

SNU CSE 4190.426A

Human-Computer Interaction

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Contact Info

- Office hours (Room 431 Bldg 302):
 - 3:30~4:30 pm, Thursday
 - or by email any time: *jseo@snu.ac.kr*
 - or by appointment
 - drop in/telephone discouraged
- TA
 - 조재민
 - Room 314-2 Bldg 302
 - Office Hours: TBA.
 - Email: *jmjo@hcil.snu.ac.kr*



Text and references

- Book

- **Human-Computer Interaction: An Empirical Research Perspective**, Morgan Kaufmann, I Scott MacKenzie, 2013
- Human Computer Interaction 개론, 김진우, 안그래픽스, 2012.3

- Optional Books

- **Designing the User Interface: Strategies for Effective Human-Computer Interaction** 6th Ed., Addison-Wesley, Shneiderman, Plaisant, Cohen, Jacobs, Elmqvist, Diakopoulos, 2016.
- Interaction Design: Beyond Human-Computer Interaction, 3rd Ed., Wiley, Yvonne Rogers, Helen Sharp, Jenny Preece, June 21, 2011.
<http://lib.snu.ac.kr/search/DetailView.ax?sid=1&cid=3796459>
- Universal Principles of Design, Lidwell, Holden and Butler [Rockport], 1998.

What you will learn

- Principle of design
 - How to identify needs
 - How to create/imagine possible solutions
 - brainstorming and prototyping
 - How to select and implement a solution
 - How to evaluate the result (i.e. design HCI experiments)
 - with or without users
 - qualitative or quantitative
- Basic human factors
 - Characteristic of the human information processor (HIP)
- Basic interface technologies
 - Software (e.g. D3.js)
 - Hardware (e.g. Arduino)
- Information Visualization
 - D3.js



Workload

- Reading
 - About one or two short chapters per week
- Homework
 - Comments and Questions on Readings
 - Independent
- Projects (information visualization)
 - In groups of 2(~3) people
 - Theme of term project will be announced soon.
- Late assignments policy
 - -20% up to 24 hours late
 - -50% up to 48 hours late
 - -100% after that

How you will be evaluated

- Homeworks (30%)
- Projects (20%)
- Exams (45%)
 - mid-term (25%)
 - final (20%)
- Class Participation (5%)
- *weights subject to change*

*You must pass both exam components
and
project components to pass the course*

Resources

- Course web site: eTL
 - update (or upload) your photo by next Thursday!
 - lecture notes, announcements, ...
- Academic Honesty
- 배움의 윤리 (on eTL)

전통적인 컴퓨터과학/공학 과목들

- 자료구조론
- 컴퓨터구조론
- 운영체제
- 프로그래밍언어
- 알고리즘
- 데이터베이스
- 데이터통신
- 인공지능
- 시스템프로그래밍
- 소프트웨어공학
- 컴퓨터그래픽스

컴퓨터 중심

기술 중심

경제성/효율

속도

정확도

실감도

HCI: Human-Computer Interaction

- Higher Level Goals of Your Study in CS?
- 사람(사용자)이 중심이 되는 컴퓨터시스템 디자인

Optimal User Experience (UX)

Usefulness (유용성)

Usability (사용성)

Affection (감성)



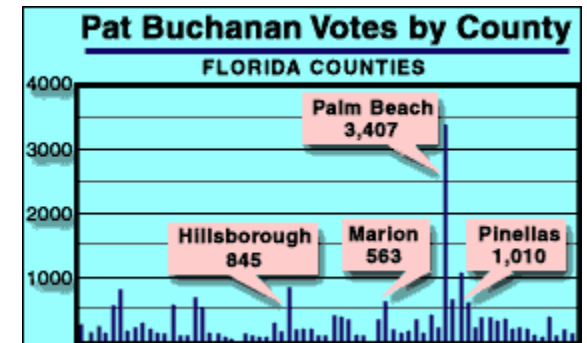
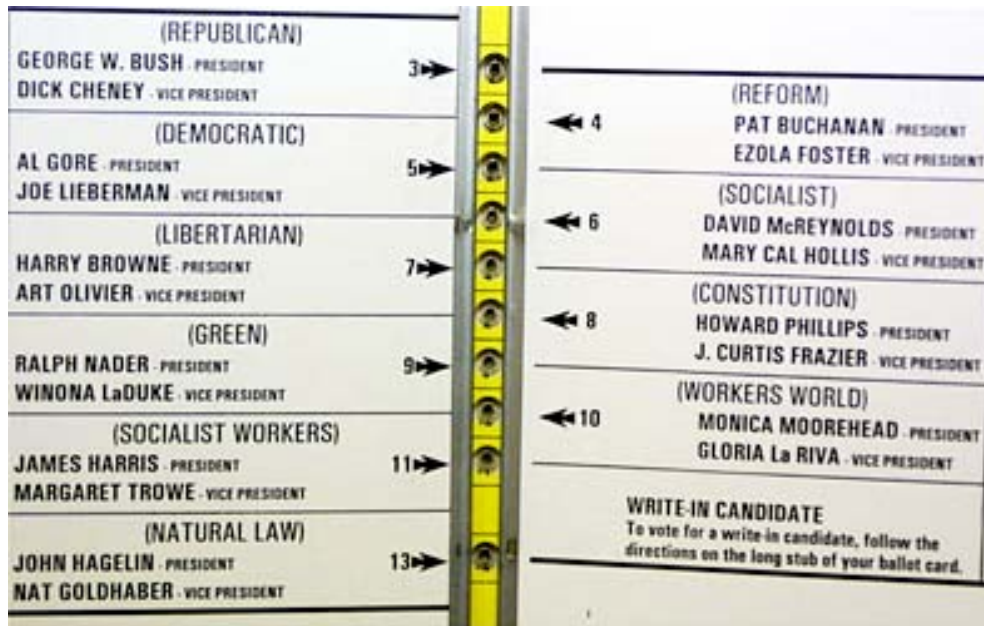
- Human-computer interaction is a discipline concerned with the design, evaluation and implementation of **interactive computing systems** *for human use* and with the study of major phenomena surrounding them. – ACM SIGCHI

Usability: 사용하기 쉬운가?

- 어떻게 측정할 것인가?
 - Speed of performance
 - Rate of errors by users
 - Retention over time (related to Learnability)
 - Time to learn
 - Subjective satisfaction

Why is it so important?

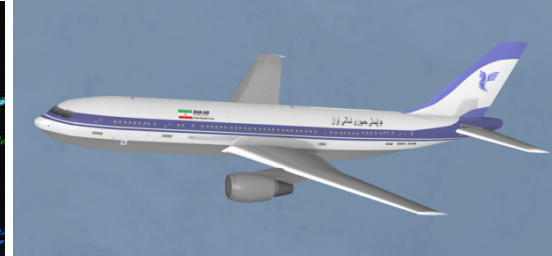
- 역사적 사건



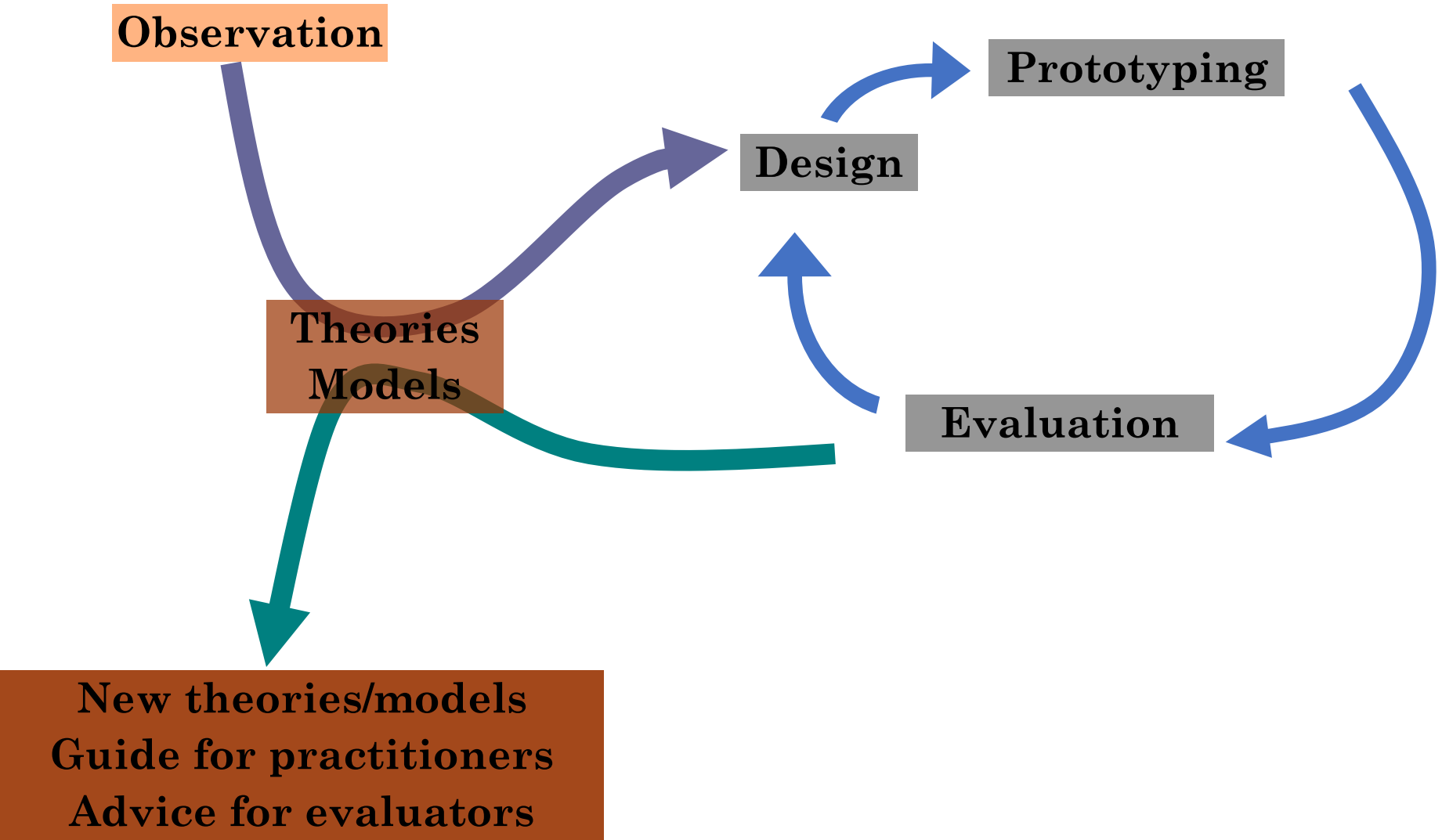
Save or Kill Lives



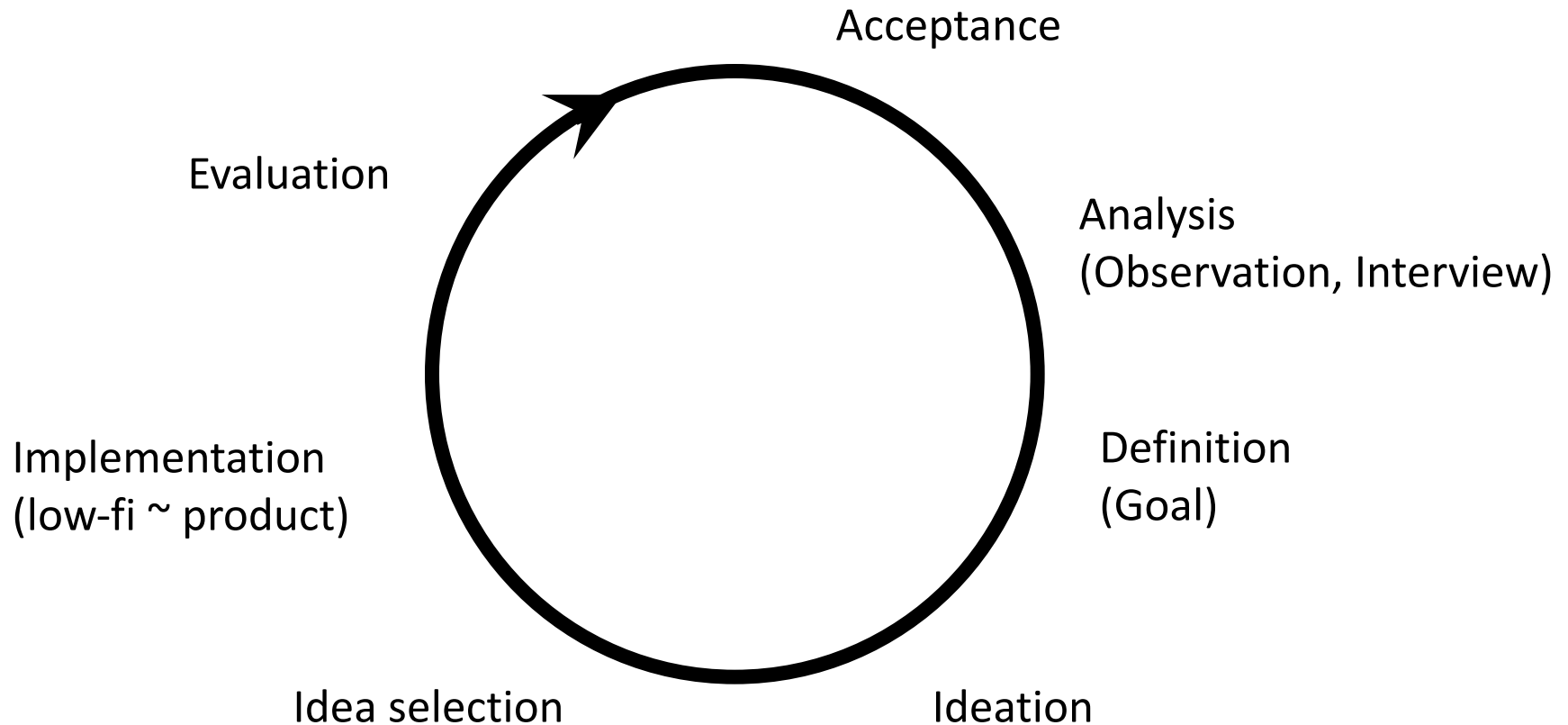
The same identifier for two different tracks (airplanes)



Research Framework



Design Process



“The universal traveler”
(Koberg & Bagnall, 1995)

Research Methods

- Controlled Experiments
 - Theory-driven, hypothesis testing
 - Modify Independent Variables → Measure Dependent Variables
- Ethnographic Methods
- Surveys & Questionnaires
- Logging & Automated Metrics

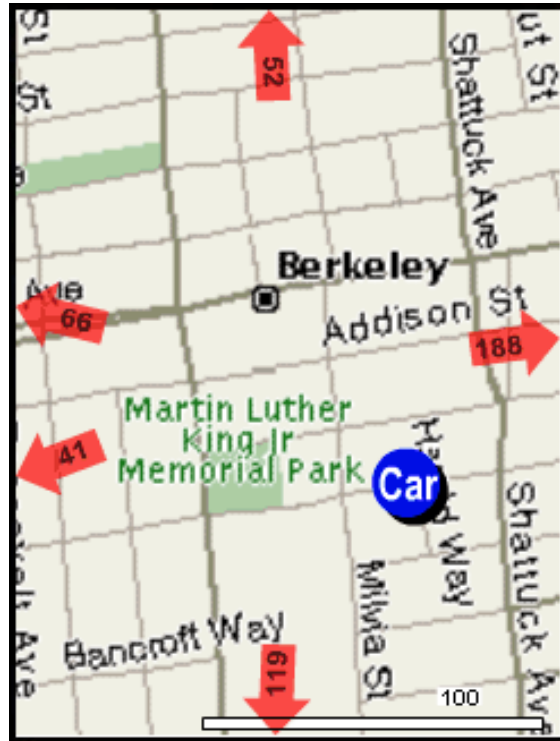
Controlled Experiment

- Practical problem & Existing theory
- Write a lucid & testable Hypothesis
- Alter a small number of independent variables (treatment)
- Select & assign subjects
- Control other variables
- Measure small number dependent variables
- Apply statistical test
- Guidance for practitioners, refine theory, advice for experimenters

New Overview and Zooming



How to show on small screen?



Baudisch 2003



Burigat 2006

Direction and Distance



Halo: A Technique for Visualizing Off-Screen Locations. Baudisch 2003.



Wedge: Clutter-Free Visualization of Off-Screen Locations, Gustafson 2008

Questions?