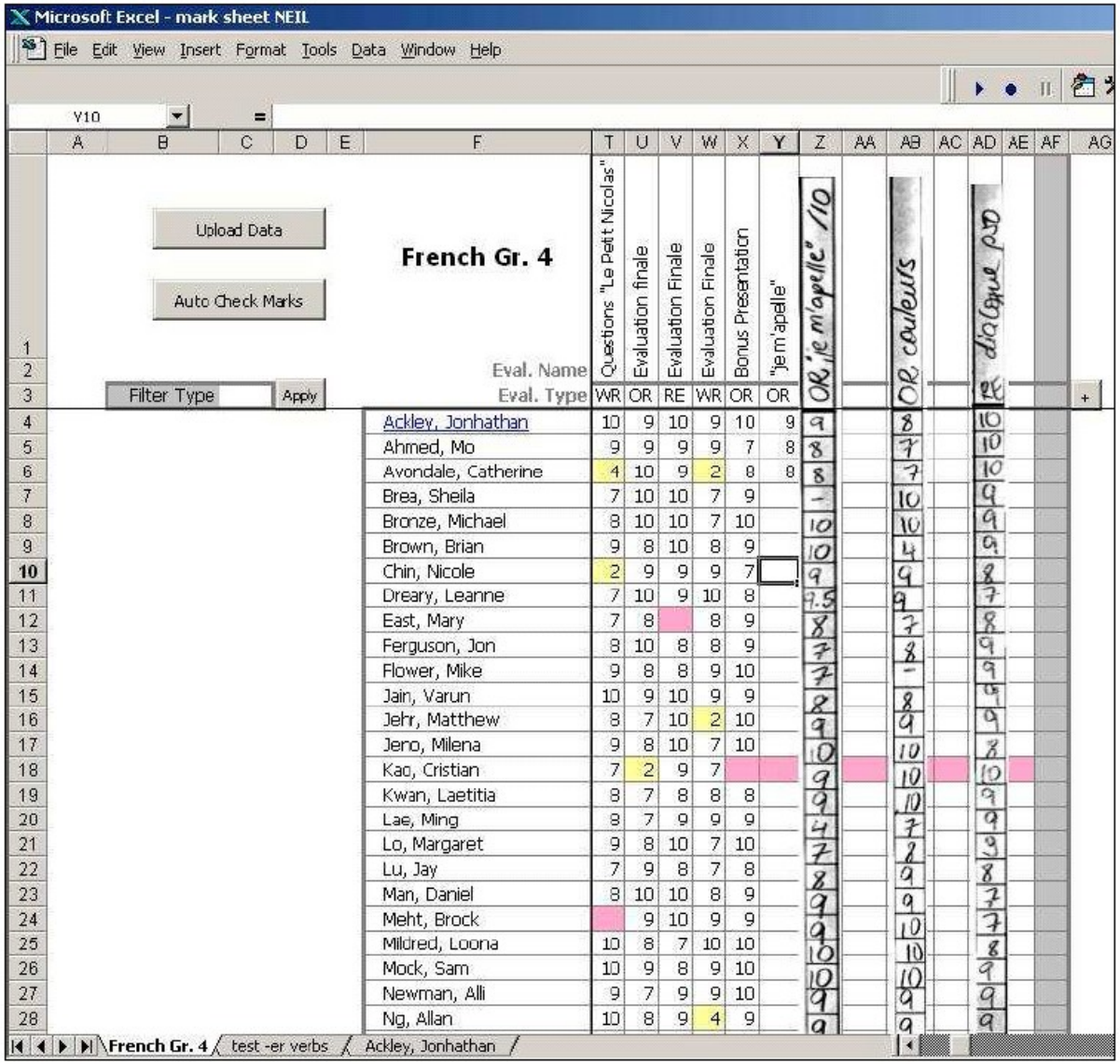
Basketball Scorekeepers

Newspaper Section Editors

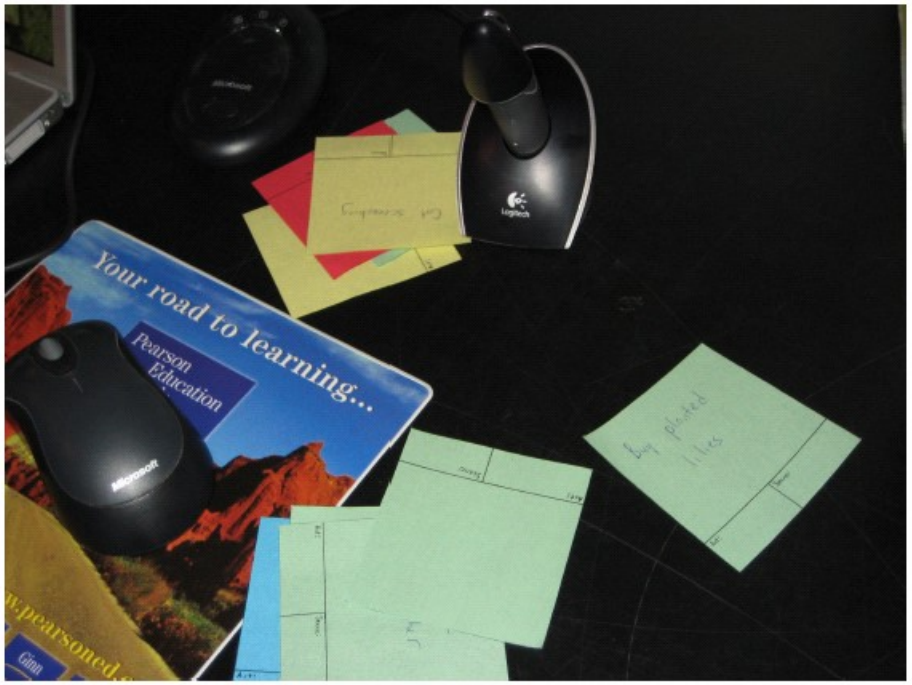


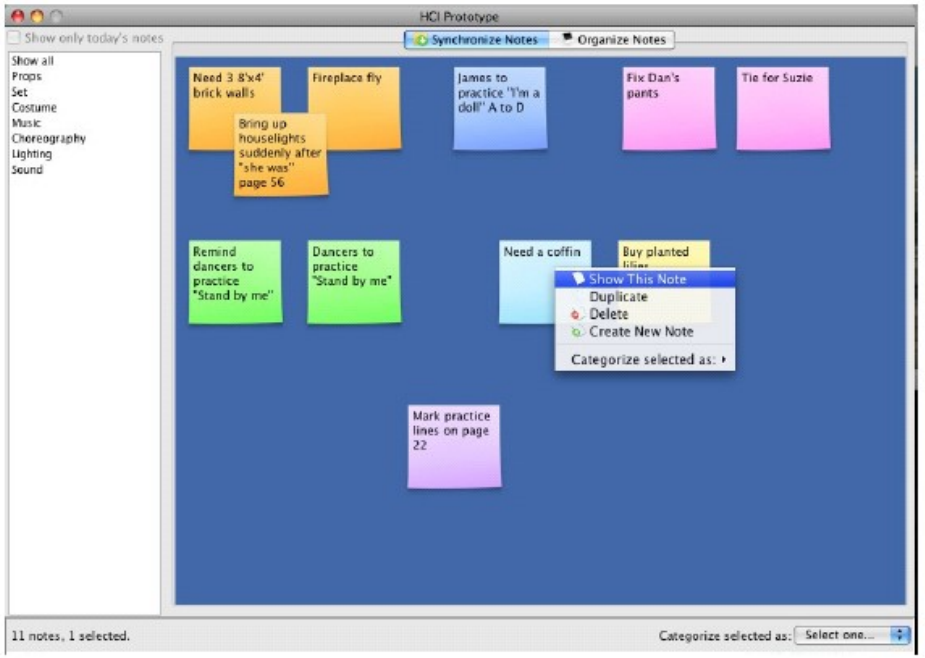


Teachers


Microsoft Excel - mark sheet NEIL
File Edit View Insert Format Tools Data Window Help
Upload Data
Auto Check Marks
French Gr. 4
Filter Type
Apply
Eval. Name
Eval. Type
Questions "Le Petit Nicolas"
Evaluation finale
Evaluation Finale
Evaluation Finale
Bonus Presentation
"je m'apelle"
OR "je m'apelle" /10
OR couleurs
OR dialogue /10
WR OR RE WR OR OR
Ackley, Jonhathan 10 9 10 9 10 9 9 8 10
Ahmed, Mo 9 9 9 9 7 8 8 7 10
Avondale, Catherine 4 10 9 2 8 8 8 7 10
Brea, Sheila 7 10 10 7 9 - 10 9
Bronze, Michael 8 10 10 7 10 10 10 9
Brown, Brian 9 8 10 8 9 10 4 9
Chin, Nicole 2 9 9 9 7 9 9 8
Dreary, Leanne 7 10 9 10 8 7.5 9 7
East, Mary 7 8 8 9 8 7 8 9
Ferguson, Jon 8 10 8 8 9 7 8 - 9
Flower, Mike 9 8 8 9 10 7 8 9
Jain, Varun 10 9 10 9 9 8 9 9
Jehr, Matthew 8 7 10 2 10 9 10 8
Jero, Milena 9 8 10 7 10 10 10 10
Kao, Cristian 7 2 9 7 9 10 9
Kwan, Laetitia 8 7 8 8 8 9 9 9
Lae, Ming 8 7 9 9 9 7 9 9
Lo, Margaret 9 8 10 7 10 8 9 8
Lu, Jay 7 9 8 7 8 9 9 7
Man, Daniel 8 10 10 8 9 9 10 8
Meht, Brock 9 10 9 9 10 10 9
Mildred, Loona 10 8 7 10 10 10 10 8
Mock, Sam 10 9 8 9 10 10 9 9
Newman, Alli 9 7 9 9 10 9 9 9
Ng, Allan 10 8 9 4 9 9 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?