EVALUATION OF PROTOTYPES
USABILITY TESTING

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690A- Advanced Methods in HCI

Slides from Prof. Joanna McGrenere and Dr. Leila Aflatoony
Includes slides from Prof. Karon MacLean and Jessica Dawson

MIDTERM EVALS [5 MIN]

Course seems largely on track

-FB on google form were generally positive to very positive in tone

Workload has gone down

Working class seem to be effective

In-class activities are well-received

In-class discussions need improvement

-most students want them, but they are too rushed now

I included more examples/ case studies/ videos

Added more relevant research papers as bonus readings

Introduced HCI ideas from big companies (Microsoft, Google, etc.)

Provided rubric in advance to help clarifying milestones

TODAY

- Usability testing lecture [20 min]
- CLIP evaluation study [17 min]
- In class activity [20 min]
  - cognitive walkthrough
- Discussion [15 min]

LEARNING GOALS

- understand the role of usability testing in HCI
- be able to define usability testing (Nelson's definition vs others)
- understand how usability testing is different from other evaluation methods
- explain when usability studies are typically conducted and why
  - give examples of locations, tasks, metrics, evaluation methods that might be involved
- explain how to plan and conduct a usability study

WHAT IS THE ROLE OF USABILITY IN HCI?

HCI starts with understanding the problems that users are having

then designing a system that solves these problems
→ requirements, task examples specify what it should do
→ decide on conceptual/interface design for how system will do it

→ **usability studies:** see if we succeeded

WHAT IS THE ROLE OF USABILITY IN HCI?

- **design** for usability
- **evaluate** system usability
  - how **easy** it is for the user to *get* the system to do what s/he needs it to do
- establish/apply **metrics and standards** for usability

OBSERVE, TEST, ITERATE, AND LEARN (DON NORMAN)

USABILITY (NIELSEN'S DEFINITON)

learnability: easy to learn so a user can rapidly start to use it

efficiency: once the user has learned the system, a high degree of productivity is possible (better known as *performance*)

memorability: the user should be able to return to the system and not have to learn again

errors: users should make few errors and recover easily

satisfaction: the system should be pleasant to use

ELEMENTS OF A USABILITY TEST

- Interactive system / prototype
- Evaluation goals
- Tasks
- Measures/metrics
- Data collection/recording methods
- Participants

TASK

generally: user researcher specifies the task

can be:

- at quite low level; e.g. the subtask that will take you from one screen to the next.
- or, at entire task level: see if someone can figure it out, start to finish, and watch /count / measure the challenges s/he has

➔ can use task description much as you did for cognitive walkthroughs

(but don't usually want to include the *story*)

METHODS
EXAMPLES OF COMMON ONES

Observational techniques:

- silent
- think aloud
- constructive interaction

Query techniques:

- Interview
- survey
- questionnaire

METRICS
EXAMPLES OF COMMON ONES

time:

- to **complete** a task (entire, or a portion)
- **learn** a task
- **resume** a task after interruption
- **find** something on a screen
- **attain** specified degree of **proficiency**

errors:

- number per task or unit of time
  - different types: e.g., navigation, selection, interpretation
- number of users making the error
- **alternately**: number of successes

METRICS
EXAMPLES OF COMMON ONES

events of interest:

- page views or clicks
- access of particular tools
- timeouts
- questions asked or help tools consulted
- # users willing to recommend

subjective factors:

- task level satisfaction
- perception of aesthetics
- perceived ease of use
- perceived preference
- (all can be measured on a Likert or semantic rating scale)

USABILITY TESTING
IN YOUR PROJECT – TEST MILESTONE

evaluation goals?

- you will likely want to draw from your requirements and task examples; may need to prioritize;
- test *how well* your system supports what you intended it to
- metrics, evaluation methods, etc. should follow

medium fidelity prototype scope?

- prototype won't be a complete working system
- it should do just enough to test if your design will meet your goals (and be acheivable in the time available)

BIGGEST DIFFERENCES WITH ALTERNATIVES:

Usability testing requires:

A refined interface.

- This could be… your new medium fidelity prototype.
- Or it could be the bad old interface, which you plan to revise or replace
  i.e., might be “evaluate for understanding the problem”

Measured outcomes.

Users (participants).

NOTE ON TERMINOLOGY

Not entirely standardized…

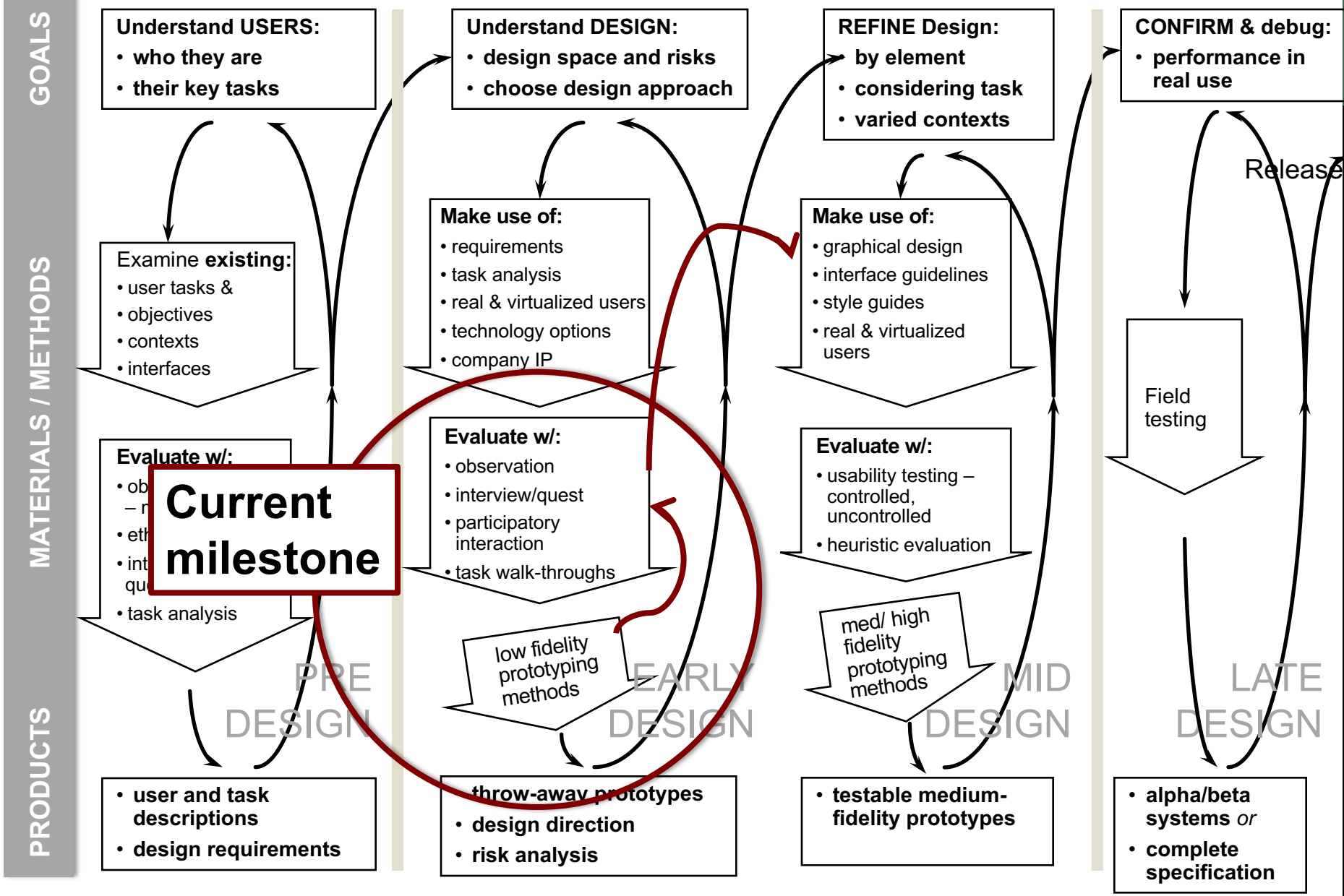
User Study – very general. Any study that involves actual or prospective users. Can be anytime -- from before a system is built (Empathize / Pre-Design) right to a controlled experiment.

Usability Study – more specific. Requires a system for which task performance can be measured (usually Mid / Late Design, but can be Pre-Desing for a system being re-designed)

Controlled Experiment – a specifc type of usabilty study with hypotheses and statistical testing, often comparing alternate designs (more on this later). (Test / Late Design)

Informal / Small User Study – often used before a usability study, not ready to measure things yet, interested in higher-level feedback. (Early design).

usability testing: *"count" problems in refined prototype*



ACTIVITY

Analyze a documented usability study

Perform the walkthrough with 1-2 team members with two or more classmates from another team

DISCUSSION ON READINGS [15 MIN]

- What surprised you? or
- What you disagreed with?
- Others?

ON DECK…

Next class (Tuesday) …

- Readings and researcher journal
- Forth project milestone: prototyping
    - due on April 2nd