UX Design

Embedded Interface Design

with **Bruce Montgomery**

Learning Objectives

Students will be able to…

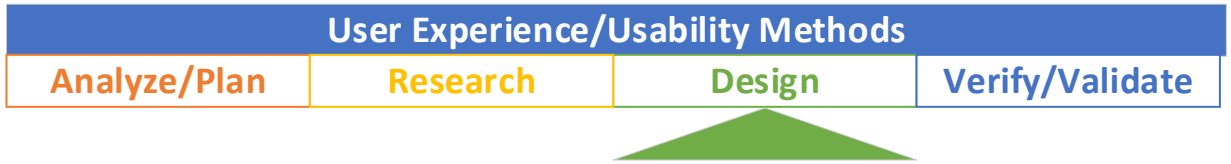
- Understand the importance of the UX design phase
- Recognize some key UX design principles
- Consider high-level steps for performing UX designs

Design

Design: the art or action of conceiving of and producing a plan or drawing of something before it is made [1]

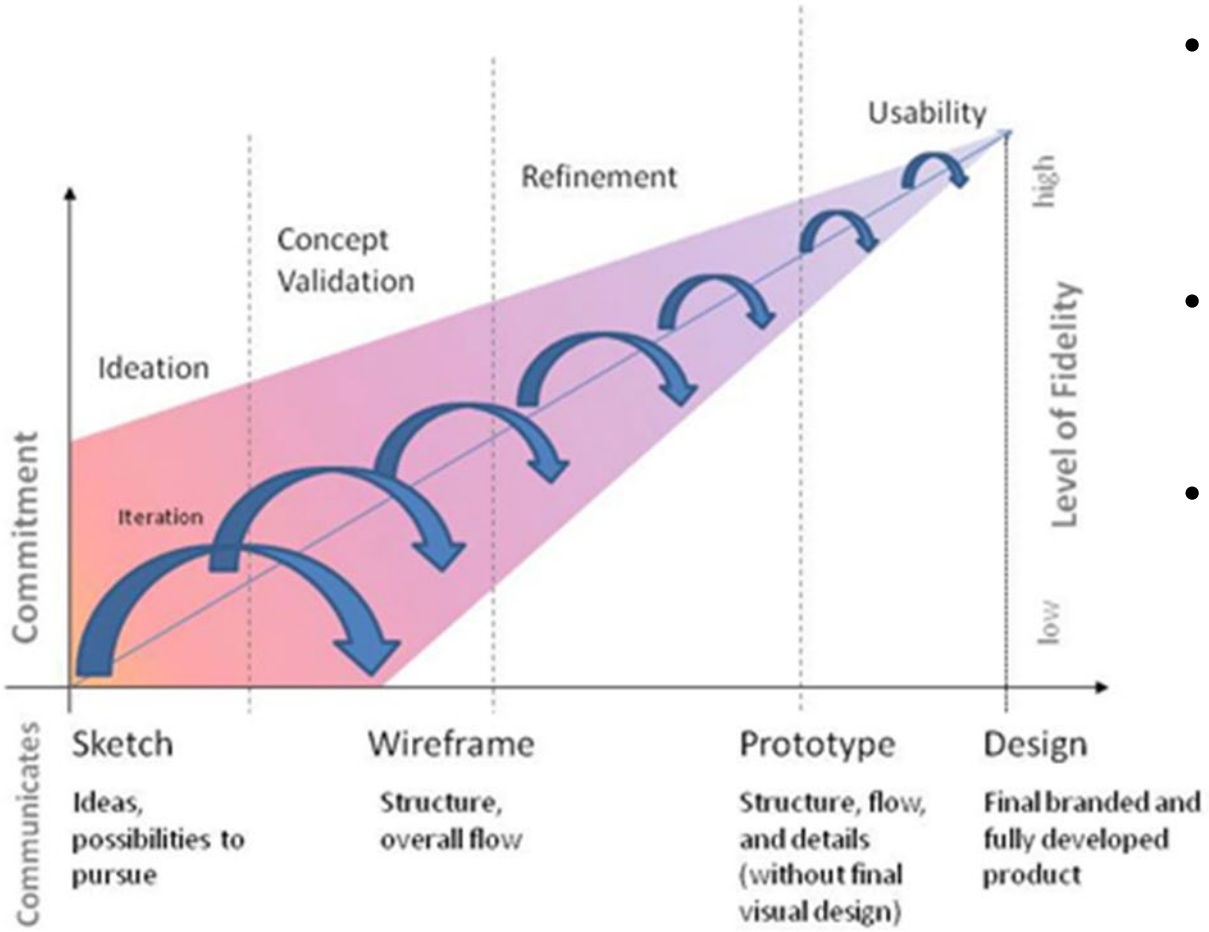
“Design is a funny word. Some people think design means how it looks. But of course, if you dig deeper, it’s really how it works.”
— Steve Jobs

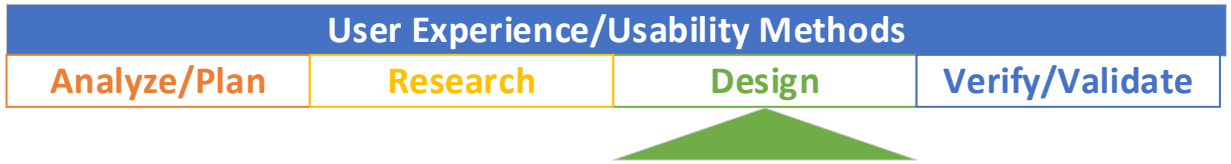
UX Design



- Why?
- Purpose of the phase
- Effective UX Design
- Design principles - Norman

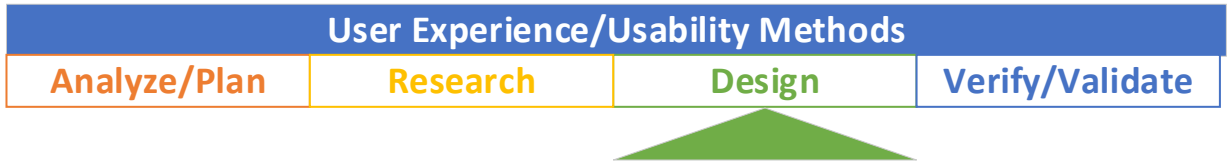
UX Design





- The UX Design phase focuses on iteration of concepts and models, moving to increasing levels of detail and functionality – low to high design fidelity
- Along the way, these stages of designs can also be reviewed and tested with actual users, and issues found can be corrected in the next cycle
- Image [2]

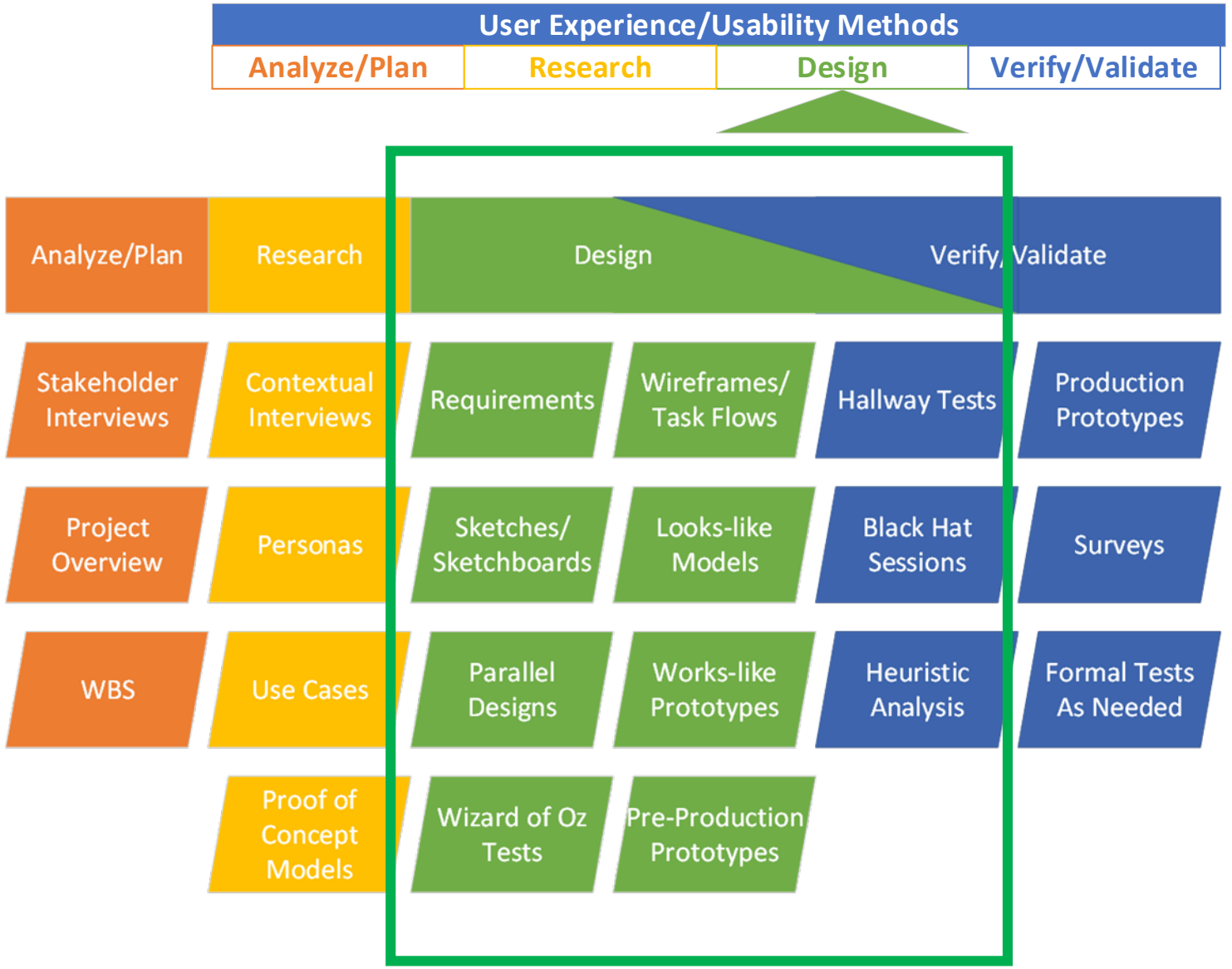
UX Design: Why?



- Ok, now we're making something! But one step at a time…
- The UX Design phase exists for us to turn all that we learned about our users in the research phase into a product following our earlier planning and analysis
- We will develop requirements and designs, incrementally and iteratively, verifying and validating our assumptions and design choices regularly with users
- Remembering our need for a minimum viable product with a unique value proposition, we'll strive to do just what we need to in order to meet product and UX expectations

UX Design Phase

Per our phased approach, we'll move into cycles of designs based on the data gathered in earlier phases, and we'll test those designs with users to continue to expose issues as soon as feasible



Effective UX Design Elements

- Avoid premature optimization
  - Goal is to allow user input to drive design and not force choices – allow for ideation and change - iterate
- Use progressive elaboration
  - Low fidelity/paper/rough/non-functional
    -> High fidelity/computer/finished/partially functional
- [You'll see these concepts later in Buxton's design funnel concept]
- Involve users or user surrogates as much as possible
- Test low fidelity models as well as high fidelity ones
  - Paper prototyping test approaches (more later)

Goals of Design - Norman

- From Norman's book, Design of Everyday Things [2]
- Make it easy to see what actions are possible
  - Make use of constraints
- Make things visible: the system model, alternate actions, results
- Make it easy to see the state of the system
- Follow natural mappings between intentions and actions
- Generally, the user should be able to
  - Figure out what to do
  - Know what's going on

- More of this later in usability heuristics

Making Difficult Tasks Simple - Norman

- From Norman's book, Design of Everyday Things [2]
- Use knowledge from the world and the head
- Simplify task structures
- Make things visible, esp. between execution and evaluation
- Use the right mappings
- Exploit artificial and natural constraints
- Design for error
- When all else fails, standardize

Summary

- Use the UX design stage to answer the needs we find in research and the project goals set in planning and analysis
- Begin broadly, then begin to focus on a solution
- Iterate through designs
- Progressively elaborate and test designs
- Keep the user involved in the design process
- Next up, UX design methods

References

[1] https://www.lexico.com/en/definition/design
[2] https://www.uxmatters.com/mt/archives/2010/05/sketches-and-wireframes-and-prototypes-oh-my-creating-your-own-magical-wizard-experience.php
[3] The Design of Everyday Things, Norman, 1990, Currency Doubleday