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# Graphical User Interface

## Chapter Two

# Usability Engineering Life Cycle

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# Chapter Description

- **Aims**

- ✓ To understand the concept of usability and usability objectives.
- ✓ To explain the parallel design and participatory design concepts.
- ✓ To explore the usability life cycle.

- **Expected Outcomes**

- Understand the usability concept, objectives as well as usability life cycle

- **References**

- ✓ Wilbert O. Galitz, *The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques*, John Wiley & Sons Inc, 2007.
- ✓ Jenifer Tidwell, *Designing Interfaces*, O'Reilly, 2011
- ✓ Jeff Johnson, *Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules*, Morgan Kaufman Publisher, 2010



# What is usability?

- “Usability measures the **quality of a user's experience** when **interacting with a product or system**—whether a Web site, a software application, mobile technology, or any user-operated device”.

[U.S. Department of Health & Human Services](#) •

# Know the users ( Who are ? )

## Disable

- Accessibility Issue
- Section 508 (US Law)



## Beginner

- Tend to watch/listen
- He follows the computer



## Intermediate

- Tend to interact a little
- Still follow the computer

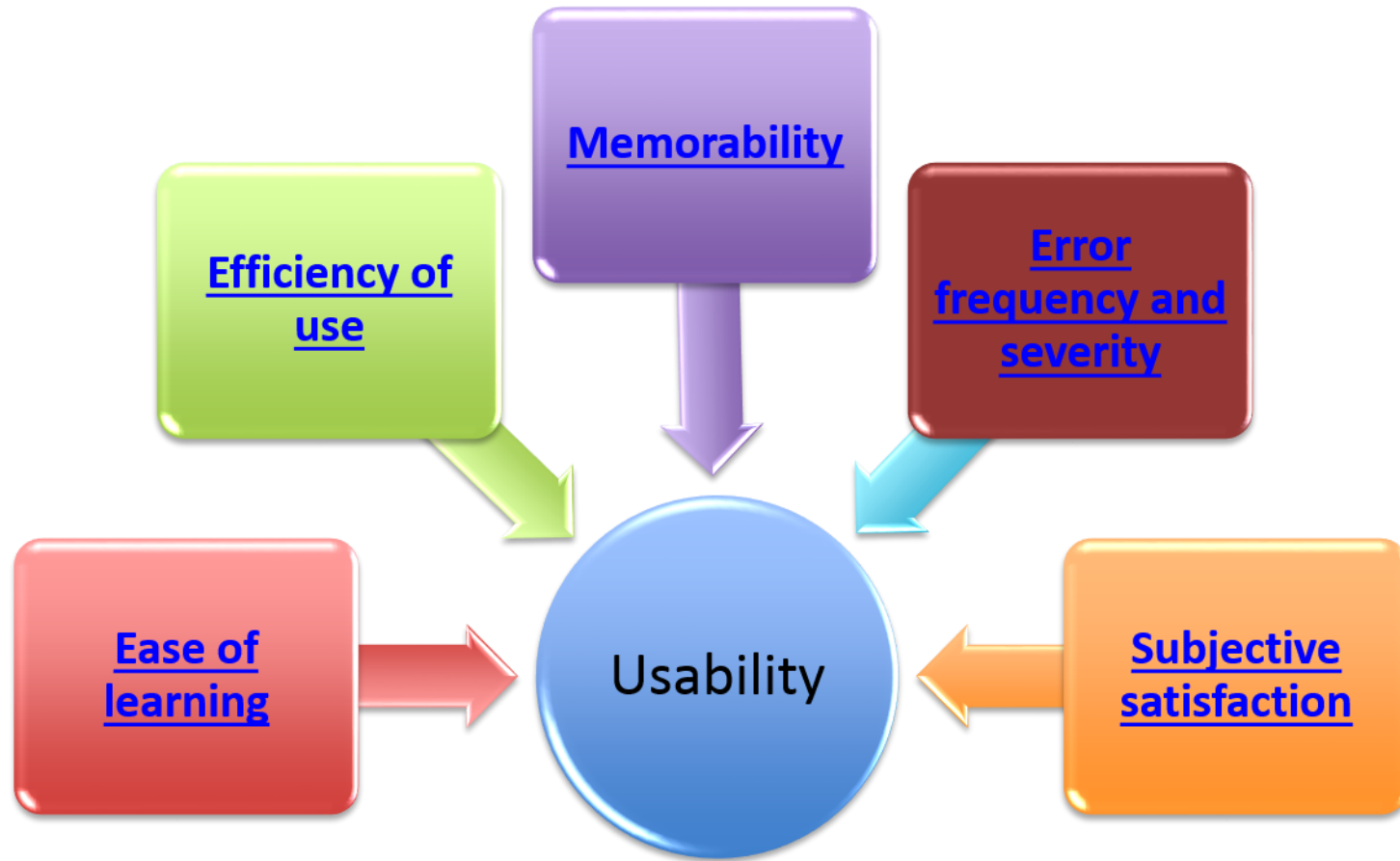


## Advanced

- Tend to interact and get control
- Computer follows him



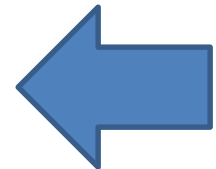
# Define Usability Objective





- **Ease of learning** –

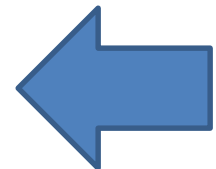
How fast can a user who has never seen the user interface before learn it sufficiently well to accomplish basic tasks?





- **Efficiency of use –**

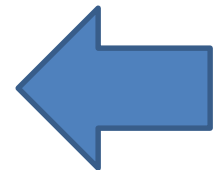
Once an experienced user has learned to use the system, how fast can he or she accomplish tasks?





- **Memorability** –

If a user has used the system before, can he or she remember enough to use it effectively the next time or does the user have to start over again learning everything?

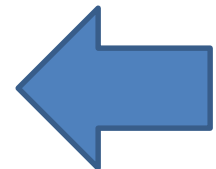






- **Error frequency and severity –**

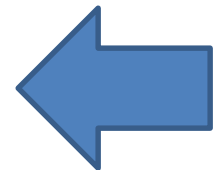
How often do users make errors while using the system, how serious are these errors, and how do users recover from these errors?



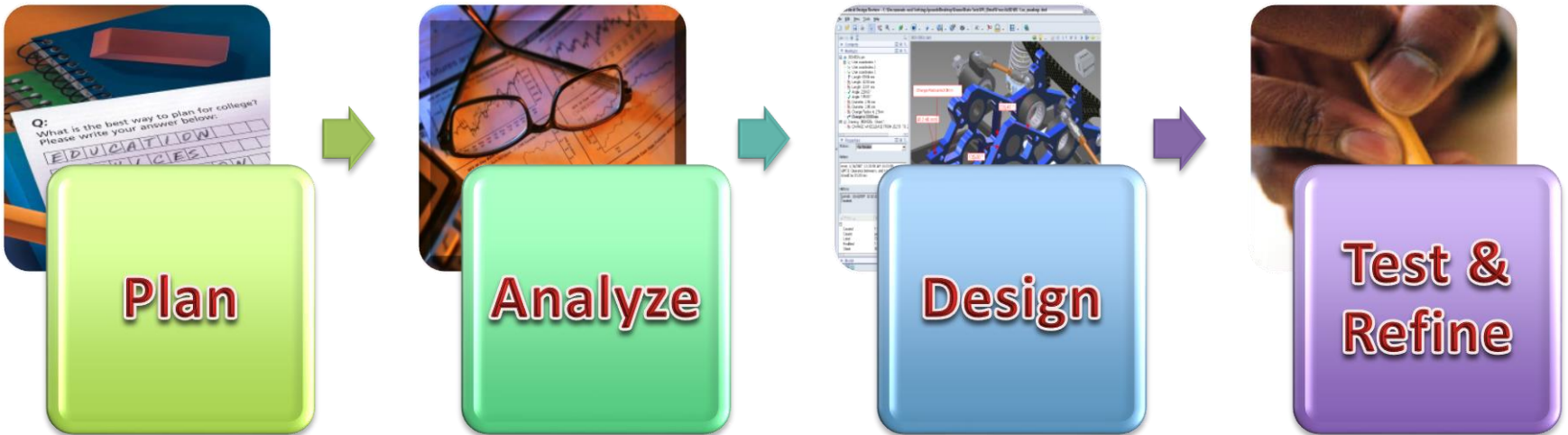


- **Subjective satisfaction –**

How much does the user *like* using the system?



# Usability Engineering Life-cycle



# Requirements analysis

- User profile
- Task profile
- Environment Profile
- General design guidelines

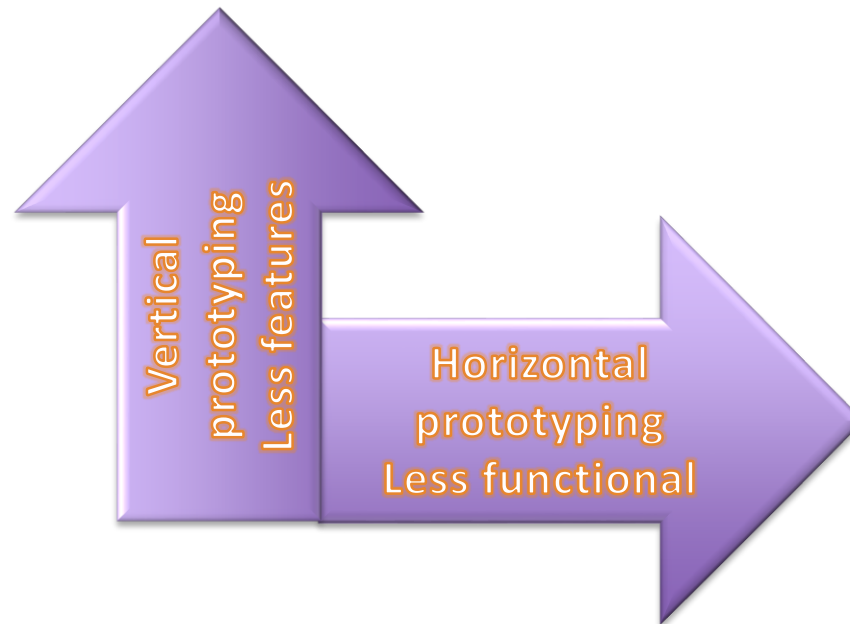
# design

- Conceptual model mockups----prototype
- Design standards
- Detailed user interface design



# Prototyping

- Model for product or system (including software)
- Fast developing, low cost, changeable till satisfy
- Product prototyping – user interface usability testing

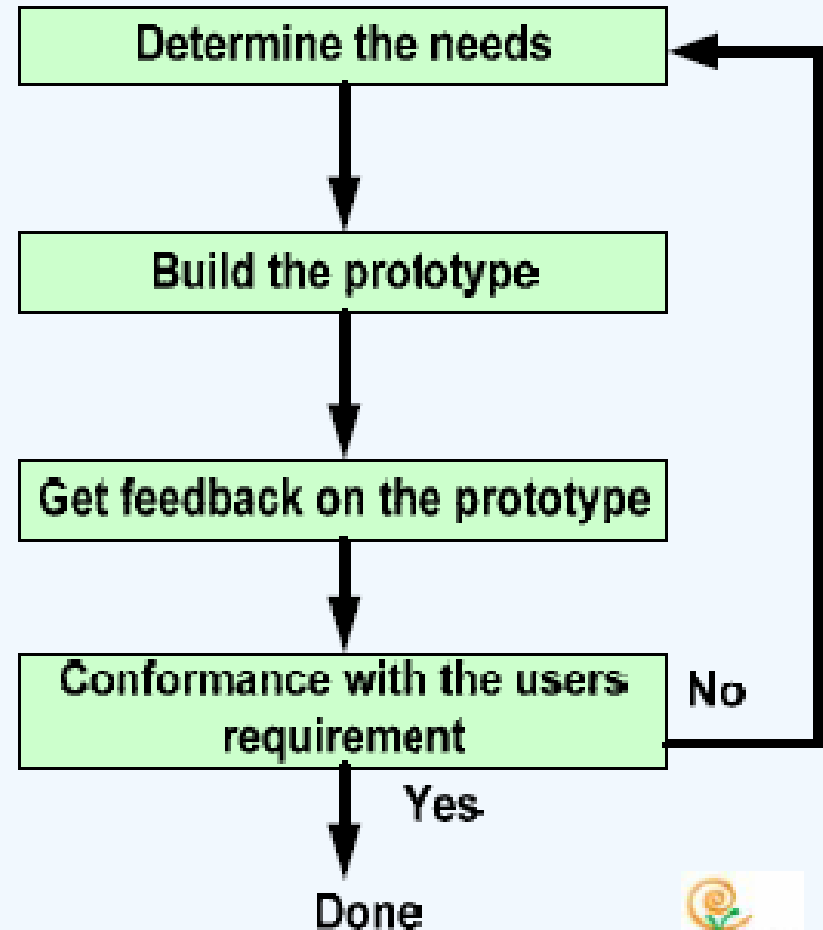


# Prototypes

## Design Phase...

- **Prototypes**

The prototyping of a user interface and its subsequent testing with real users is the only accurate means of measuring the usability of an interface



# Empirical testing

## Severity testing

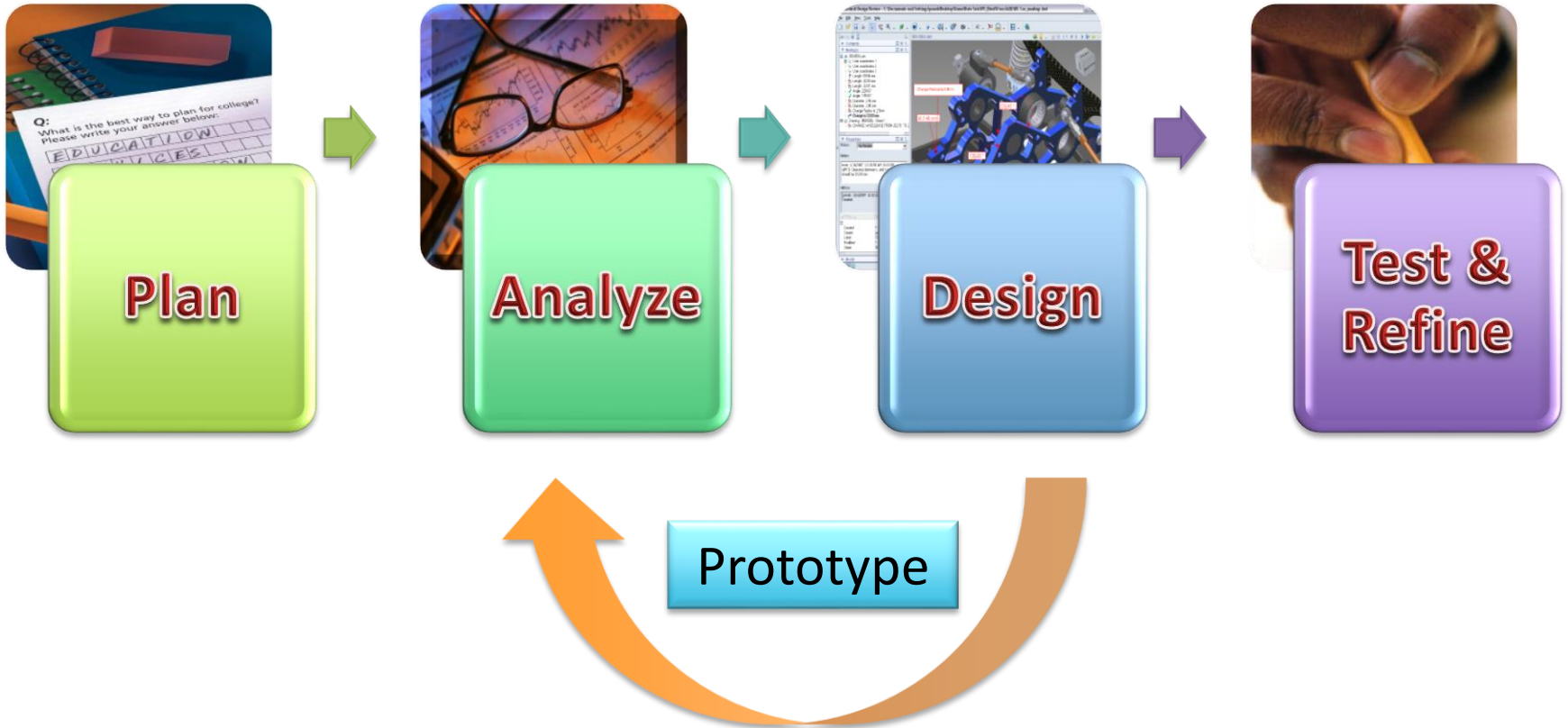
- Done by experts

## User satisfaction

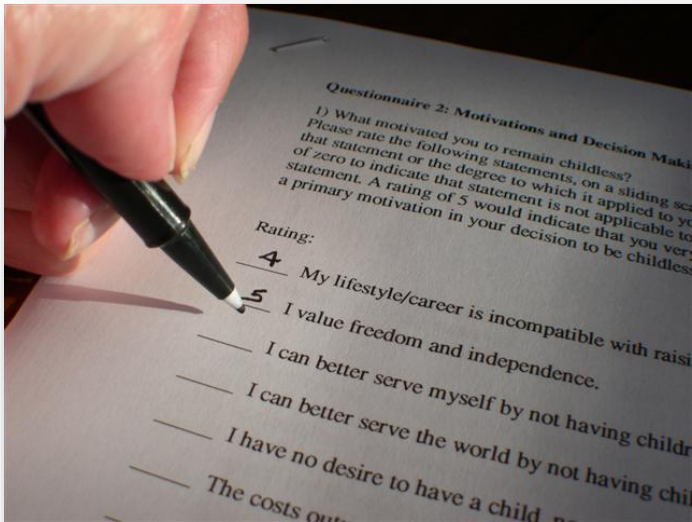
- Questionnaire by user



# Iteration Design



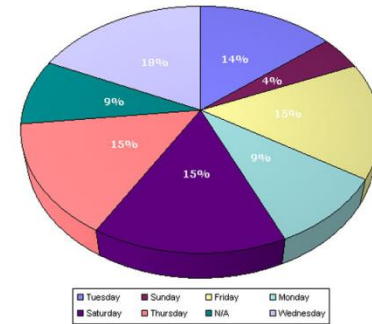
# User Feedback



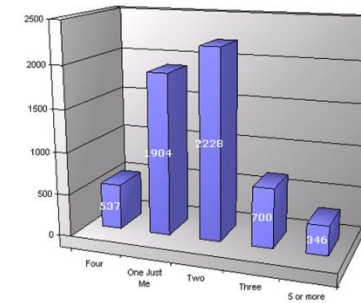
## Guest Survey

COMPLETED 1% (622 OF 97456 RESPONDENTS)

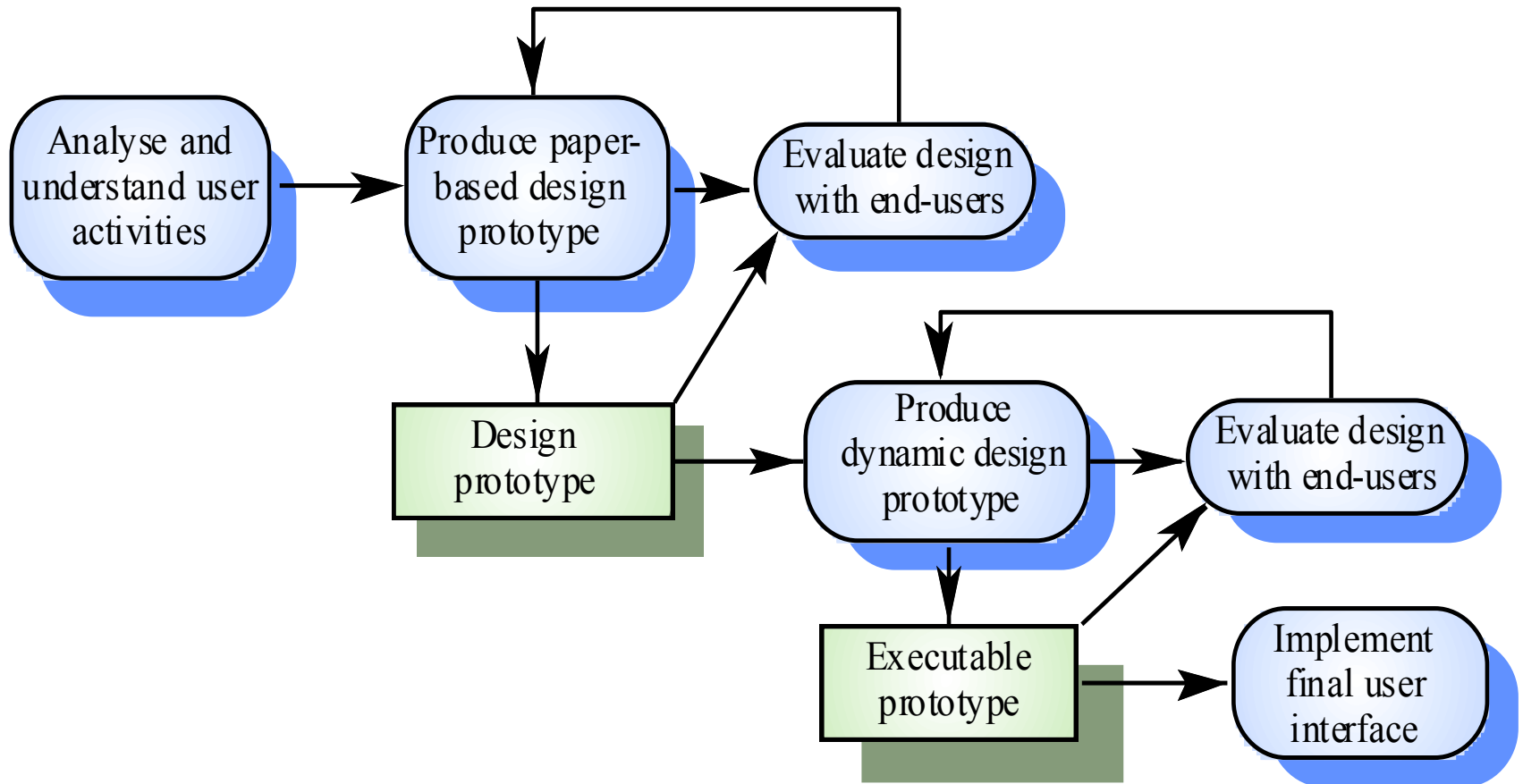
What day of the week was your visit?



How many people do you buy for?



# Flowchart of a complete GUI design and evaluation process



# Further readings:

- <https://www.mindd.com/>
- <http://www.usability.gov/basics/whatusa.html>
- <http://www.section508.gov/>
- <http://www.usabilitynet.org/>
- <http://www.cpsr.org/issues/pd/introInfo>
- <http://en.wikipedia.org/wiki/Usability>
- <http://www.usernomics.com/usability.html>

