# Introduction to HCI (Human Computer Interaction)

## Fall 2019

## Filed Studies: Observation

one of the anywhere, anytime evaluation techniques

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Courses, projects, papers, and more:
http://groups.cs.umass.edu/nmahyar/

# Team formation [10 min]

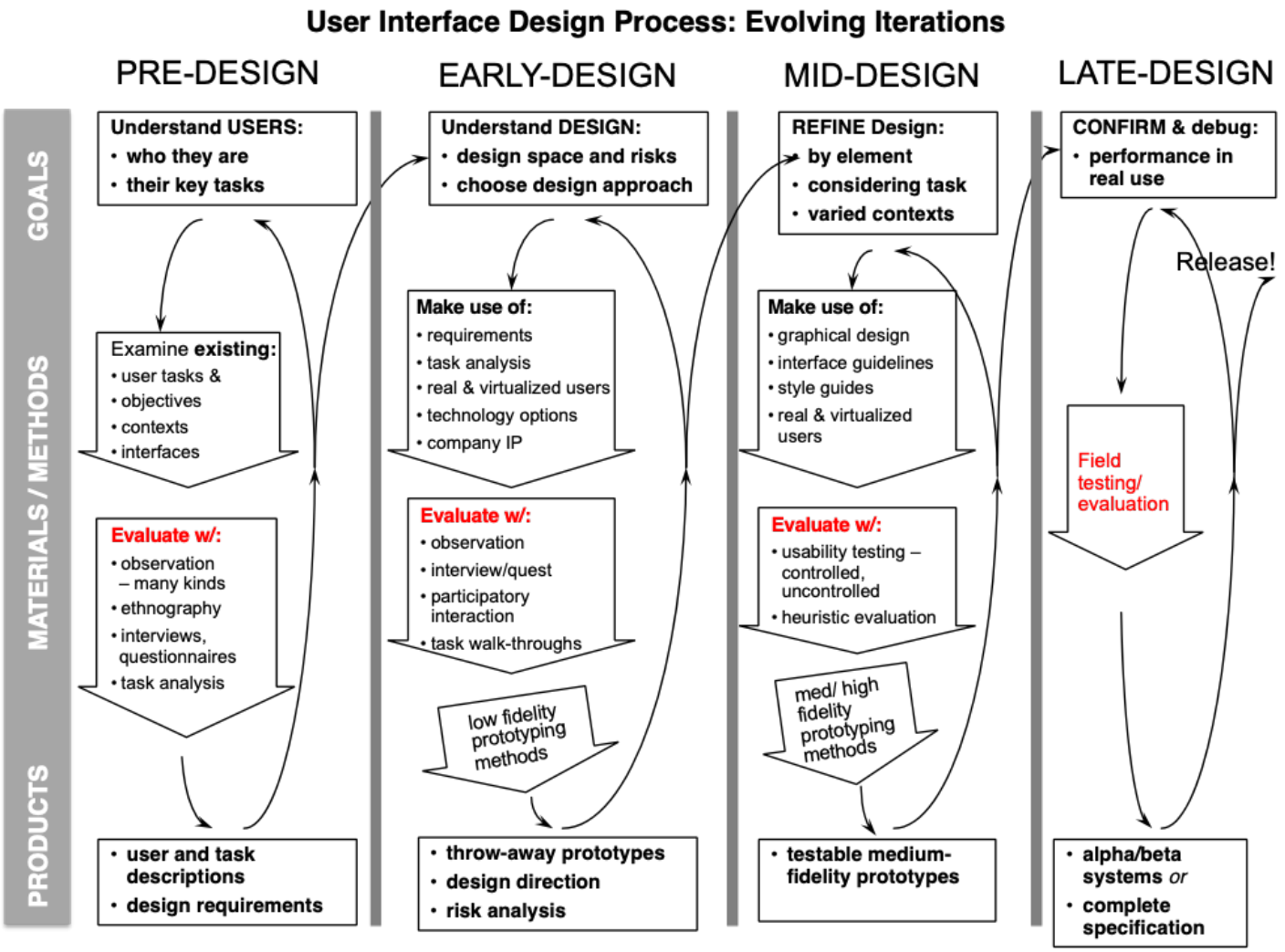
Teams for project formed by students

- form teams: 8-9 member per team
- combination of different skills and knowledge
- use google spread sheet (link in Piazza)
- complete the team contract: due before next class
- choose a project topic (design opportunity) form project lists

# Project overview

- Project ideas posted on both Piazza and website
  - description of milestones
  - First project milestone: to be posted soon

# Review: HCI process – big picture



# roadmap to evaluation types

## pre-design

ethnography

observation

interviews, focus groups

questionnaires, surveys

## early design

interviews, focus groups, observation

questionnaires, surveys

contextual inquiry & work modeling

task analysis, task / cognitive walkthroughs

participatory design

heuristic evaluation

## mid-late design

observation, interviews, questionnaires, surveys
*using advanced prototypes*

heuristic evaluation

formal performance / usability testing

→ *evaluation material (prototype) evolves* →

# Learning goals

- Understand field studies and explain why field work is an appropriate choice of enquiry method
- Explain when and how to use field methods
- Identify focal points for doing a field study
- Understand ethnography
- Explain observation as a fundamental method in ethnography
- Describe how to conduct an observation session, what to observe, and how to collect and document data
- Discuss pros/cons of observation

# What is a filed study?

- field study is a general term that denotes a study that takes place in context

- value of context? what people say and what they do can vary significantly

# Why do we observe people?

- to understand their issues and needs
- to find out existing problems
- to build empathy
- to capture tacit knowledge and ward against participants trying to please observer

# Filed study methods

- ethnography
- observational study
- (in-depth) interview study
- contextual inquiry (not covered in this course)
- diary study (not covered in this course)
- field experiment (not covered in this course)

# What is ethnography?

- roots in anthropology – exploration of the everyday realities of people living in small scale, non-western societies
- Studies the culture (values, beliefs, behaviors, language) of distinct group within society.

# What is ethnography?

- Descriptive
  - detailed “thick” description of event; get some insight into their meanings of what going on
- Method of discovery
  - when you are not sure what happening
- Comparative
- Naturalistic setting
- Empathetic
- No assumption

# Participant Observation | HCI Course | Stanford University


https://www.youtube.com/watch?v=8SnFEINtf4U

# Specifics on observation

- look for what people do, not what they say
- direct observations
  - researcher on site, in context
  - participate as little as possible
  - take notes, audio tape conversational components, collect artifacts, take pictures of artifacts that cannot be taken, sometimes videotape as a backup
- video observations
  - researcher not present, video camera capturing instead
  - can be less intrusive for participant

# What to observe?

- ROUTINES + PATTERNS
- Language
  - what they and how they say things (do, think, believe)
- Actions and activities
  - what they do
  - how they behave
- Things and environments
  - what artifacts? spaces?
  - how are these artifacts and spaces: shaped and used

# General steps for observational studies

1. Determine research objectives
2. Develop focal points
3. Identify participants and sampling strategy, recruit participants
4. Determine data collection methods and design materials
    1. E.g., creating interview questions
5. Data analysis
6. Other pragmatics
    1. How will data be recorded?
    2. What do you need to bring?
    3. Ethics
    4. Piloting
7. Post-session debriefing

# 1. Research objectives

- formulate research objectives:
  - state what you want to achieve
  - use objectives to set initial scope
    - e.g., to understand how doctors manage patient records and the implications this activity has for the design of electronic health records

# 2. Identify focal points

- 2-5 questions that focus & scope the research:
  - driven by research objectives or development goals
  - answers not anticipated or assumed
    - e.g., what are the triggers that result in a doctor updating (or referencing) a patient record?

# 3. Recruiting participants

- can be more involved than for lab studies:
  - participants allowing you into their “space”
  - often involves more time than a lab study
  - consider appropriate incentive (lab study norms not necessarily appropriate: e.g., $15/hr)
- usually far fewer participants than in a lab study, 3-12 is common

# 3. Identifying participants

- Subcultures
  - Social groups defined by cultural similarities (e.g. Punk Rocker, Harley drivers, …)
  - Share norms: clothes, behaviors, activities, language, place (e.g. Italians, …)
- Practices
  - Social practices: cooking, skateboarders, DIY makers
    - Materials (e.g. things, computers, artifacts, environment…)
    - Competences (e.g. skills, knowledge, technology)
    - Motivations

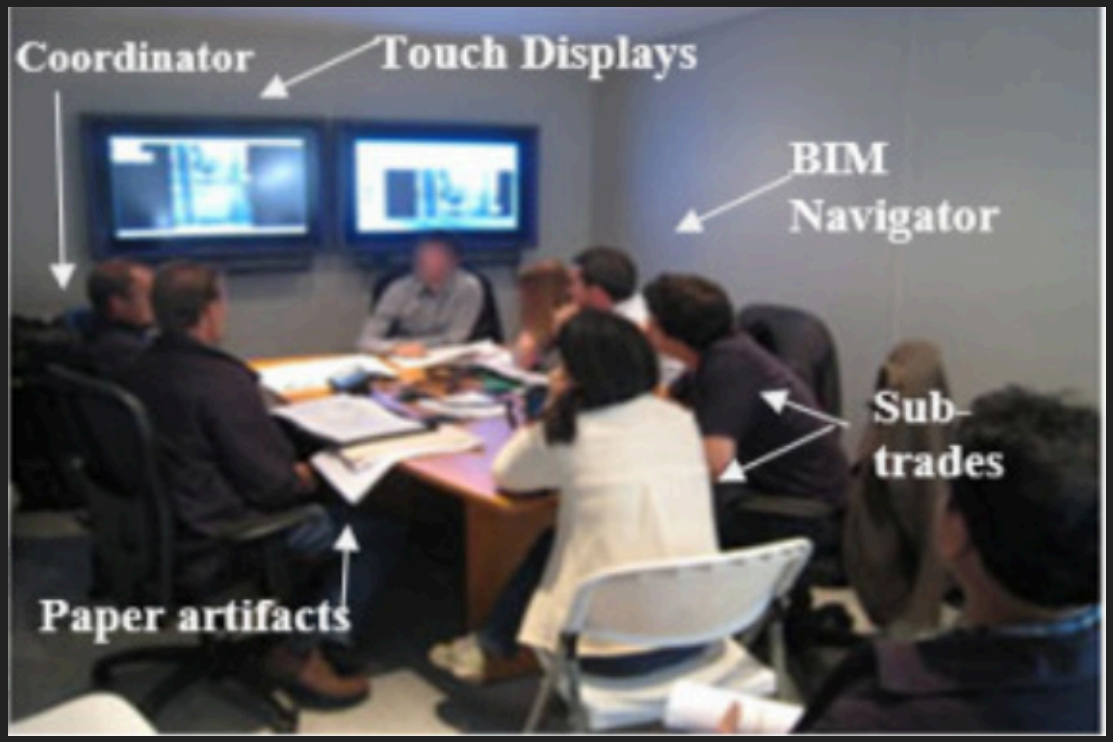
# 3. Gaining access

- Entry: the process of developing presence and relationship in the designated research setting that makes it possible for the researchers to collect data.
- Field: the natural, non laboratory setting or location where the activities which a researcher is interested take place.
- Building rapport: develop good personal relationship with people to get access and information.

# 4. Data collection methods

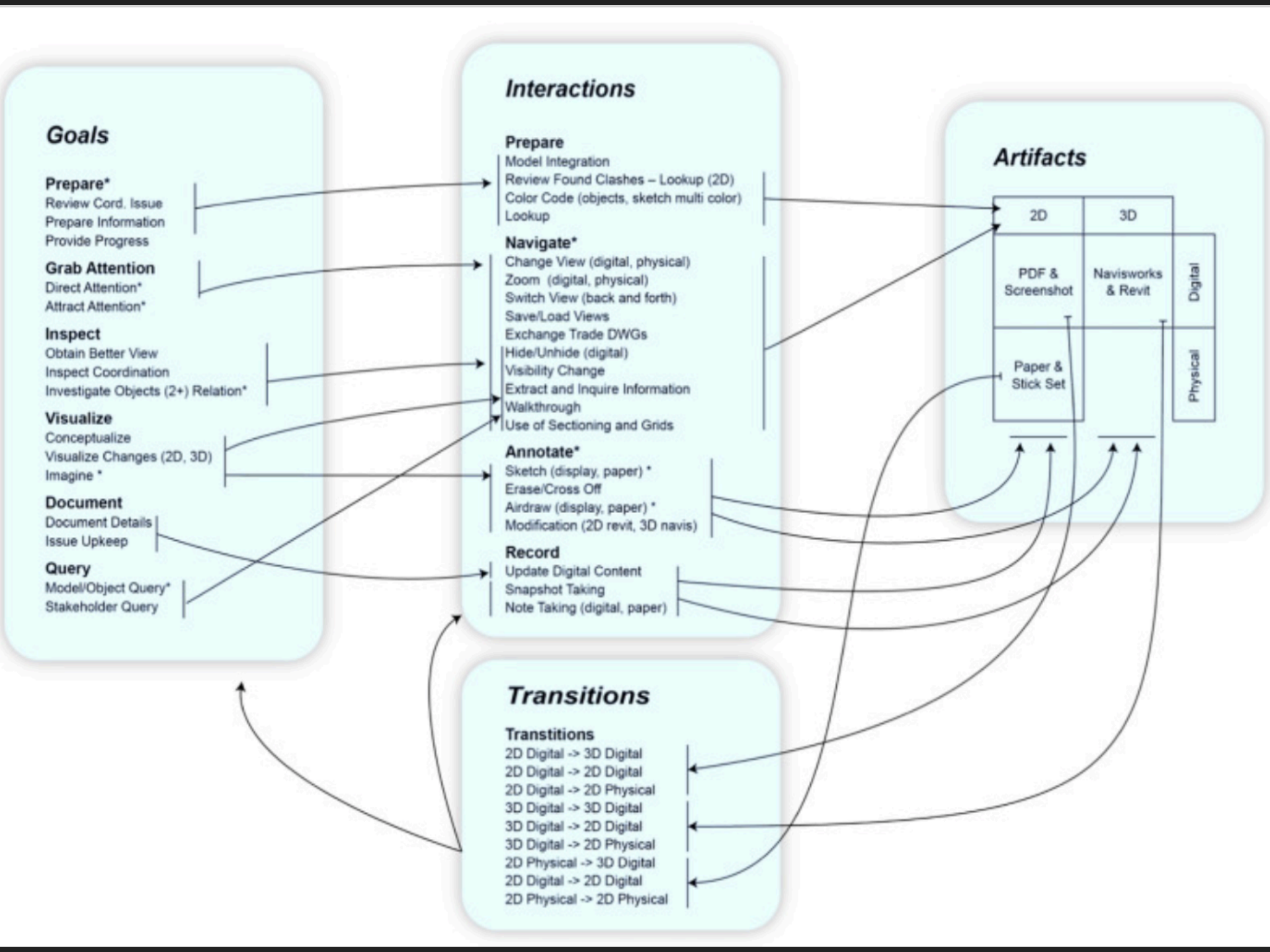
- select methods that will address focal points and that
- will be appropriate for chosen site, e.g.,
  - observation
  - interviews
  - self-report techniques
    - diaries and visual stories
  - remote data collection techniques
  - artifact analysis

# Example: how and why practitioners interact with artifact in design coordination




Characterizing interactions with BIM tools and artifacts in building design coordination meetings, Mehrbod et al, 2019

https://www.sciencedirect.com/science/article/pii/S0926580516304307


Goals
Prepare*
Review Cord. Issue
Prepare Information
Provide Progress
Grab Attention
Direct Attention*
Attract Attention*
Inspect
Obtain Better View
Inspect Coordination
Investigate Objects (2+) Relation*
Visualize
Conceptualize
Visualize Changes (2D, 3D)
Imagine *
Document
Document Details
Issue Upkeep
Query
Model/Object Query*
Stakeholder Query
Interactions
Prepare
Model Integration
Review Found Clashes – Lookup (2D)
Color Code (objects, sketch multi color)
Lookup
Navigate*
Change View (digital, physical)
Zoom (digital, physical)
Switch View (back and forth)
Save/Load Views
Exchange Trade DWGs
Hide/Unhide (digital)
Visibility Change
Extract and Inquire Information
Walkthrough
Use of Sectioning and Grids
Annotate*
Sketch (display, paper) *
Erase/Cross Off
Airdraw (display, paper) *
Modification (2D revit, 3D navis)
Record
Update Digital Content
Snapshot Taking
Note Taking (digital, paper)
Artifacts
2D
3D
PDF & Screenshot
Navisworks & Revit
Digital
Paper & Stick Set
Physical
Transitions
Transtitions
2D Digital -> 3D Digital
2D Digital -> 2D Digital
2D Digital -> 2D Physical
3D Digital -> 3D Digital
3D Digital -> 2D Digital
3D Digital -> 2D Physical
2D Physical -> 3D Digital
2D Digital -> 2D Digital
2D Physical -> 2D Physical

# 4. Data collection techniques

- Notes (e.g. bullet point, what people say)
- Still camera
- Audio
- Video
- Tracking users (e.g. diaries)
- Interaction logs
- Screen capture

# 4. Field notes

- No point in observation if you don’t record.
- Develop powers of observation, practice mental notes.
- Describe behaviorally: try to avoid interpreting meaning of action.
- Description of individual (in detail).
- Describe physical state of environment (in detail).
- Keep your interpretation separate from notes.

# Type of data

- qualitative data
  - interpreted to tell a “story”, categorization and looking for themes
- quantitative data
  - presented as values, tables, charts and graphs; often treated statistically

# 5. Data analysis

- circulate notes and transcriptions among team
- hold video analysis sessions
- identify patterns: in behavior, events, artifacts, within and across individuals
- common techniques:
  - coding data
  - affinity diagrams
- triangulate data where possible

# Observation Activity

- Imagine you are creating a multiuser interactive table top puzzle and you are trying to understand how people work on puzzles together in a real world…
- Here an example focal point:
  - How do people arrange the activity in the physical space?
  - Come up with 1 or 2 focal points on your own.
- In group of 8-9, and:
  - 3-4 members play and solve a puzzle.
  - 3-4 members observe the first team while playing with puzzles and take notes on interaction, actions, behavior, and conversation among them.

# On deck

- Gradescope consent poll
  - Before next class
- Fill out and submit team contract
  - Before next class
  - https://drive.google.com/file/d/18PGKPHCRHkgxdsIYvqKx07F2mFO1zdsj/view?usp=sharing
- Project milestones
  - Visit: http://groups.cs.umass.edu/nmahyar/teaching/intro-to-hci-cs-325-fall-2019/
- Cover the readings before each session and ask questions about the readings in class or via Piazza

# Extra slides

# Pros and cons of observation

pros:

- comprehensive understanding of current practice
- greater ability to predict the impact of a new or re-designed
- Technology
- give developers a richer understanding of who + context they are
- developing for
- greater ability to prioritize design ideas & features

cons:

- time intensive
- could perpetuate negative aspects of current design
- vast amounts of data that can be difficult to analyze
- output is description of practices, not prediction for design
- scale – small number of users