Introduction to User Experience Design

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&

Introduction to User Experience Design

Important Terms and Concepts

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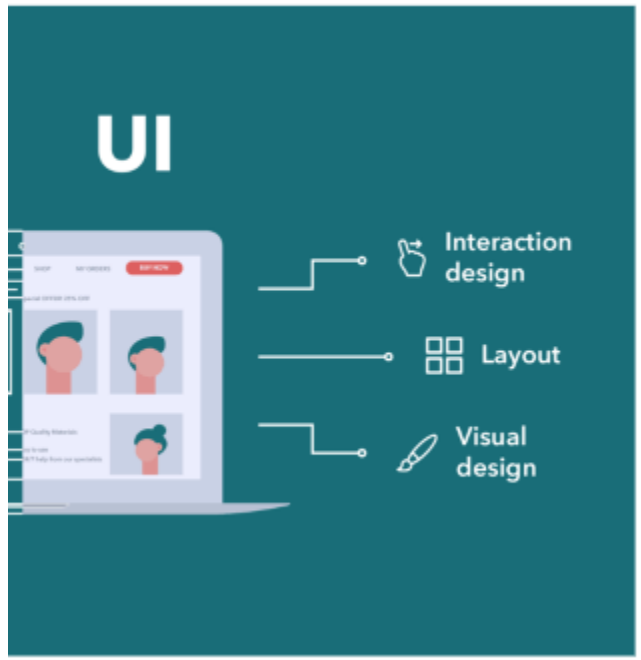
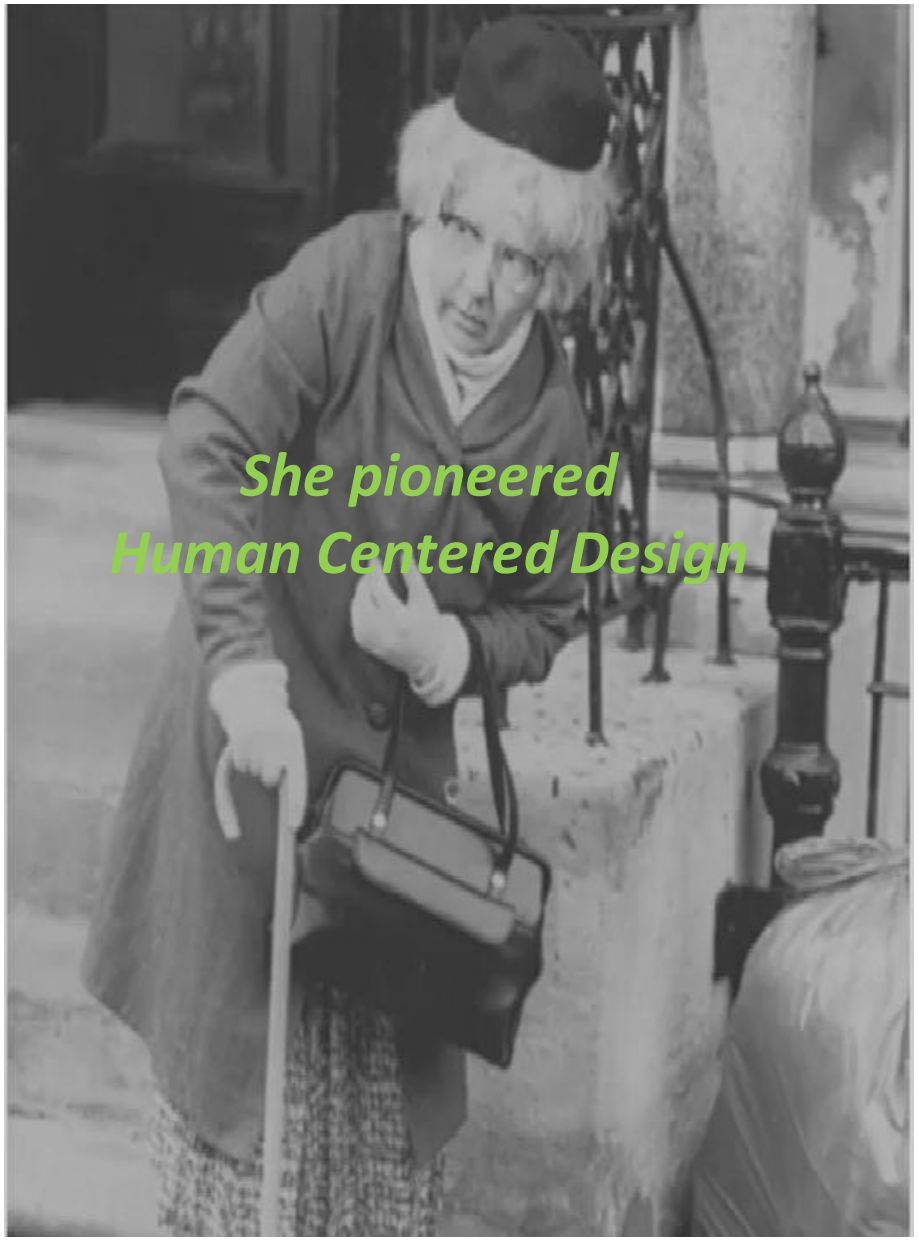
Core concept of User Experience design

- Users use interfaces to accomplish a task


UI
Interaction design
Layout
Visual design

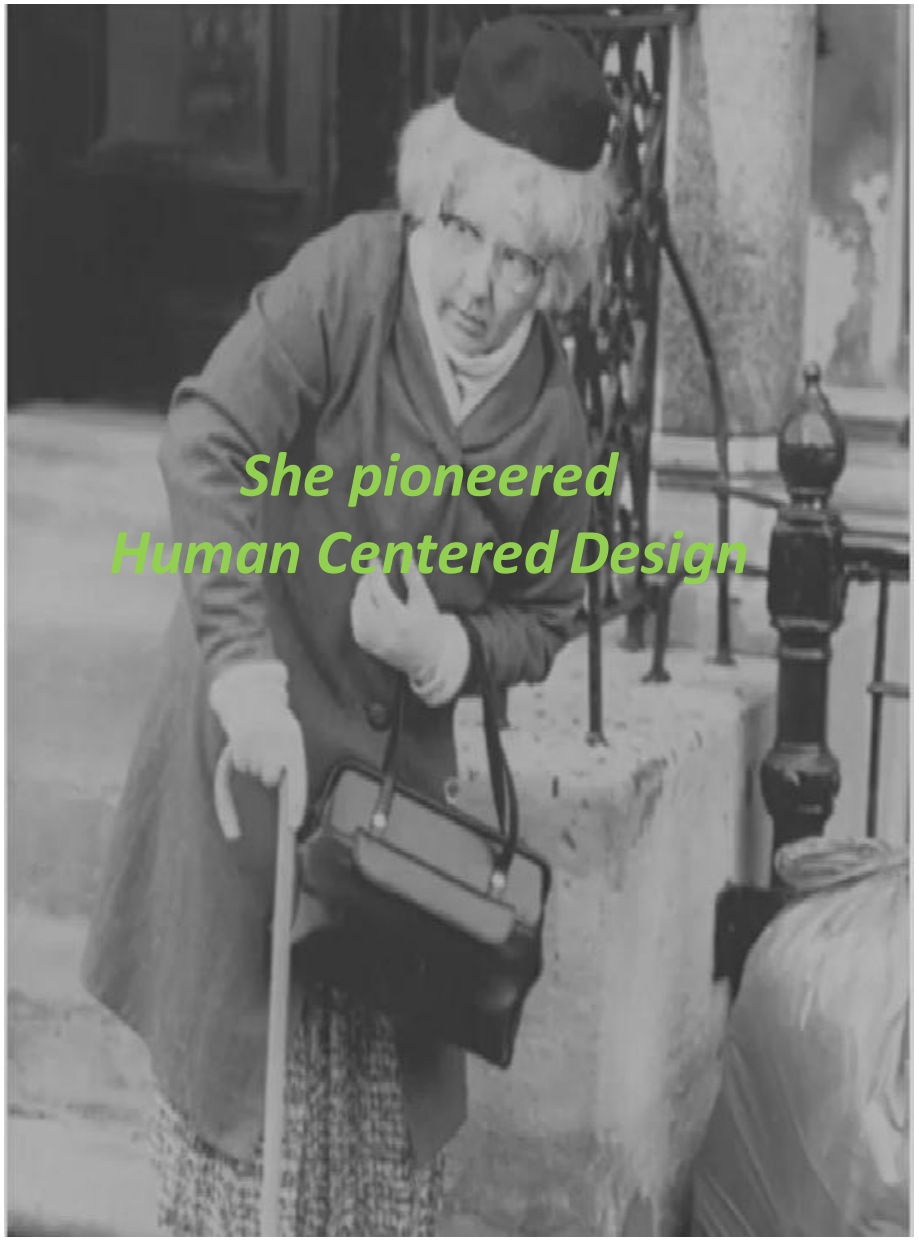

UX
UI
User research
Personas
Usability testing
Interaction design
Layout
Visual design


She pioneered
Human Centered Design

Patricia Moore

When she was 30, to research and gather requirements of the elderly people, Moore traveled throughout the United States and Canada (116 cities), prosthetically disguised and restricted as an elderly women, around 85 years of age.

The research helped her to get a first-hand experience of how elders manage their daily lives and what their needs are.

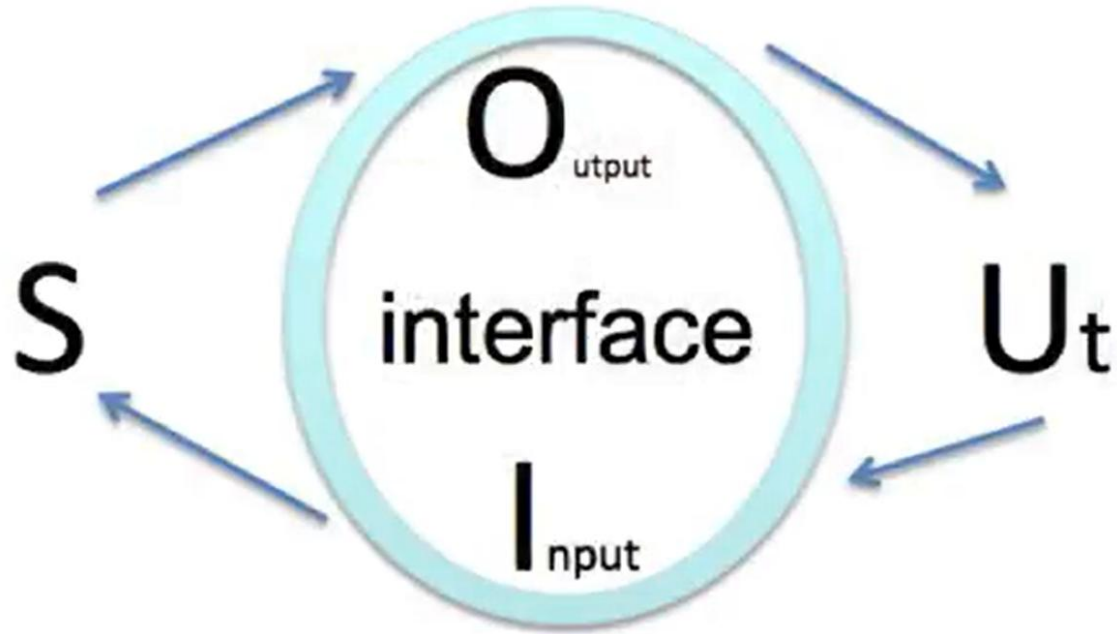


User (Human)

- The individual that is using some technology to accomplish a task

Interface

- Interface: the mediation of the user's task (Ut) and the *system's* (S) Core function (Dix, Finlay, Abowd & Beale, 2004)
- The user enters input (I) into the interface to complete a task (O)



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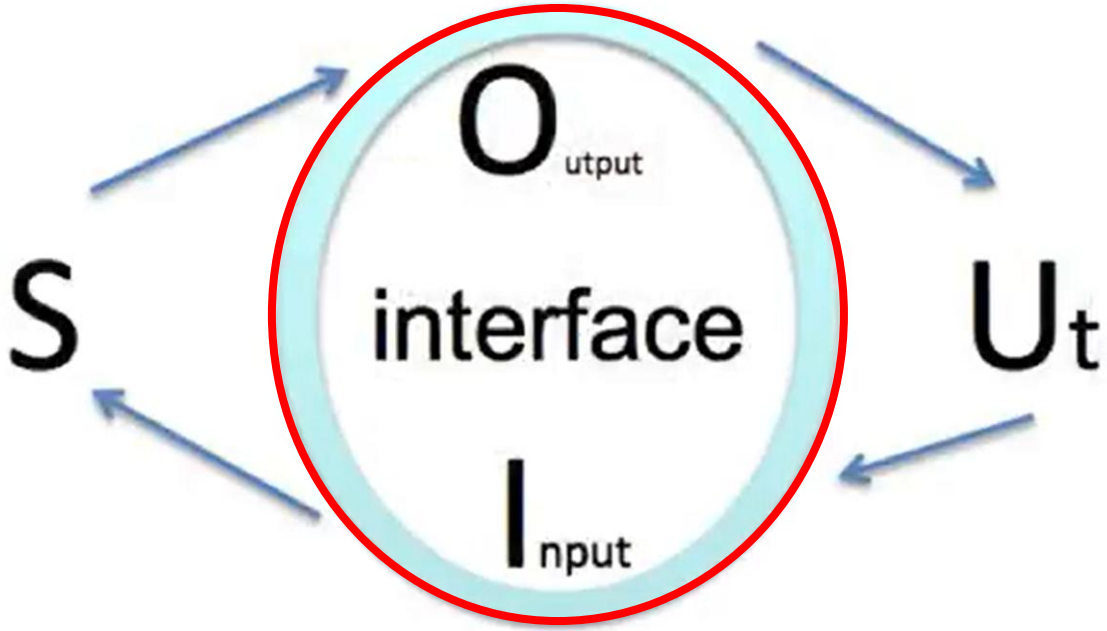

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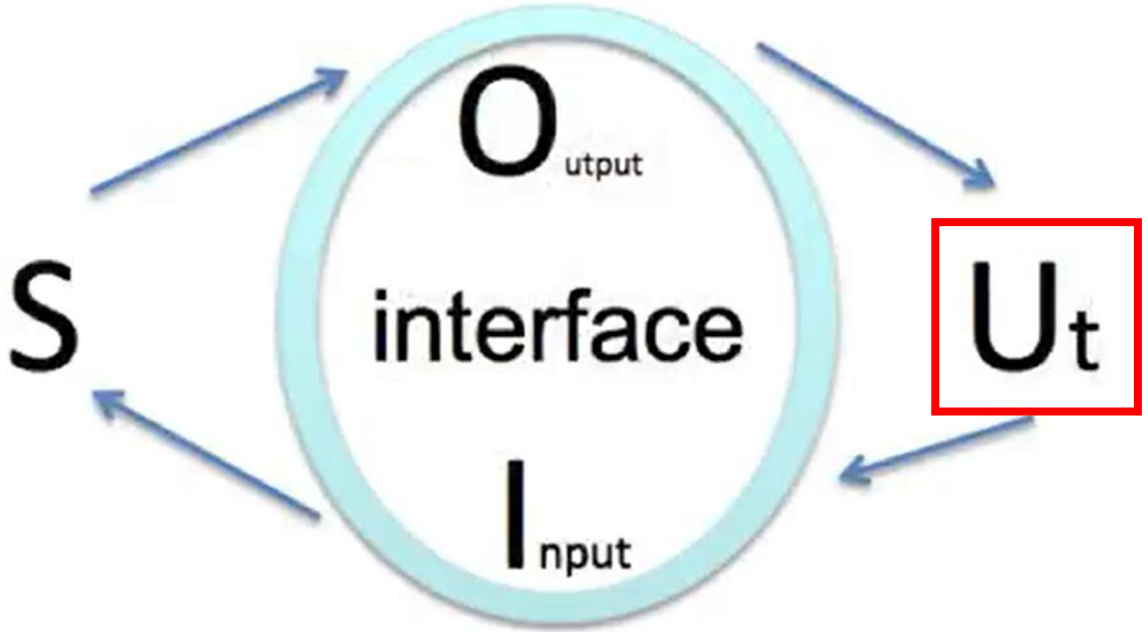

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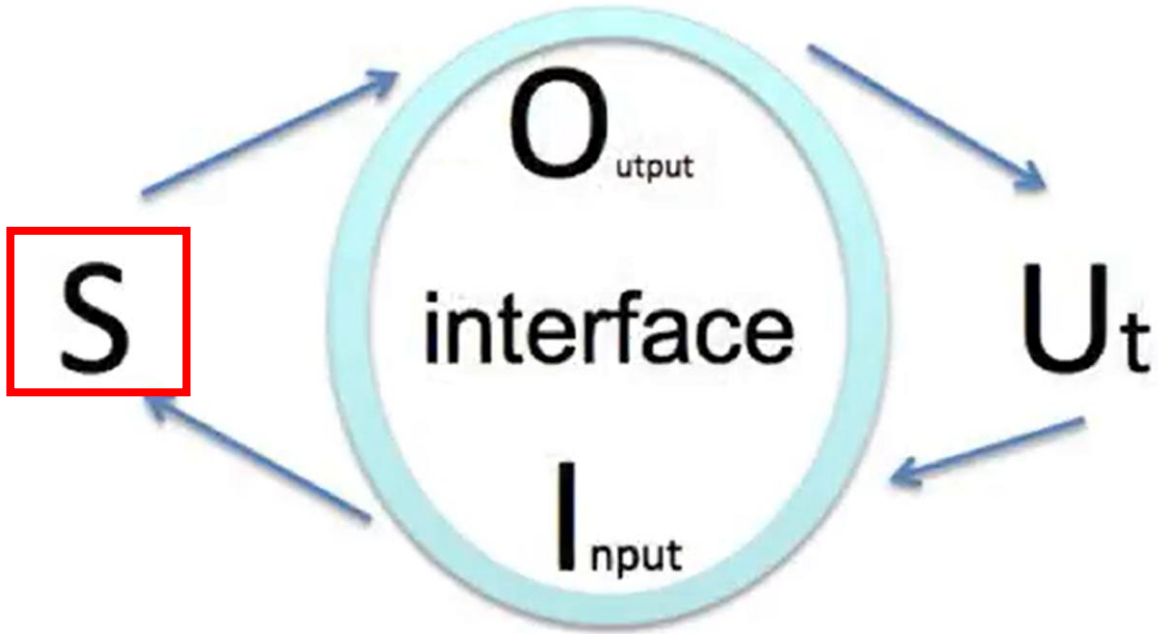

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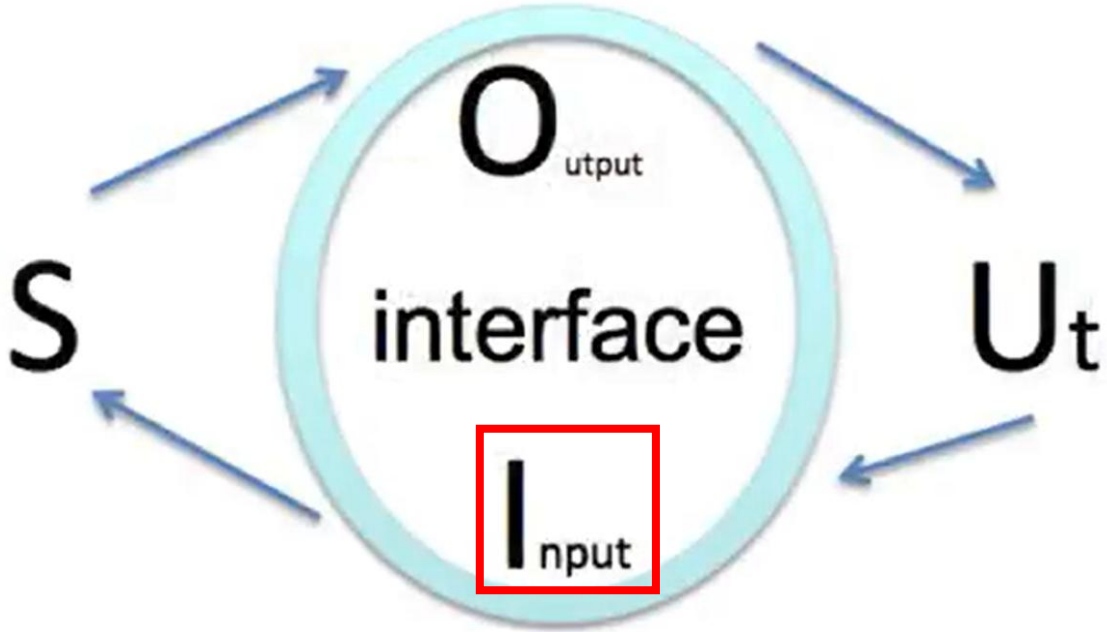

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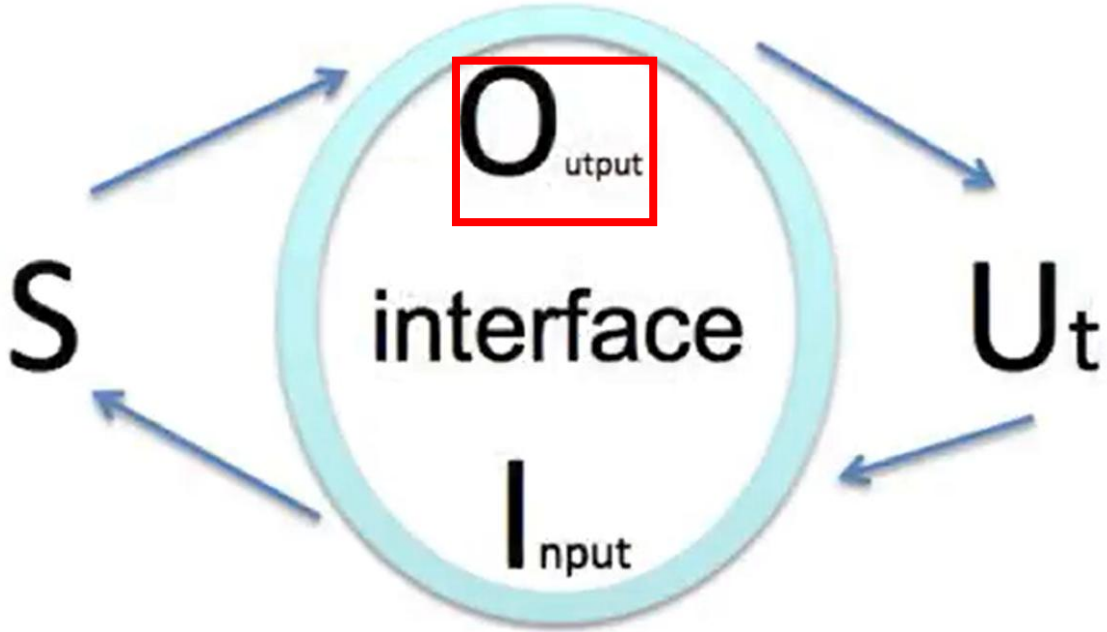

User Experience

- Interface: the mediation of the user's task (Ut) and the *system's* (S) Core function (Dix, Finlay, Abowd & Beale, 2004)
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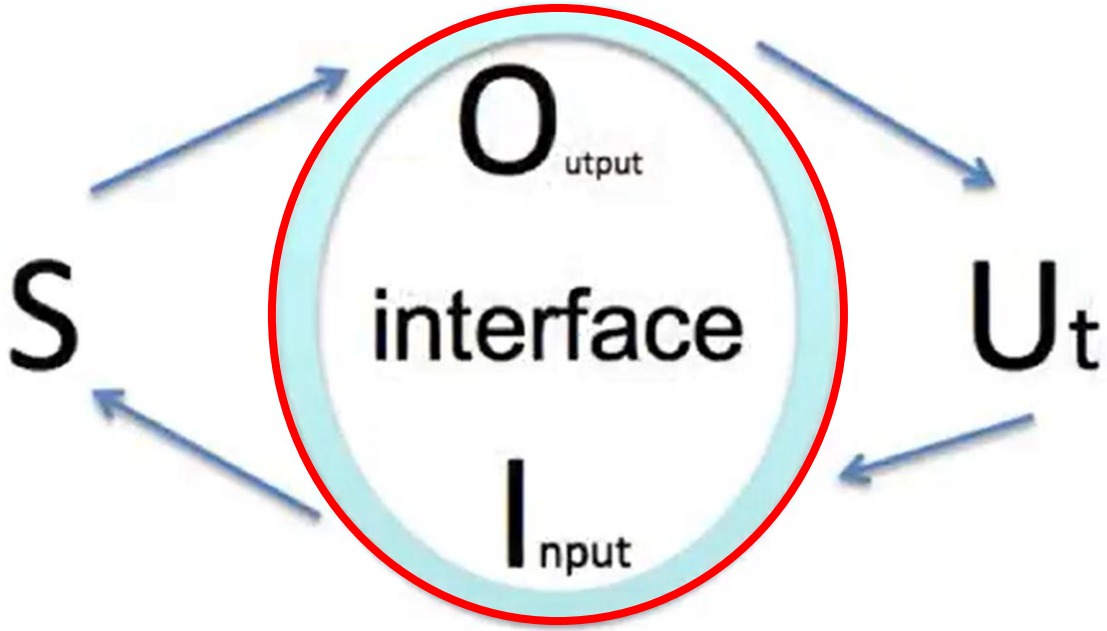
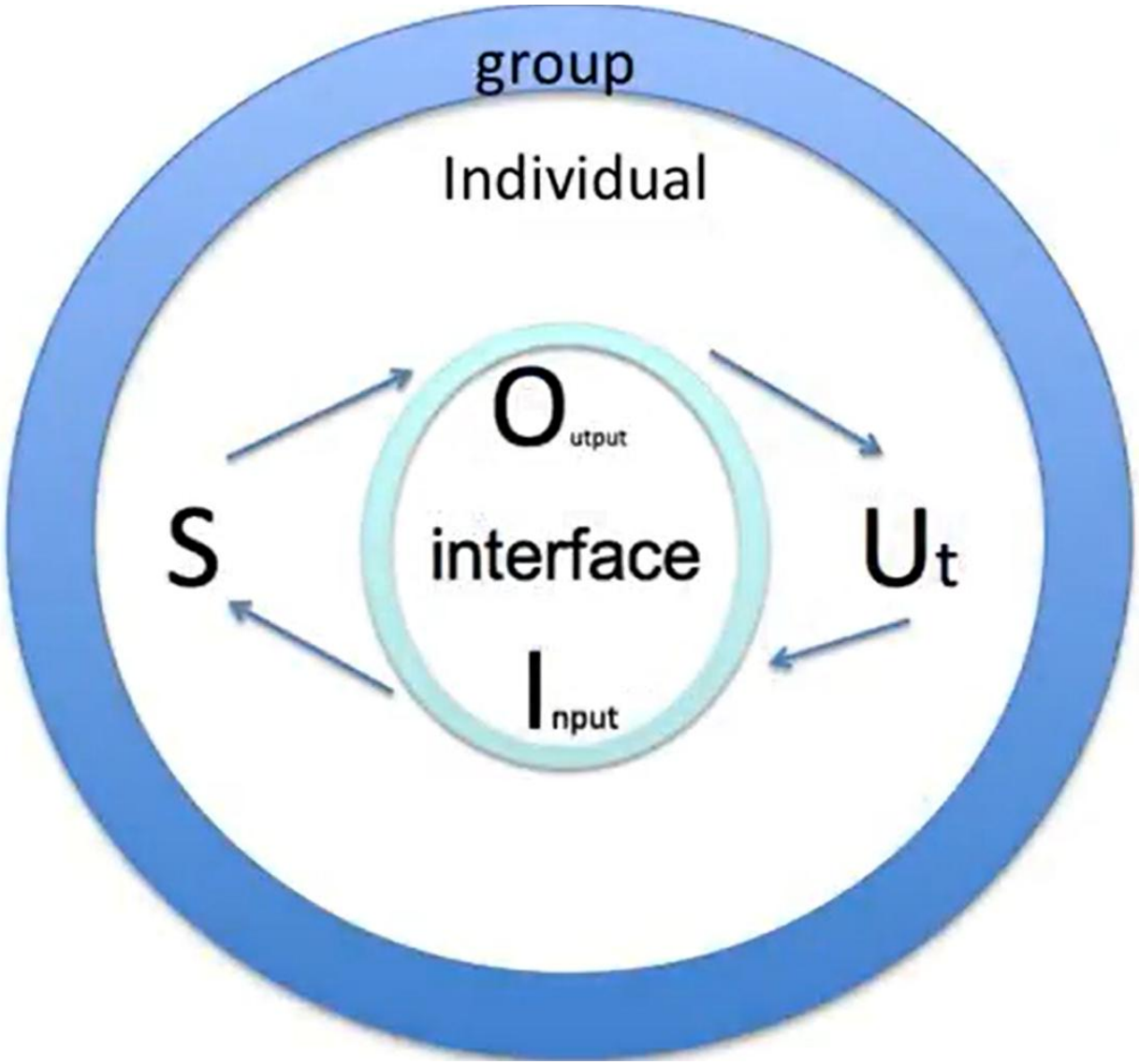
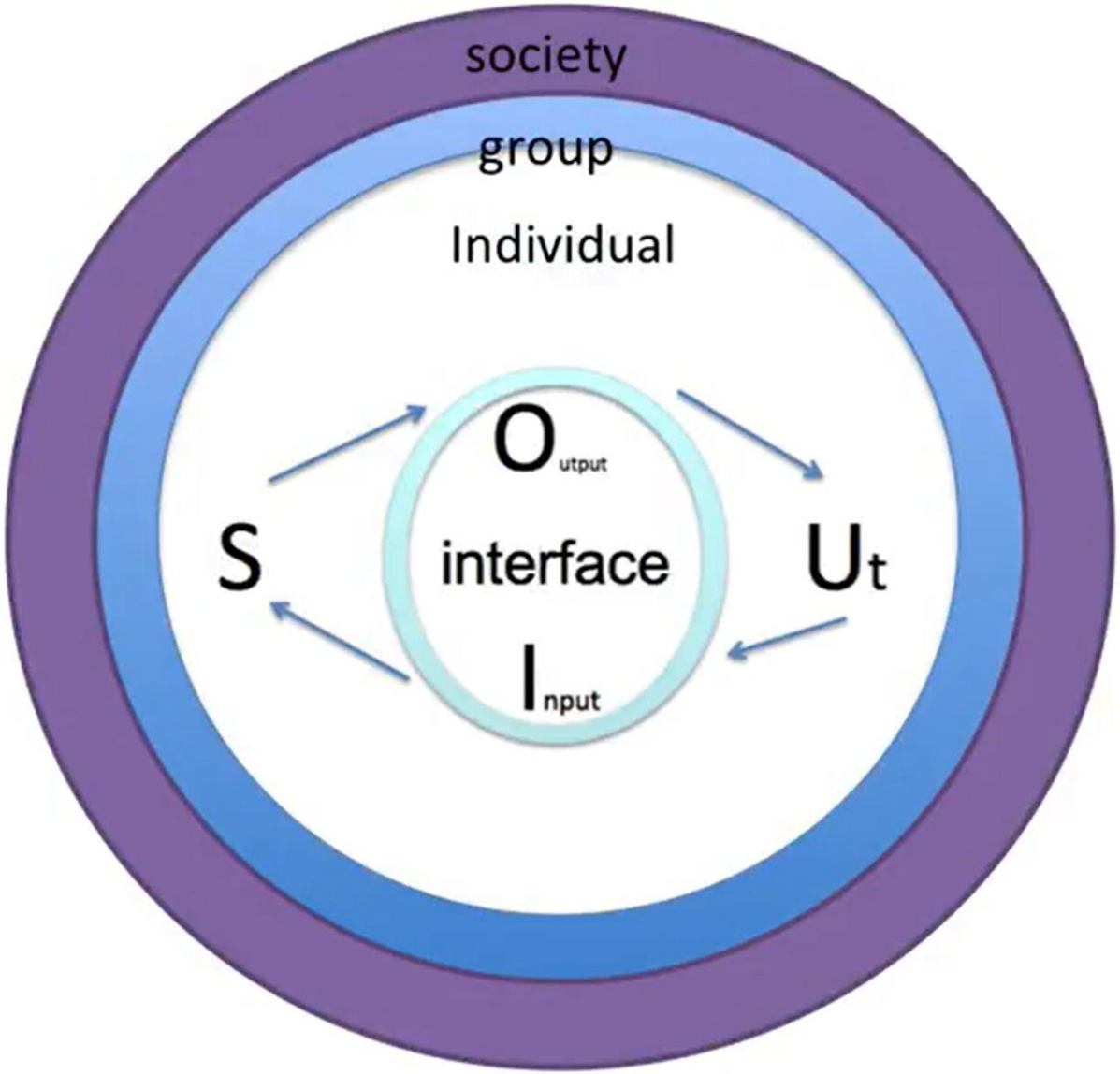


User Experience



User Experience

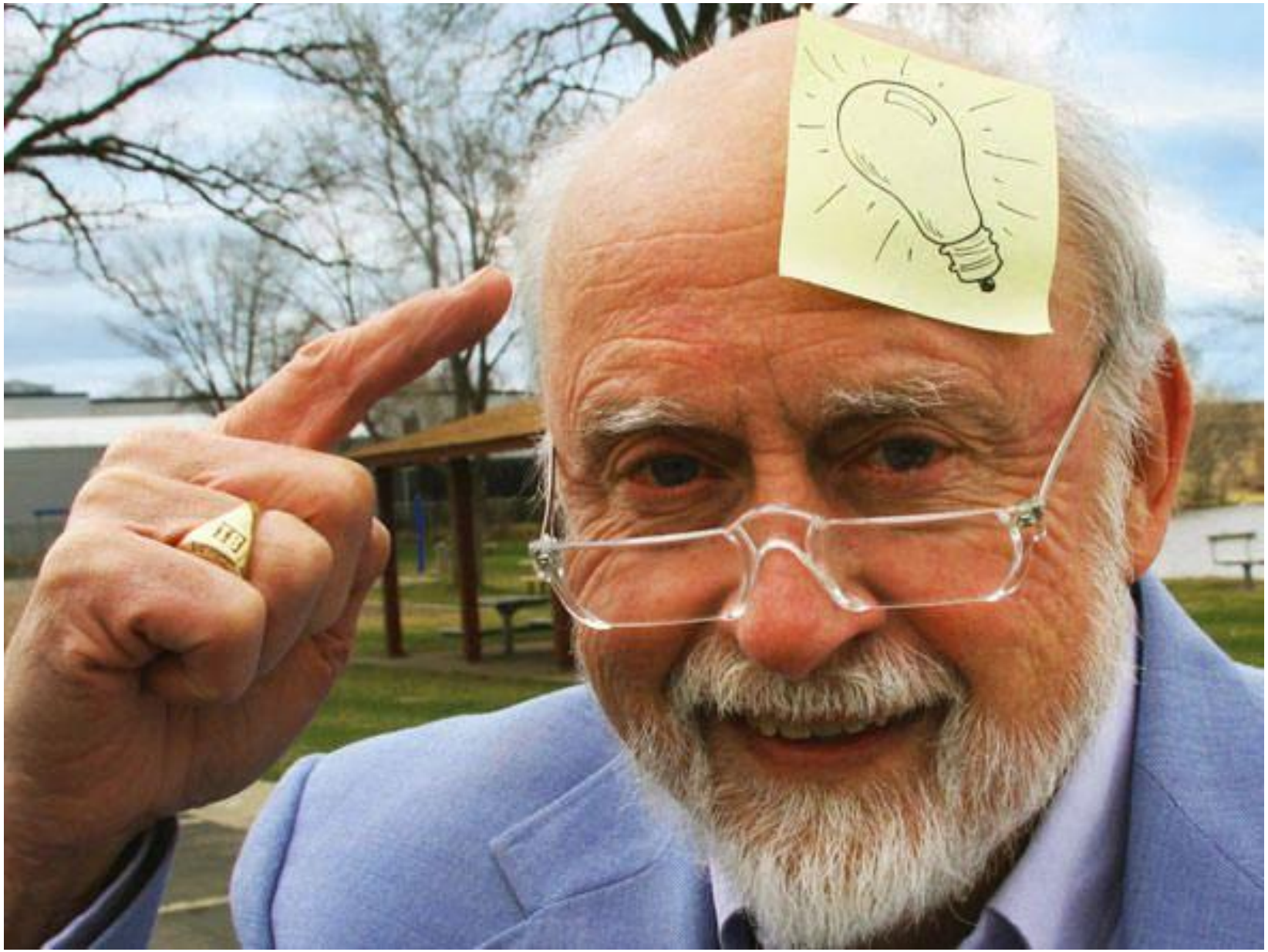


Design

The development of novel creation to meet some need

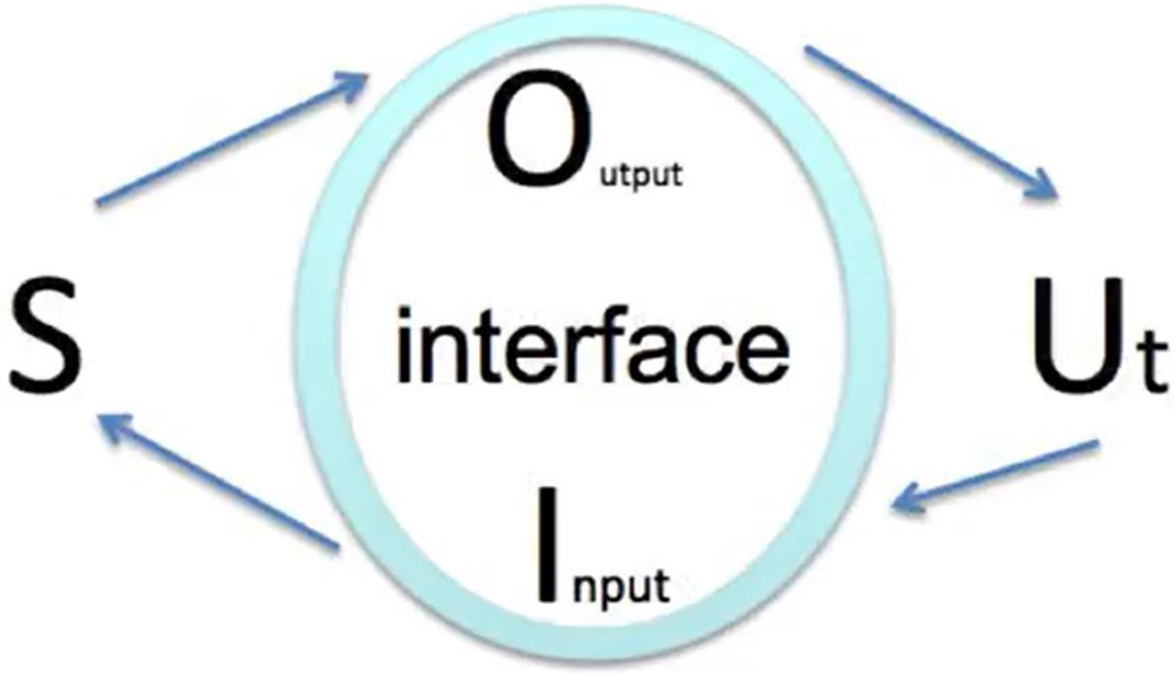
“Design is really an act of communication, which means having a deep understanding of the person with whom the designer is communicating.”

— **Donald A. Norman**

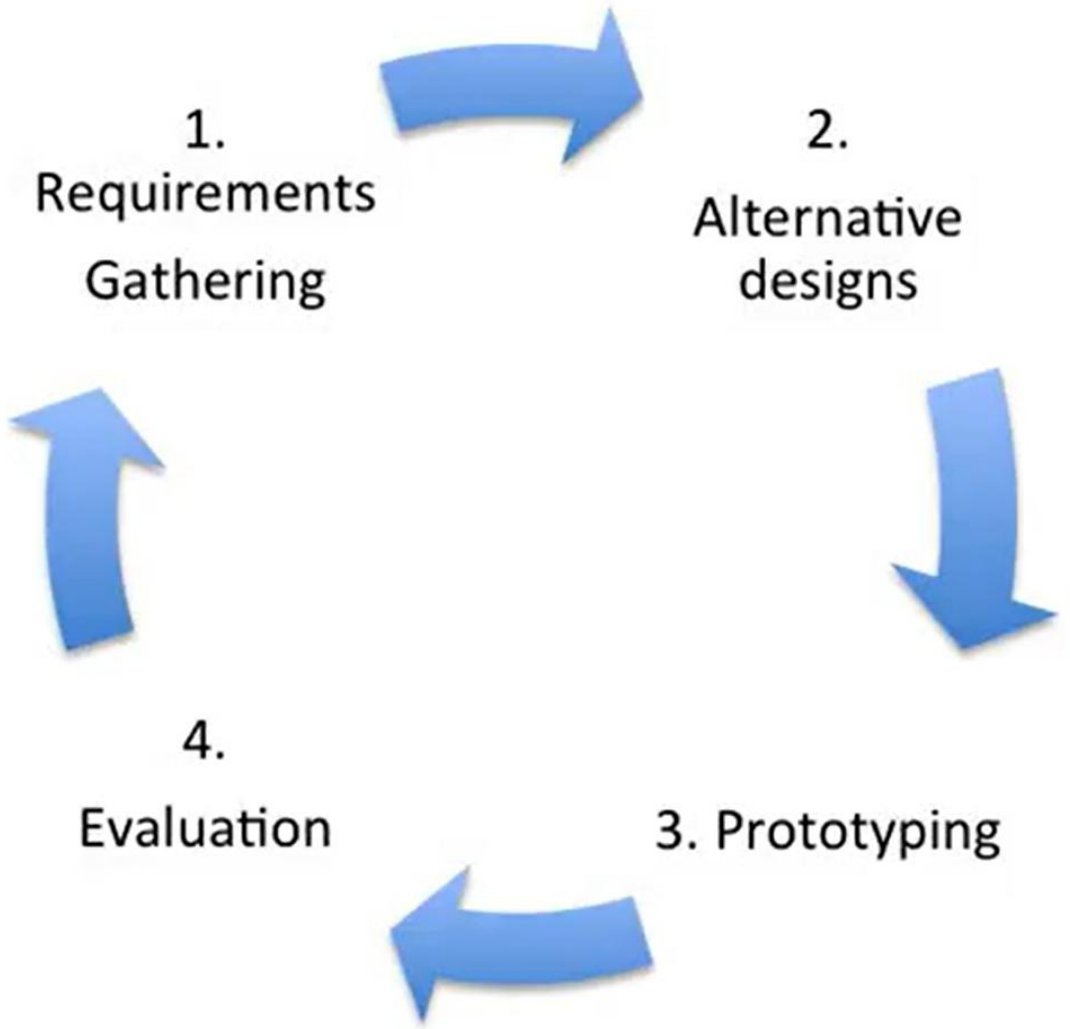


Goal of User Experience Design

- Design interfaces that are useful and usable
- Useful - allows a user to complete a task
- S actually produces desired O
- Usable – "…refers to the effectiveness, efficiency, and satisfaction with which users can achieve tasks when using an [interface]" (Courage, Baxter & Caine, 2015)
- I is easy to understand
- O actually completes task



User Interface Design Cycle



Requirements Gathering

- In this phase the designer aims to understand how users are currently completing tasks

Designing Alternatives

- In this phase we are able to develop novel interfaces to successfully complete the task because we have sound requirements for the system

Developing Prototypes

- The designer models various system features that meet core aspects of task

Evaluation

- In this phase we test the system's usability and usefulness with either users or experts

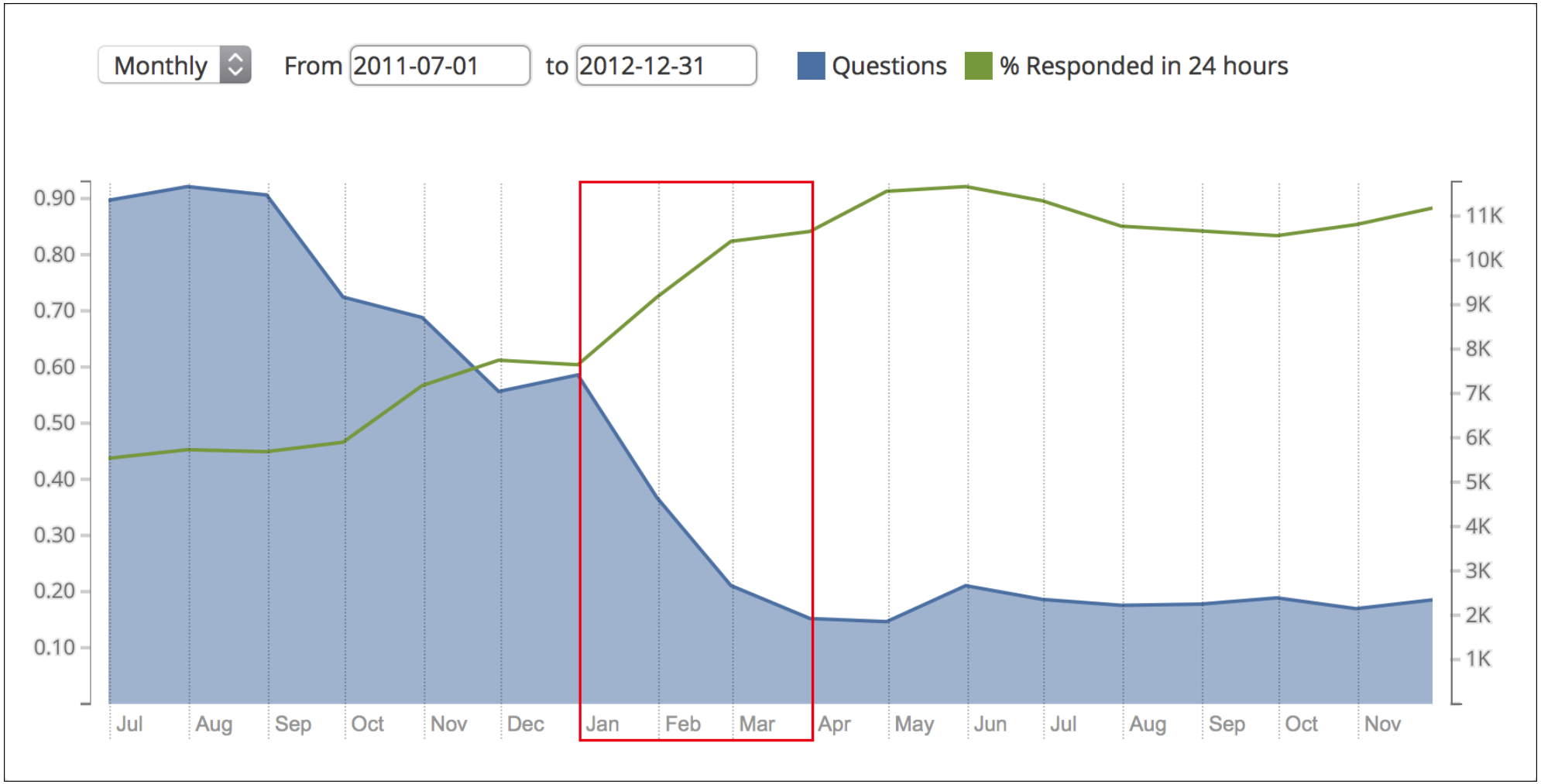
Airbnb UI/UX Design Success Story

- In the late 2000s, when the company's sales were dropping to new lows, the founders started looking for flaws in their business strategy.
- The changes that Airbnb was talking about here were UI/UX **design** changes.
- A close look at their website revealed that the property images were of low quality and obscure.
- When they replaced these amateur photos with high quality images, their revenues doubled within a week in 2009.
- When Airbnb focused more on the experience sales and revenue shot up.

Airbnb Design Success Story

- **Airbnb's rise in the travel and lodging industry** was aided by simple UI/UX **design** elements.

Volume of questions (solid blue) in Mozilla support forum before, during, and after 3-month UX activities (red box).



https://www.nngroup.com/articles/testing-decreased-support/

Courtesy: Mozilla

Summary

- You learnt Important Terms and Concepts for User Experience Design
- You also learnt some striking benefits of UX Design

Introduction to User Experience Design

Features of Good Design

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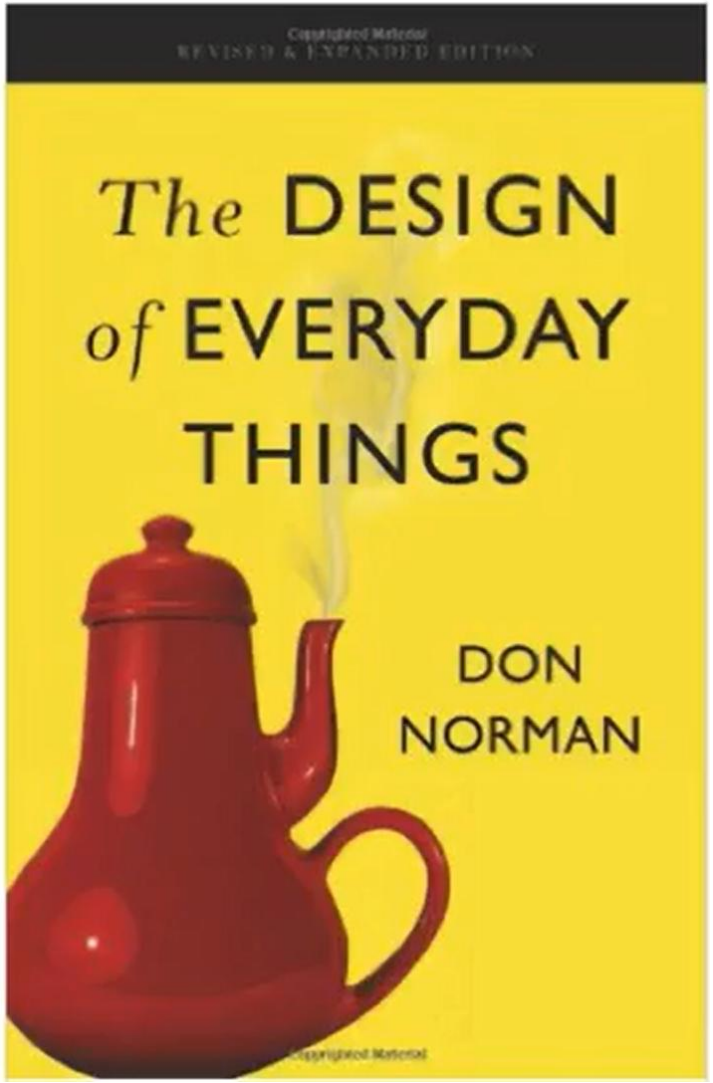
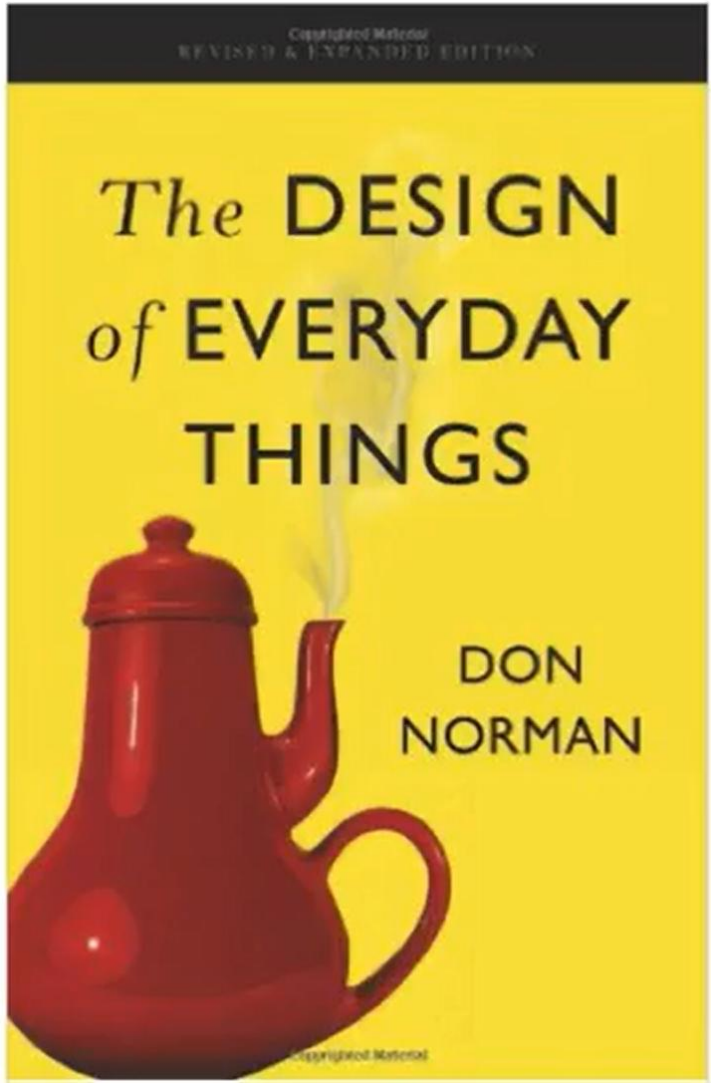
Design Lexicon



Features that Don Norman tells us are fundamental to good design

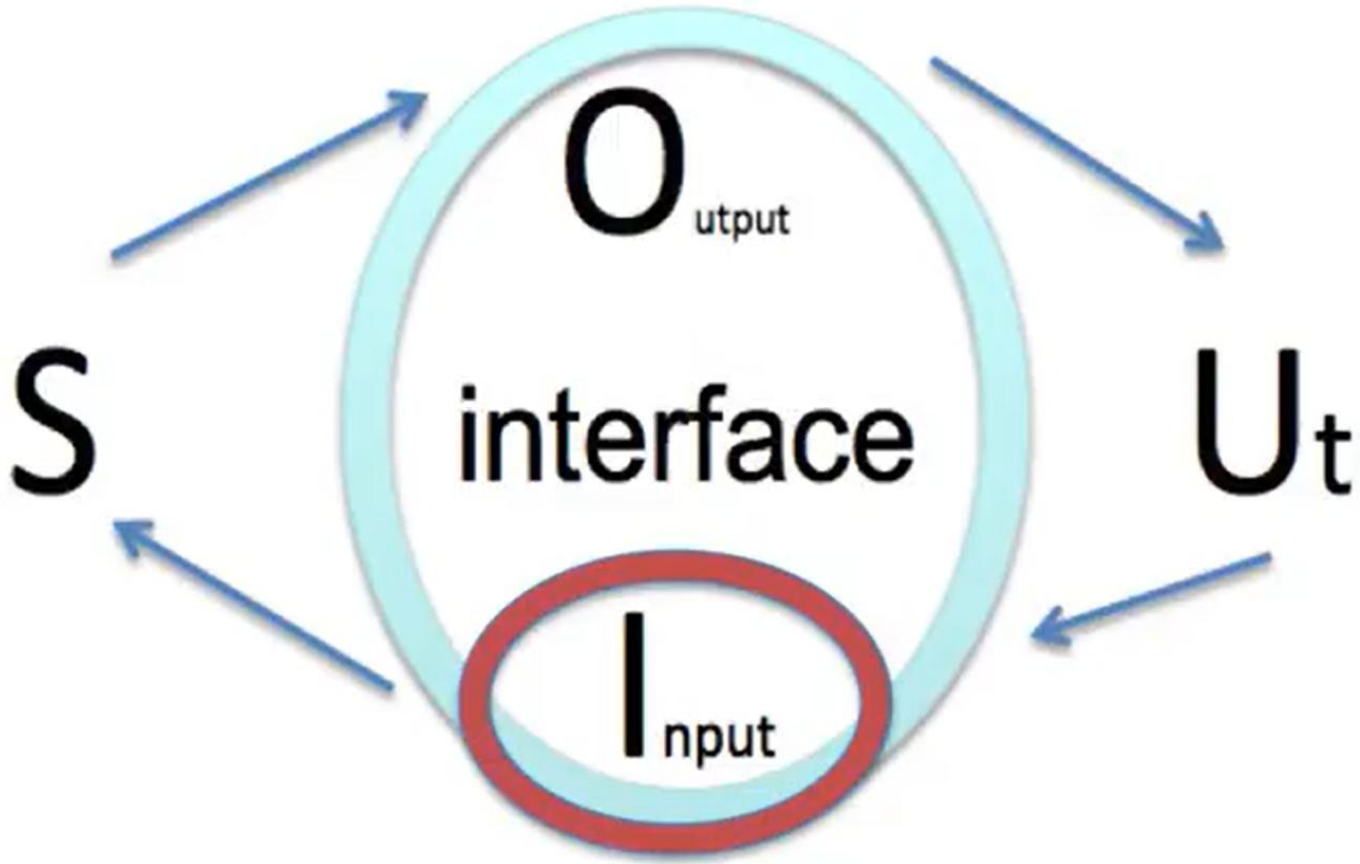
- Affordance
- Signifiers
- Feedback



Usability is essential to good design

- Characterized as effective, efficient and satisfying to the user

Usable Interface



Affordance

- The perceived and actual properties of the things, primarily those fundamental properties that determine just how the things could possibly be used

Not about how it works on the inside or looks on the outside
How the product behaves and is used in real world
How it works on the outside where a person comes into contact with it And has to work with it

HUMAN AND TECHNOLOGY

How it works ?
(According to me)

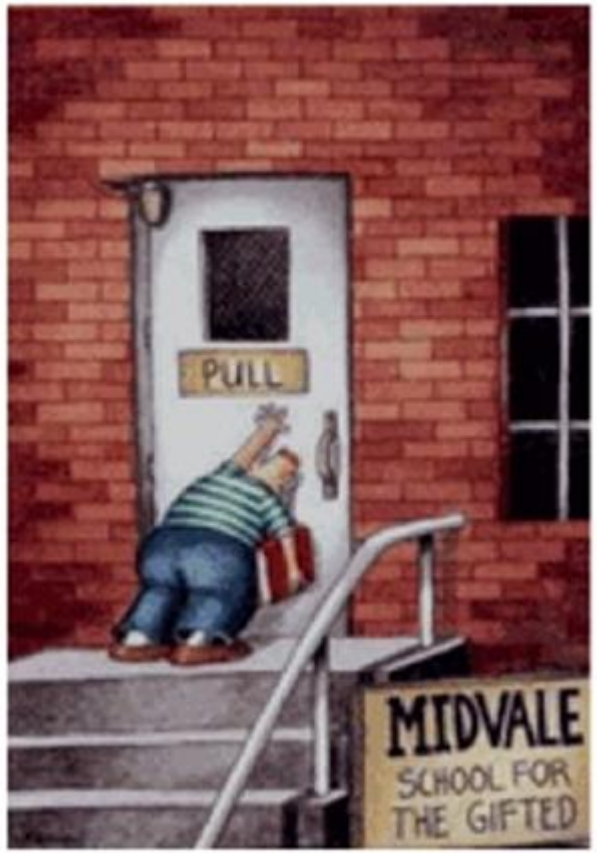
What it does?

Affordance and Behavioural Psychology

Courtesy: https://healthy-india.org/

signifiers

- Marks or sounds that communicate what actions are possible and how they should be done



Feedback

- Sending back to the user information about what system input has occurred

Three features of good design

- Affordances
- Signifiers
- Feedback

PEOPLE MAKE JUDGMENTS

People make judgments about perceived values….

COST OF BAD DESIGN FOR PEOPLE

AMERICAN ARILINE FLIGHT 965

December 1995 , departed from Miami to Cali Columbia
On landing approach, pilot had to pick the next radio-navigation selection called ‘ROZO’
He selected ‘R’, which populated the flight management system interface with all starting with ‘R’

The pilot selected the very first of these
Instead of ‘ROZO’ he selected ‘ROMEO’ 132 miles north-east(descending into the valley

COST OF BAD DESIGN FOR PEOPLE

Slammed into a granite peak at 10,000 feet (152 passengers and 8 crew members perished)

Summary

- You learnt Features of a Good Design
- You saw a worst example of a bad design

Introduction to User Experience Design

User Engagement Ethics

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User Interaction is an essential part of User Experience Design!

- Every time you interact with a user you have access to precious information

Good design is a data driven process

- Review your goals for the interaction

Before you interact with users

- Review your goals for the interaction
- Make sure each part of the interaction meets the goal
- Collect all of the material needed and organize them
- Practice the interaction with someone else

Dress for success!

User engagement process

3 part structure

- Introduction
- Interaction
- Closing

Ask for their frank opinion

Introduction | Interaction | Closing

Explain that the interaction is confidential

Introduction | Interaction | Closing

During the introduction

Explain to users that

- Their participation is completely voluntary
- They are free to stop participating at any time
- If they wish to stop participating this will not negatively affect their relationship with your company/institution

Introduction | Interaction | Closing

Keep the tone relaxed but professional

Introduction | Interaction | Closing

Provide neutral feedback

Introduction | Interaction | Closing

Encourage elaboration

Introduction | **Interaction** | Closing

Keep control of the interaction

Introduction | **Interaction** | Closing

At the end of the session

- Remind them about the goals of the interaction and what you plan to do with their data
- Ask if they have anything else to add
- Thank them for their participation

User interaction versus research

- Establishing the difference between the two

UX definition of research

"a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge."

Rule of thumb

- You are conducting research if your are collecting information with users with the goal of **reporting** the findings in a conference (workshop, poster, demo, etc), publication, or other professional venue

User interaction as research

- Conducting research requires that your user interaction protocol is approved by an ethics review board

User Engagement

- Preparation
- The 3 step process
- Difference between user engagement and research

Summary

- You learnt User Engagement Ethics

General Resources

1. http://www.usability.gov/how-to-and-tools/methods/index.html
2. http://www.usabilitybok.org/what-is-usability
3. https://en.wikipedia.org/wiki/User_interface_design
4. https://en.wikipedia.org/wiki/User_experience_design
5. https://uxmag.com/
6. http://www.usabilityfirst.com/
7. http://alistapart.com/article/usability-testing-demystified
8. http://uxmyths.com/

Introduction to User Experience Design

Requirements Gathering Overview

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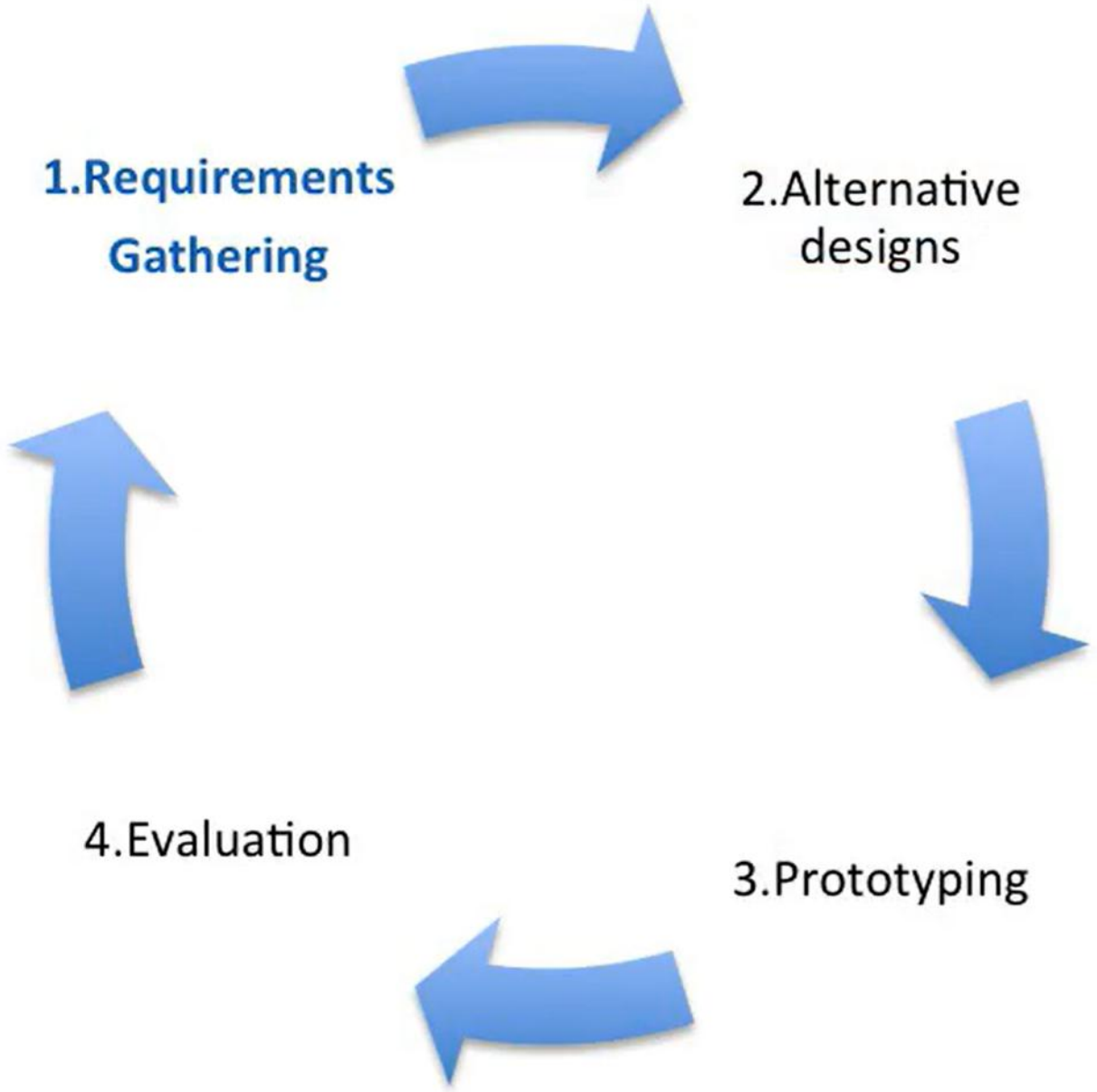
User Interface Design Process



Recap

- Users use interfaces to accomplish tasks
- The first step of the design process is to understand how users are completing the task NOW

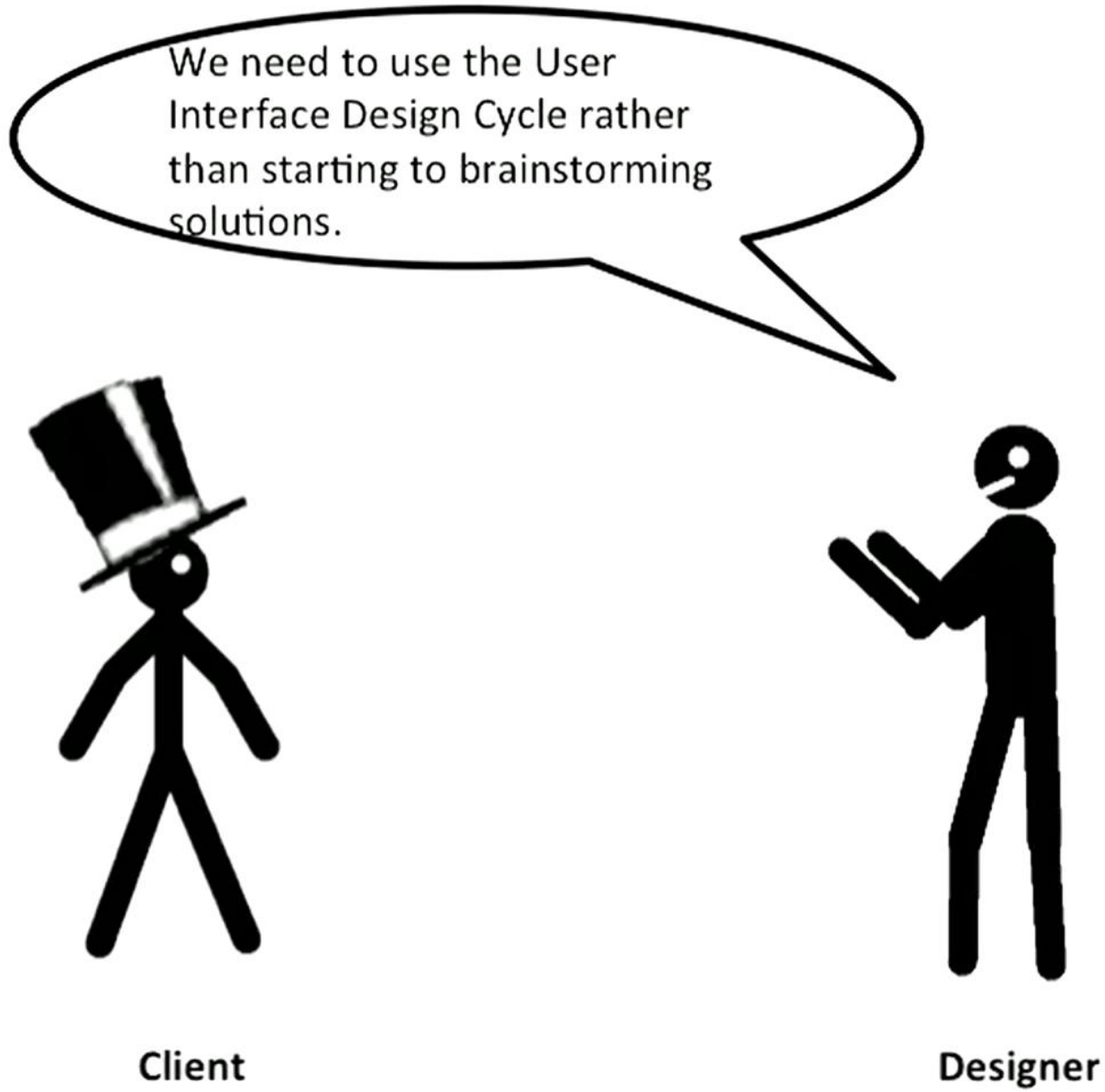
Scenario: You work for ACME User Interface Design

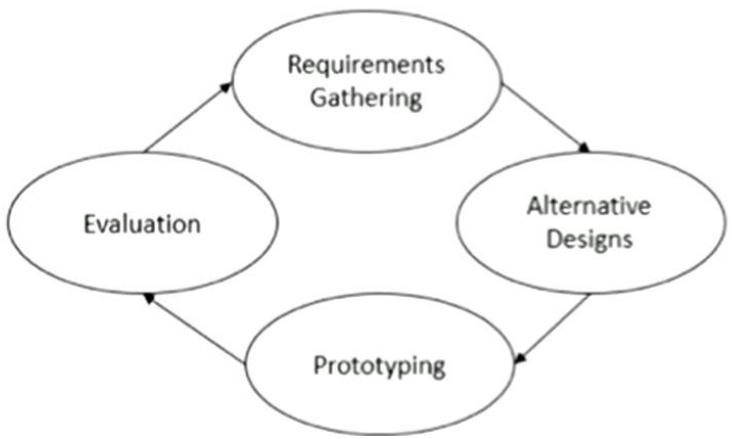
I would like to venture into the health and wellness to encourage healthy eating choices.

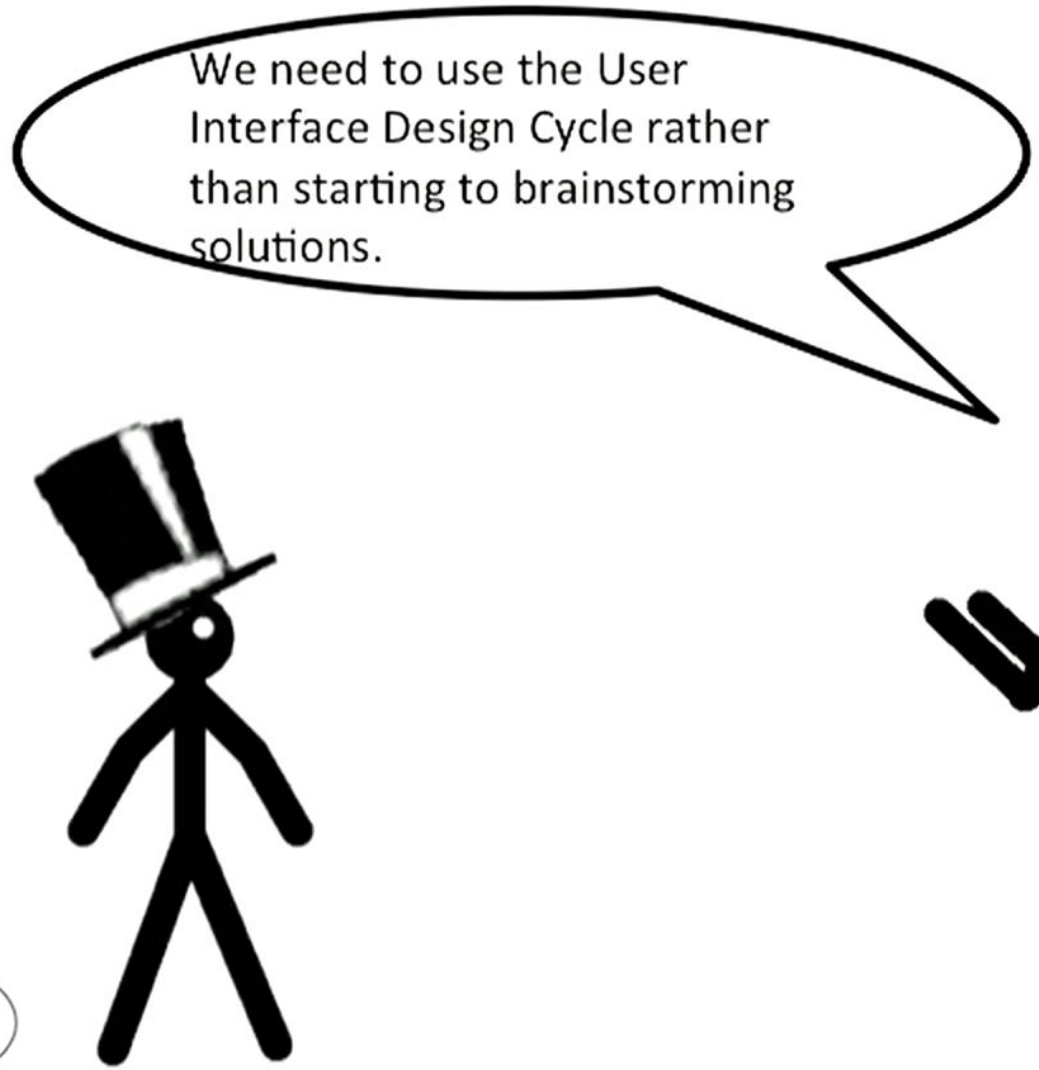
Client

Designer


I need you to develop the next system that will revolutionize the industry!
Client
Designer


We need to use the User Interface Design Cycle rather than starting to brainstorming solutions.
Client
Designer


Requirements Gathering
Alternative Designs
Prototyping
Evaluation


We need to use the User Interface Design Cycle rather than starting to brainstorming solutions.
Client
Designer

Goal of Requirements Gathering

- Understand the problem space

The Problem Space:

- Who are the users?
- When, where, why, and how do they currently accomplish the task?
- What do users perceive are problems with their current practices?
- User's wish list for improving how they currently accomplish their task?

Main pitfall of Requirements Gathering (RG)

- Designers start designing alternatives when they do NOT completely understand
  the task, user, or how the user currently accomplishes the task

Design is a systematic and data driven process

- Evidence based design techniques

Designer Techniques

- Discover what the user is doing now

- Present our requirements gathering findings

Techniques for discovery

- How is the user currently accomplishing the task?
  - Naturalistic observation
  - Surveys
  - Focus groups
  - Interviews

Techniques to represent RG findings

- About the User
  - User Characteristics tables
  - Personas

Techniques to Represent RG findings

- About the Task
  - Scenarios
  - Essential Use Case Scenarios
  - Hierarchical Task analyses
  - Current UI Critique

Techniques to Represent RG findings

- About the eventual novel interface
- Usability Principles

Data from the RG phase allows designers to

- Derive novel interface characteristics

Requirements Gathering

- Techniques to discover how the user is currently accomplishing the task

- Techniques to report our findings

Introduction to User Experience Design

Types of Users and Types of Data

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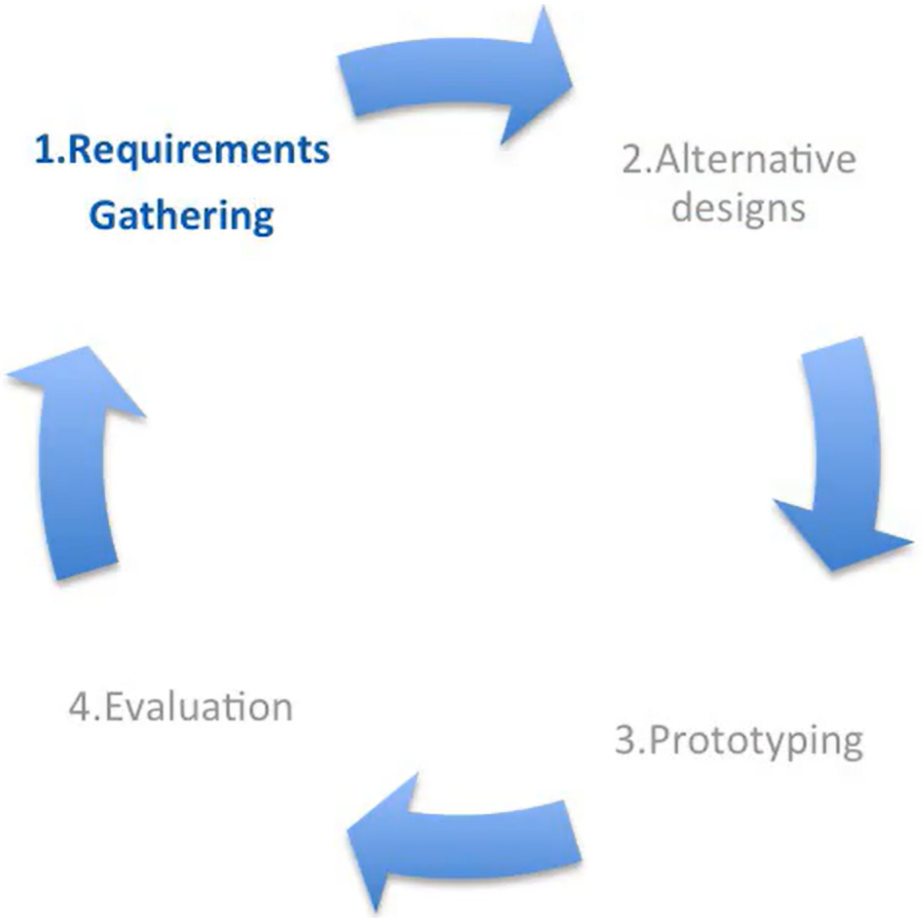
Understand the Problem Space



To understand the Problem Space

- We carry out a set of techniques
- These provide us with information (data)

Class Mantra

- Design is a systematic and data driven process

What kind of data will you collect?

- Quantitative
- Qualitative

Quantitative Data

- Information that can be transcribed numerically

Qualitative Statistics

- Thematic information

Is one data type better than the other?

Mixed method approach

- Collect both quantitative and qualitative

Categorizing Users

- Users as stakeholders
  - Primary
  - Secondary
  - Tertiary

Primary Stakeholder

- Use the design directly

Secondary stakeholders

- Do not use the design directly but may do so indirectly because they get some output from it– or may provide some input

Tertiary Stakeholders

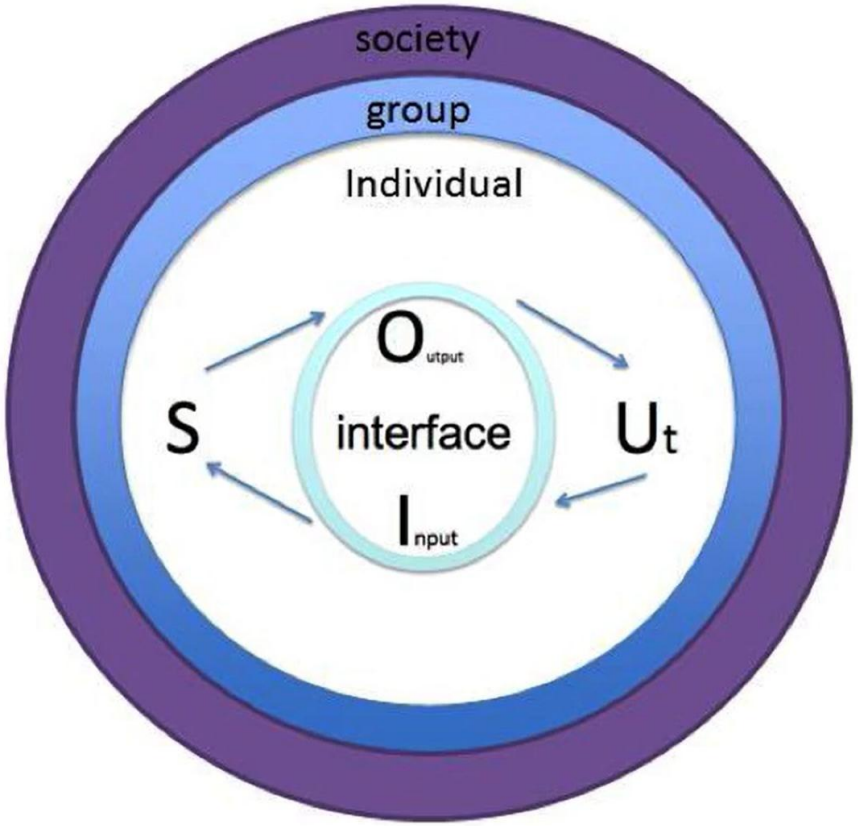
- May not use the design at all but are directly effected by the design in either negative or positive ways

An example of Stakeholders

- Primary
- Secondary
- Tertiary

Understanding Stakeholders

- Leads to better user experience design



Improved Design

- Via stakeholder consideration

This lesson we learned about

- Data types
- Stakeholders

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Discovery Technique Overview

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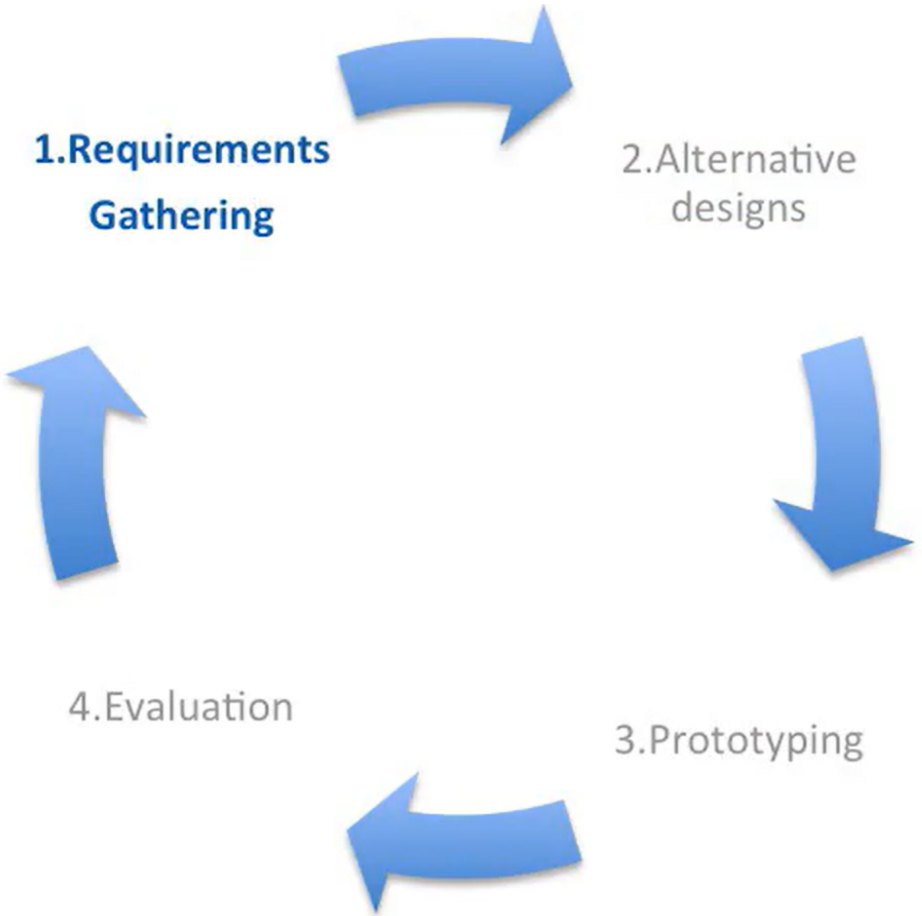
User interface design process: Discovery Techniques



Understanding the problem space

- Collect information
- from the user
- about the user to better understand their current practices and needs

Techniques for discovering

- How is the user currently accomplishing the task?
  - Naturalistic observation
  - Surveys
  - Focus groups
  - Interviews

Naturalistic Obervation

- We observe the user

Surveys

- Self-report Questionnaires
  - Closed ended items
    - Likert scales
    - Ranks
  - Open ended items
    - opinion

Focus group

- 5-7 users having a directed conversation

Interviews

- One-on-one interaction between the user and the designer

Interacting with Users

- Discover what the user is doing now
  - Review Module of Interacting with users

Techniques can be organized

Least interaction

- Naturalistic observation
- surveys
- Focus groups

Most interaction

- Interviews

Techniques for discovering

- How is the user currently accomplishing the task?
  - Naturalistic observation
  - Surveys
  - Focus groups
  - Interviews

Iterative Data Gathering Process

Understanding the Techniques

- Goal
- Data gathered
- Advantages and short comings

Requirements Gathering

- Techniques to discover how the user is currently accomplishing the task

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Naturalistic Observation

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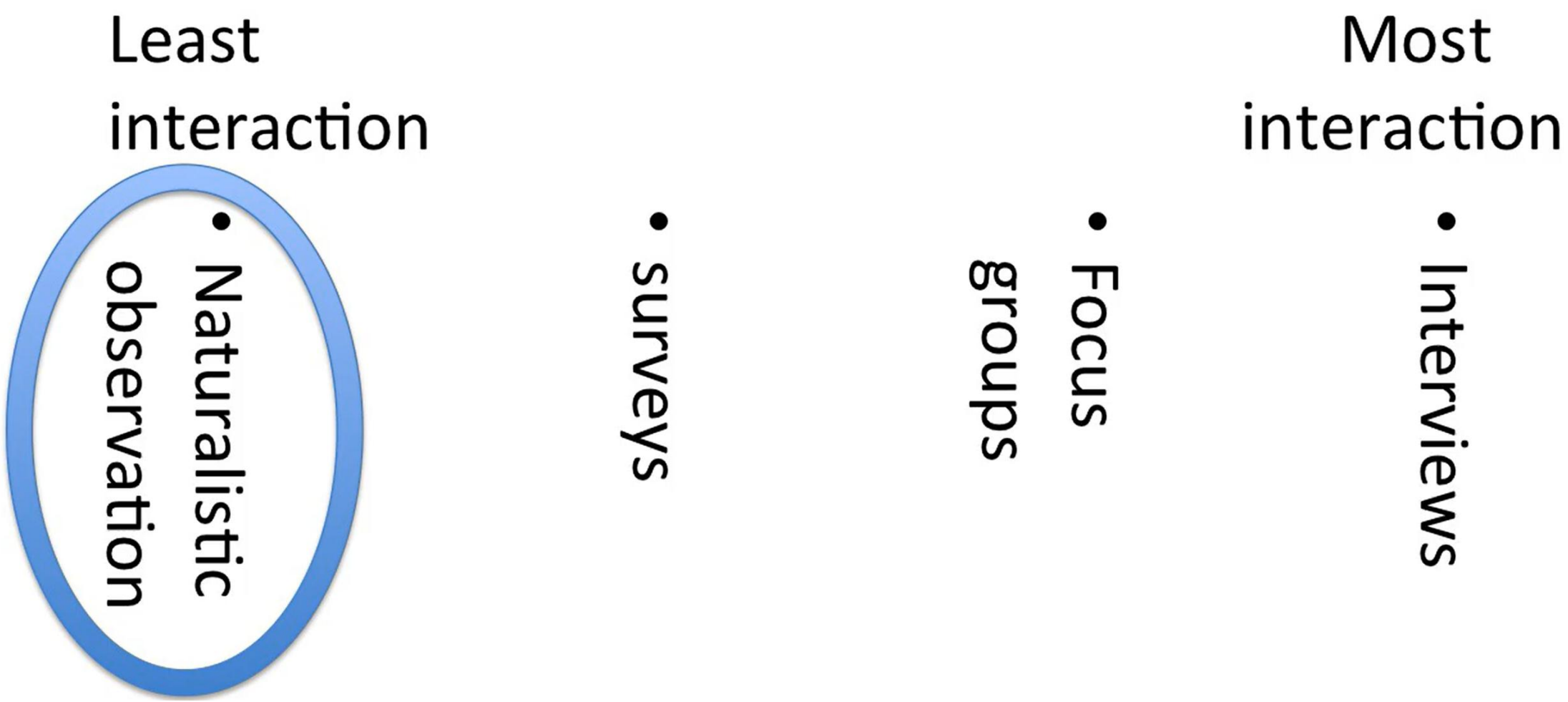
Understanding the Naturalistic Observation

- Goal
- Data gathered
- Advantages and shortcomings

Naturalistic Observation Goal

- To watch the users in action in their own environment

Techniques can be organized



Interacting with Users

- Discover what the user is doing now
  - Review Module of Interacting with users

Naturalistic Observation Data

- Qualitative
- Quantitative

Naturalistic Observation Data

- Qualitative: designer's handwritten notes

Naturalistic Observation Data

- Quantitative: counts of various actions or interactions with other users

Naturalistic Observation

- Advantages
  - No direct interaction with user
  - No social desirability bias

Naturalistic Observation

- Disadvantages
  - Observer Bias may lead to incorrect notes
  - No feedback from user

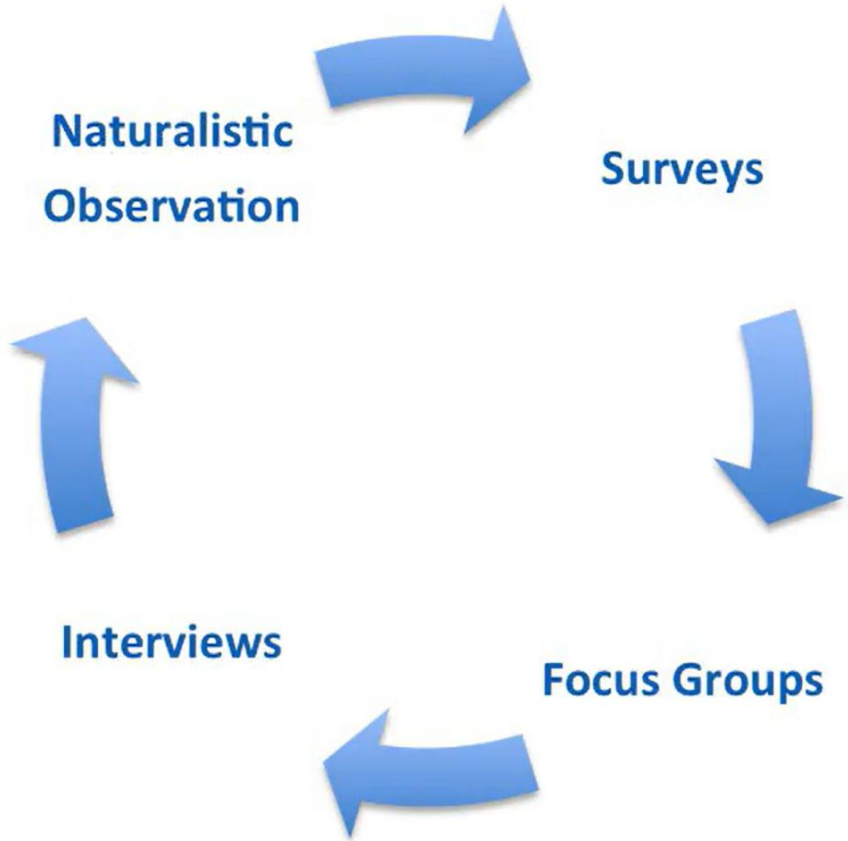
Naturalistic Observation

- Ethical Consideration
  - Maintain anonymity of users
  - Identifying information must only be collected with user permission

Naturalistic Observation Data

- Platform for future study

Iterative Data Gathering Process



Iterative Data Gathering Process

Naturalistic Observation  **Interviews**

Requirements Gathering Technique

- Naturalistic observation

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Survey

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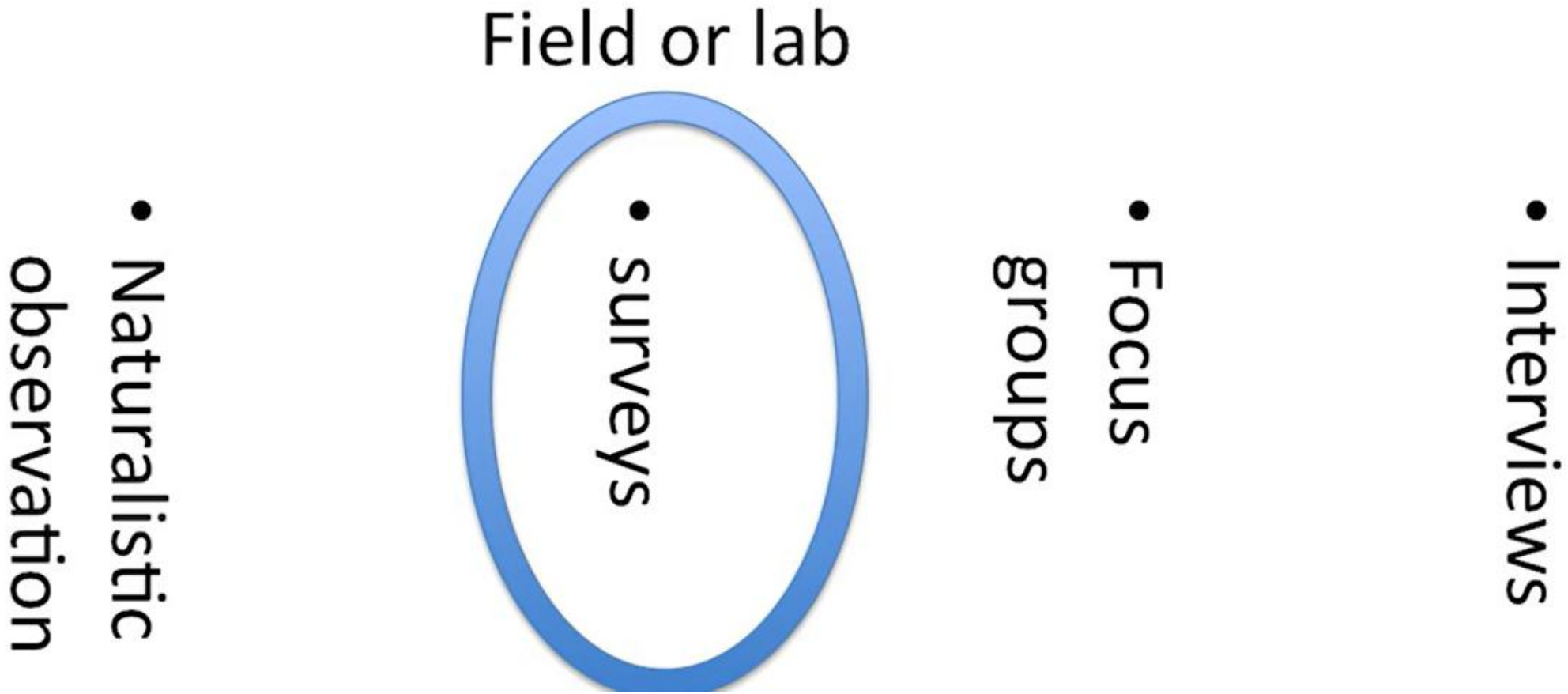
Understanding the Survey Technique

- Goal
- Data gathered
- Advantages and shortcomings

Survey Goal

- Get the users' opinions

Techniques can be organized by location



Techniques can be organized by:

Least interaction

- Naturalistic observation

- surveys

- Focus groups

Most interaction

- Interviews

Interacting with Users

- Discover what the user is doing now
  - Review Module of Interacting with users

Survey Data

- Quantitative
- Qualitative

Survey Data

- Quantitative- Closed ended questions
  - Ordered response
    - dichotomous
    - Likert scales
    - Rank

Survey Data

- Quantitative- Closed ended questions
  - Unordered Response
    - Lists

Survey Data

- Qualitative-Open ended questions

Survey

- Advantages
  - Efficient data collection
  - Relatively easy data analyses

Survey

- Disadvantages
  - Efficient data collection
  - Relatively easy data analyses
  - Superficial knowledge

Survey

- Disadvantages
  - Recall bias
  - Social desirability bias
  - Sample bias

Survey

- Platform for future study

Iterative Data Gathering Process

Iterative Data Gathering Process

Requirements Gathering Technique

- Survey

Introduction to User Experience Design

Survey

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Focus Group

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Understanding the Focus Groups

- Goal
- Data gathered
- Advantages and shortcomings

Focus Group Goal

- To engage users in direct conversations

Techniques can be organized by location

In the field

- Naturalistic observation
- surveys
- Focus groups

Lab

- Interviews

Techniques can be organized by:

Least interaction

- Naturalistic observation
- surveys
- Focus groups
- Interviews

Most interaction

Interacting with Users

- Discover what the user is doing now
  - Review Module of Interacting with users

Focus Group Composition

- Users
  - Between 5-10
- Design Team
  - Moderator
  - Note taker
  - Media person (optional)

Focus Group Structure

- Schedule
  - 5 minute warm up
  - 5 minute creative exercise
  - 45 minute discussion
    - 3 topics
  - 5 minute wrap up

Focus Group Data

- Qualitative
- Quantitative

Focus Group Data

- Qualitative:
  - note takers handwritten notes
  - Transcribed data

Focus Group Data

- Quantitative

Focus Group

- Advantages
  - Rich data in a timely manner
  - Group dynamic inspires

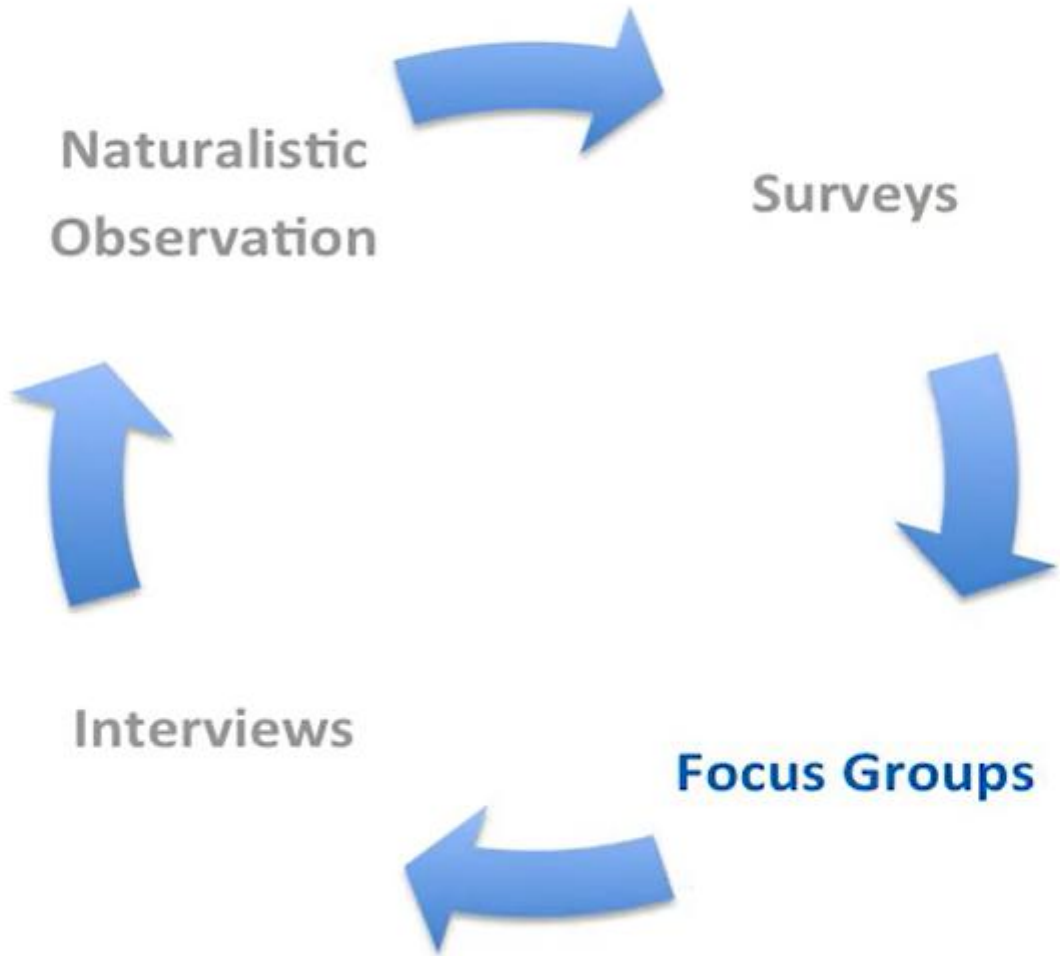
Focus Group

- Disadvantages
  - Need a team headed by an experienced moderator
  - Social influence may lead to group think
  - Influential member

Focus Group Data

- May be the culmination of design process

Iterative Data Gathering Process



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interview

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Understanding Interviews

- Goal
- Data gathered
- Advantages and shortcomings

Interview Goal

- To gather in depth information from a single user at time

Techniques can be organized by location

In the field

- Naturalistic observation
- surveys

or

Lab

- Focus groups
- Interviews

Interacting with Users

- Discover what the user is doing now
  - Review Module of Interacting with users

Interview Data

- Qualitative
- Quantitative

Interview Data

- Qualitative
  - Designer's handwritten notes
  - Interview transcript

Interview Data

- Quantitative
  - Short survey

Interviews

- Advantages
  - In depth conversation
  - Flexible protocol

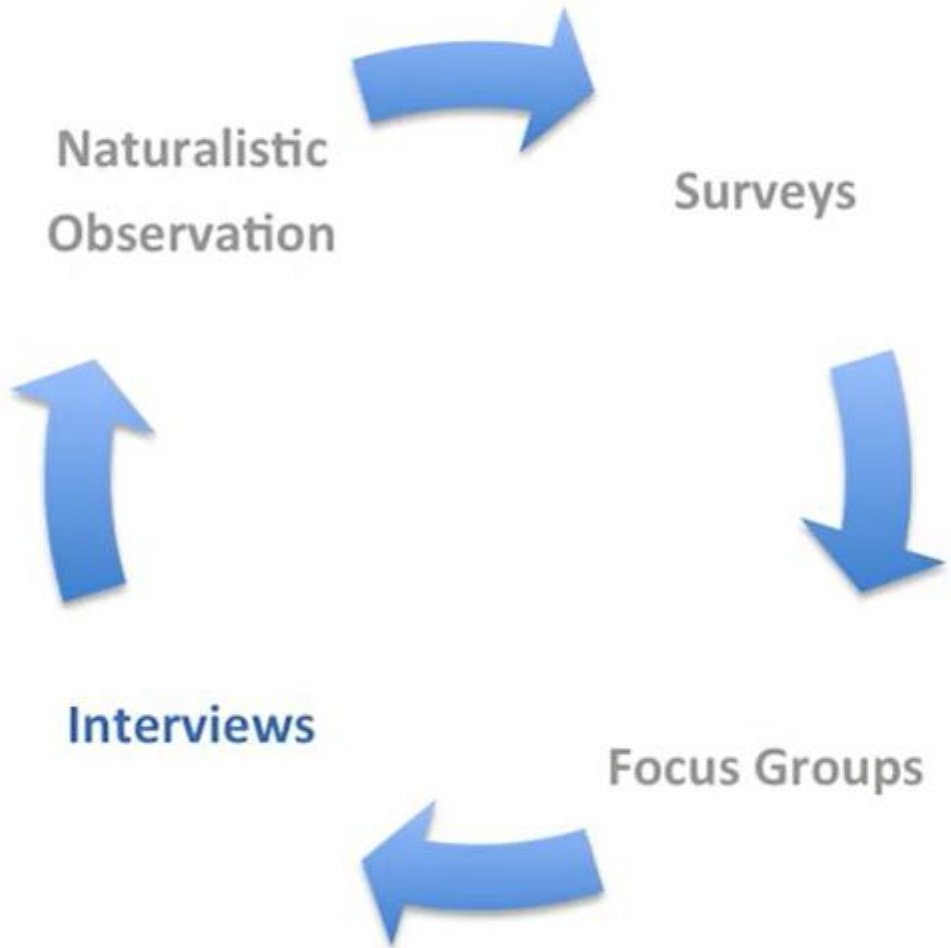
Interviews

- Disadvantages
  - Skilled interviewer
    - Lead agenda and manage and build rapport

Interviews

- Disadvantages
  - Skilled interviewer
    - Lead agenda and manage and build rapport
  - More time intensive process
    - Data collection and analyses

Iterative Data Gathering Process



Resources for Requirement Gathering

1. http://personalexcellence.co/blog/brainstorming-techniques/
2. http://leadinganswers.typepad.com/leading_answers/2009/03/nonfunctional-requirements-minimal-checklist.html
3. http://searchsoftwarequality.techtarget.com/answer/Differentiating-between-Functional-and-Nonfunctional-Requirements
4. http://www.usabilityfirst.com/usability-methods/facilitated-brainstorming/
5. http://blog.abovethefolddesign.com/2010/11/11/5-powerful-ways-to-brainstorming-with-teams/
6. http://www.inspireux.com/2013/07/18/tips-for-structuring-better-brainstorming-sessions/
7. http://www.slideshare.net/jessicaivins/aiga-cincy-uxworkshop01
8. http://asq.org/learn-about-quality/idea-creation-tools/overview/affinity.html
9. https://www.mindtools.com/pages/article/newTMC_86.htm
10. http://infodesign.com.au/usabilityresources/affinitydiagramming/