

2. Conceptual Interaction

IT4106- User Experience Design

Level II - Semester 4

Interaction Design

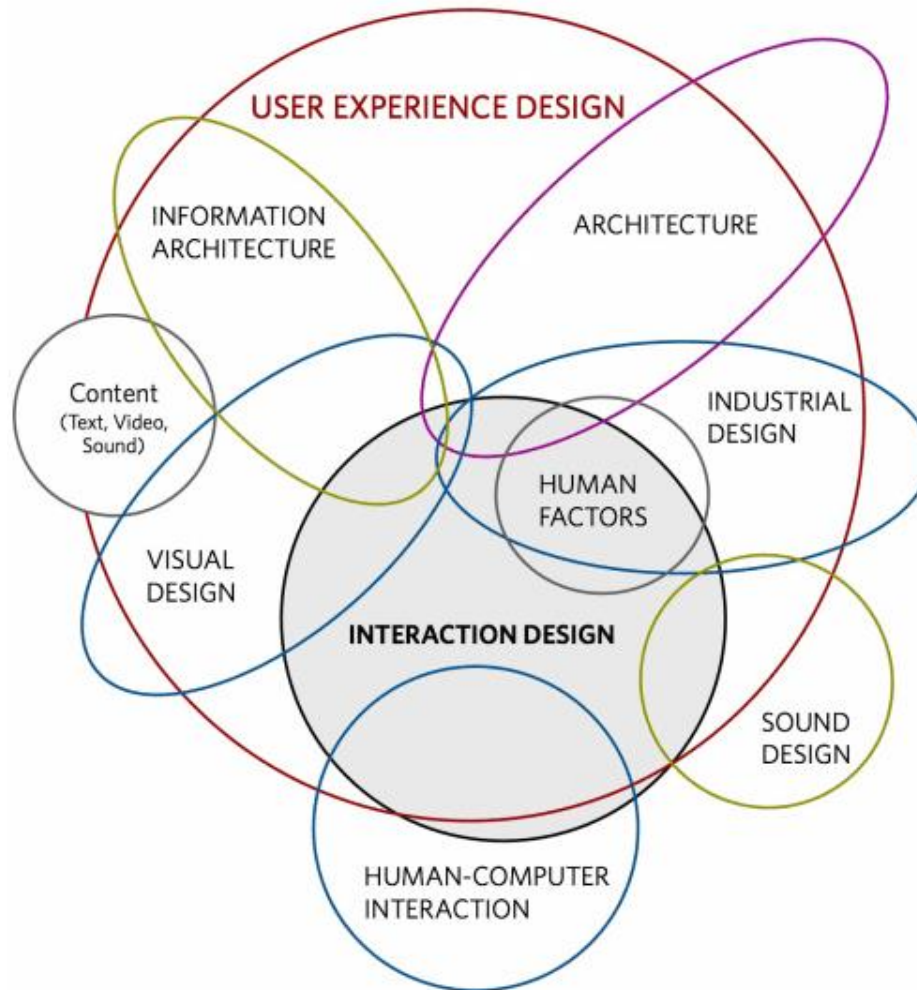
- Interaction design is a component within user experience (UX) design.
- It is the design of the interaction between users and products

The goal of interaction design is to create products that enable the user to achieve their objective(s) in the best way possible.

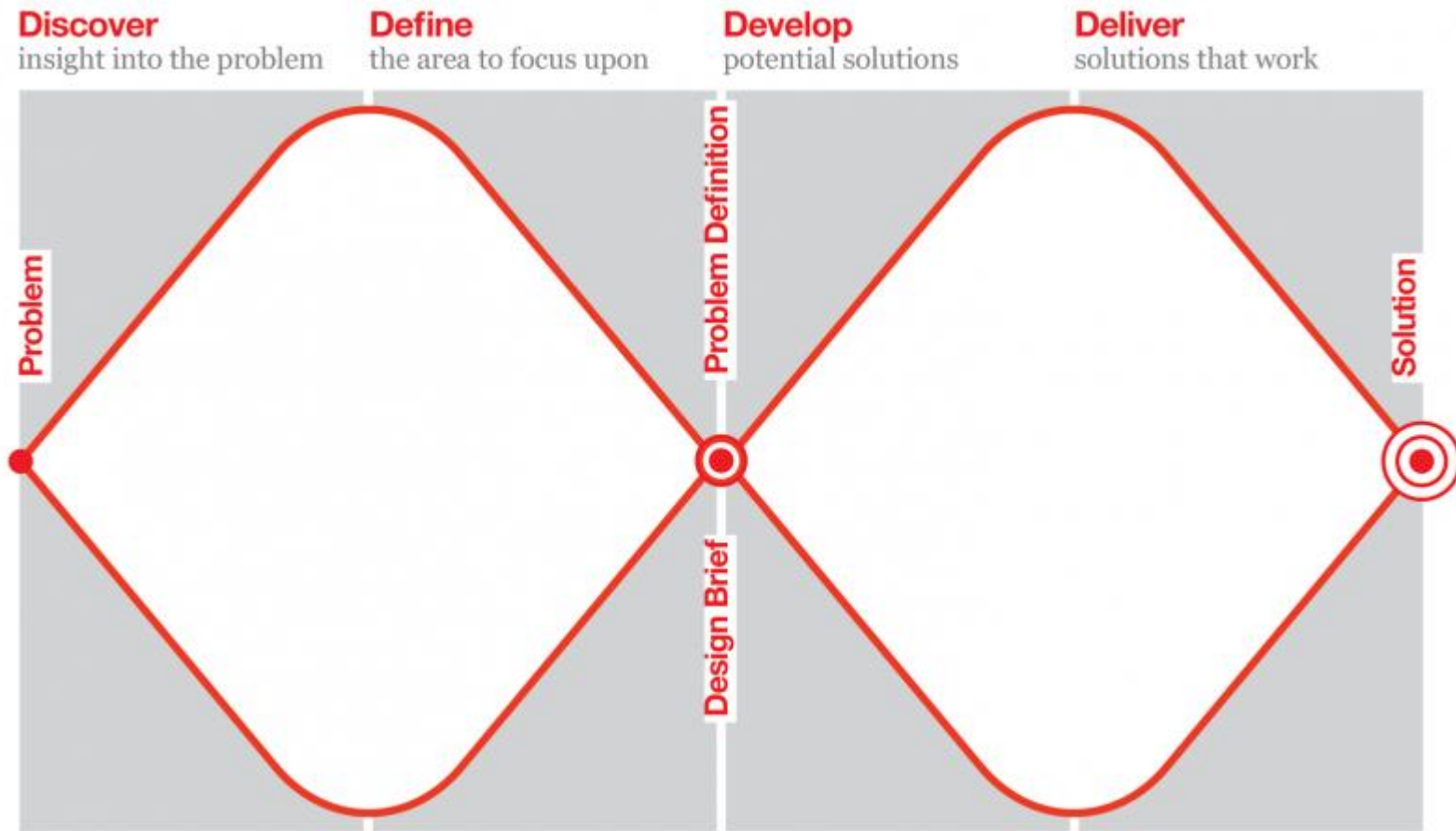
- A broad field of study

Interaction Design vs User Experience Design

- Interaction Design is a subset of UXD



Double Diamond framework for getting users involved



Source: <https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond>

Getting users involved in design

- Design is also about trade-offs
 - Eg: Deciding how much choice will be given to the user vs how much direction the system should offer
- Generating alternatives

“The best way to get
a good idea is to get
a lot of ideas”

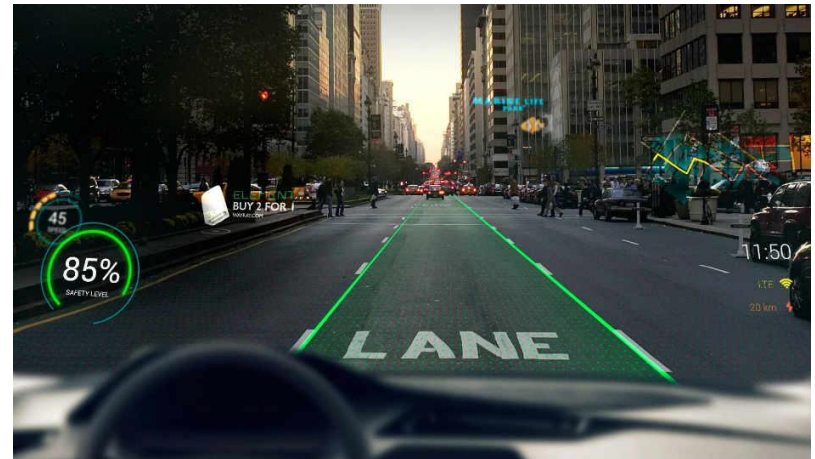
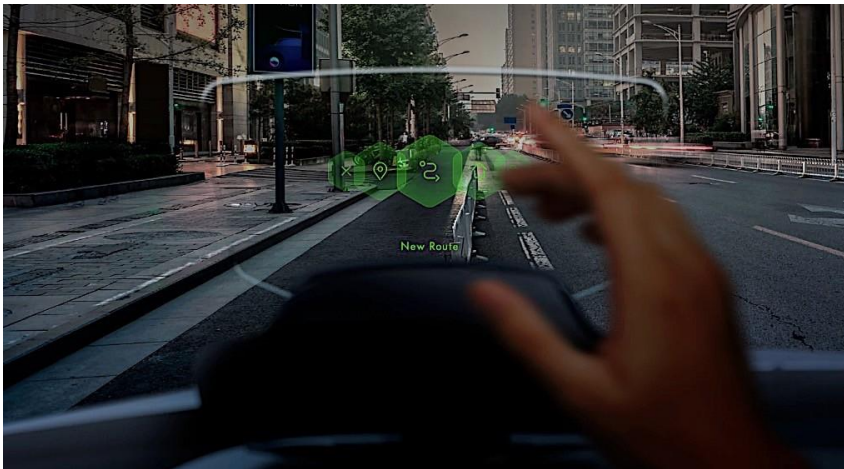
- Linus Pauling

Getting users involved in design

- Has to communicate with all stakeholders
 - Design should be expressed in a form that allows review, revision, and improvement
 - Produce a series of sketches
 - Write a description in natural language
 - Draw a series of diagrams
 - To build a prototype

Understanding the Problem Space

- Mistake of focusing on the physical design
 - Potential users and their context can be misunderstood, and usability and user experience goals can be overlooked
- Understanding the problem space has been critical in arriving at workable solutions that are safe and trusted.



the holographic navigation display from WayRay which overlays GPS navigation instructions onto the road ahead and gathers and shares driver statistics

Understanding the Problem Space

- Better to make the designs of physical aspects after articulating the nature of the problem space
 - Understanding the current practice
 - Why a change is needed
 - How this change will improve the experience
- The process of articulating the problem space is a team effort involving different perspectives

Importance of Involving Users

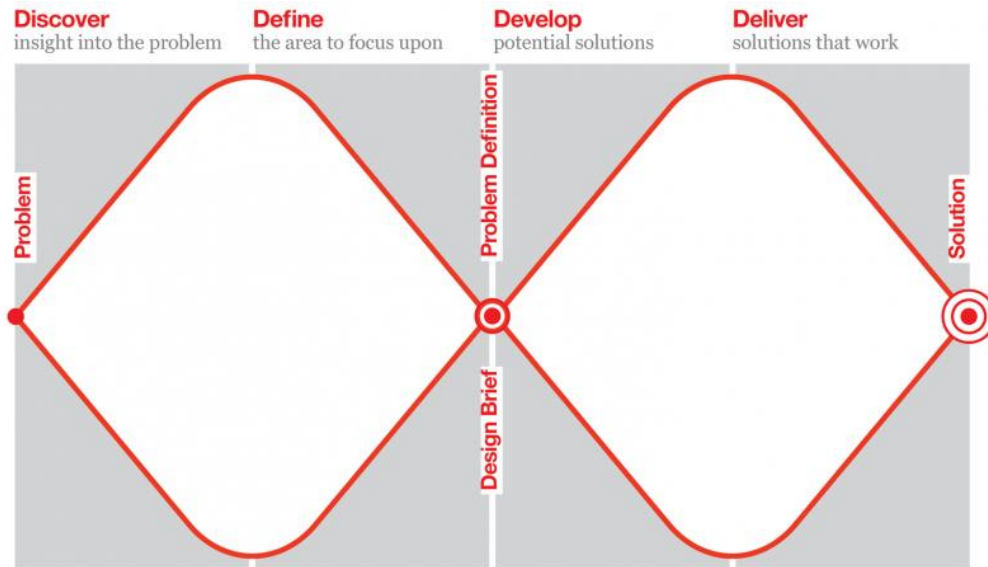
- Best way to ensure that the end product is usable
- Expectation management : making sure that the users' expectations of the new product are realistic
 - Involving users throughout development helps
 - Hands on training
 - Sense of ownership

Value for money: co-designing with underbanked women from rural Sri Lanka

<https://dl.acm.org/doi/10.1145/3292147.3292157>

Proof of concepts

- It is important to conceptualize when designing new ideas.
 - Proof of concepts
 - As a feasibility check
 - Enable designers to articulate the basic building blocks



Example- Imagine you are planning to design a voice-assisted mobile robot that can help waiters in a restaurant to take orders and deliver meals to customers.

- The robot could help take orders and entertain customers
- They can have a conversation with them at the table until the food is ready



Generate research Questions

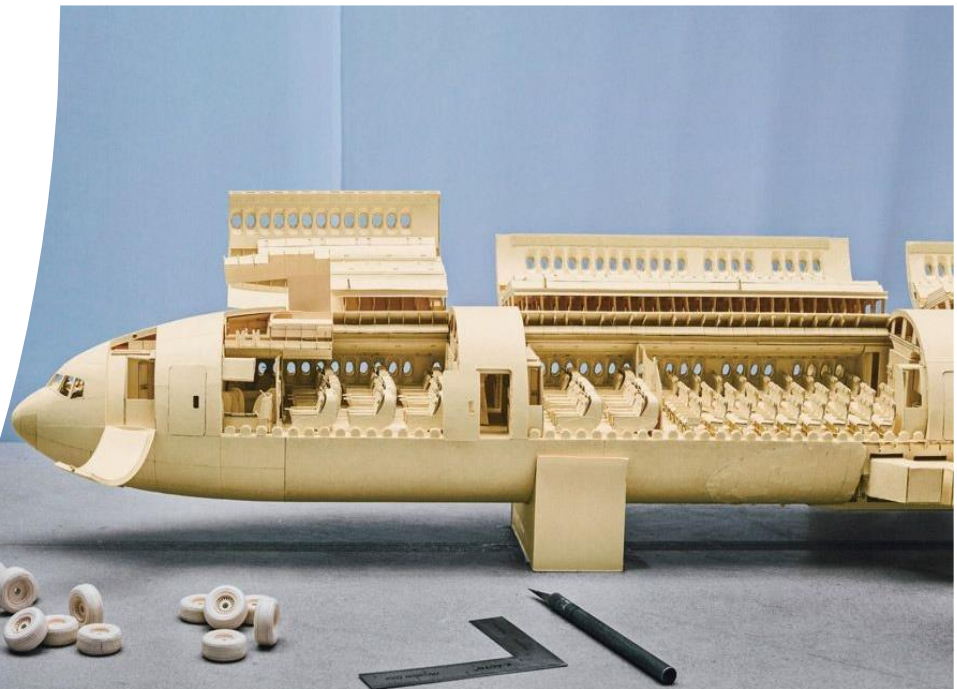
- Design a robot voice interface to wait on customers.
 - How intelligent does it have to be?
 - How would it need to move to appear to be talking?
 - What would the customers think of it?
 - Would they think it is too gimmicky and get easily tired of it?
 - ...
- Asking questions, reconsidering assumptions, and articulating concerns and standpoints are central aspects of the early ideation process.

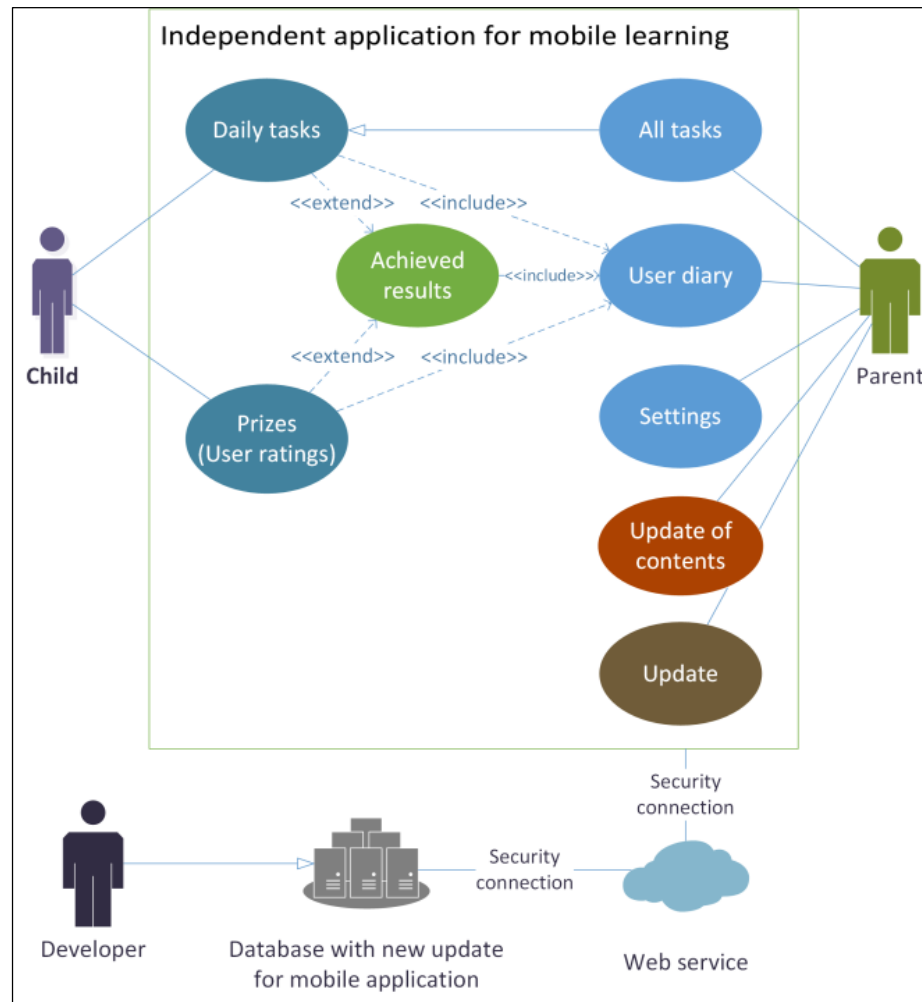
Conceptualizing interaction

- Be clear about the underlying assumptions and claims
 - Assumptions: taking something for granted that requires further investigation
 - Claims: stating something to be true when it is still open to question
- Understanding the assumptions and claims
 - Are there problems with an existing product or user experience? If so, what are they?
 - Why do you think there are problems?
 - What evidence do you have to support the existence of these problems?
 - How do you think your proposed design ideas might overcome these problems?

Conceptual Models

- Model?
 - An abstract representation of a domain which depicts a distinct logical view or a perspective of the particular domain.
- Simplified description of a system or process that helps describe how it works.





A Conceptual Design of Mobile Learning Applications for Preschool Children

- Even fundamental modeling practices are, by their very nature, forms of conceptual models – e.g UML

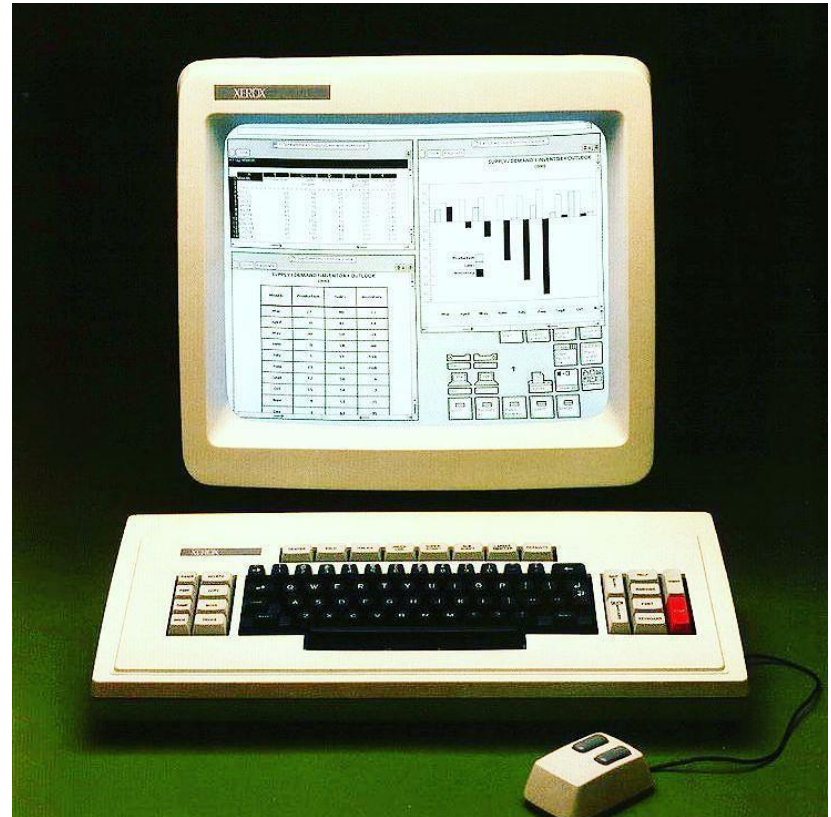
Conceptual Models

- A high-level description of how a system is organized and operates (Jeff Johnson and Austin Henderson 2002).
 - Help designers to straighten out their thinking before they start laying out their widgets
- E.g. Building an appointment management application
 - Common conceptual models associate calendars

By creating products that echo conceptual models, designers build on existing knowledge and frameworks, making it easier for the users to learn how to use the new product.

A Classic Conceptual Model: The Xerox Star

- Designed as an office system
- Was based on a conceptual model that included the familiar knowledge of an office
 - Dragging a document was seen as equivalent to moving a piece of paper
 - Putting a document to a folder was seen as placing a physical document into a physical cabinet.



<http://youtu.be/Cn4vC80Pv6Q>

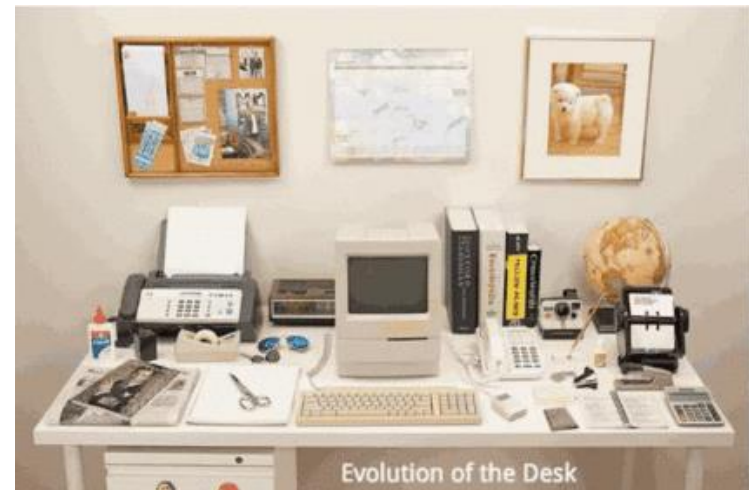
Interface Metaphors

Metaphors

- Metaphors are a central component of a conceptual model.
 - A metaphor is a mapping process from a familiar object to an unfamiliar object
 - Provide a structure that is similar in some way to aspects of a familiar entity
 - Metaphors can be used as a tool in the design process to understand new topic areas or as a means to create new ideas about familiar subjects.

Metaphors Example

- The most well-known metaphor in UX is the desktop metaphor
 - Represents the user interface in a way that is similar to interactions concerning certain objects, tasks, and behaviors encountered in physical office environments.
 - A document may be opened into a window, that represents a paper copy of the document placed on the desktop.



<https://youtu.be/uGI00HV7Cfw>

Other popular examples

- Book metaphor
 - For hypertext, online catalogues
- Filing cabinets
 - For online documentation
- Office metaphor: For collections of documents
- Library metaphor: For large collections of documents or archives
- Traffic metaphor
- Animated agent metaphor: for guidance, recommendation, persuasion

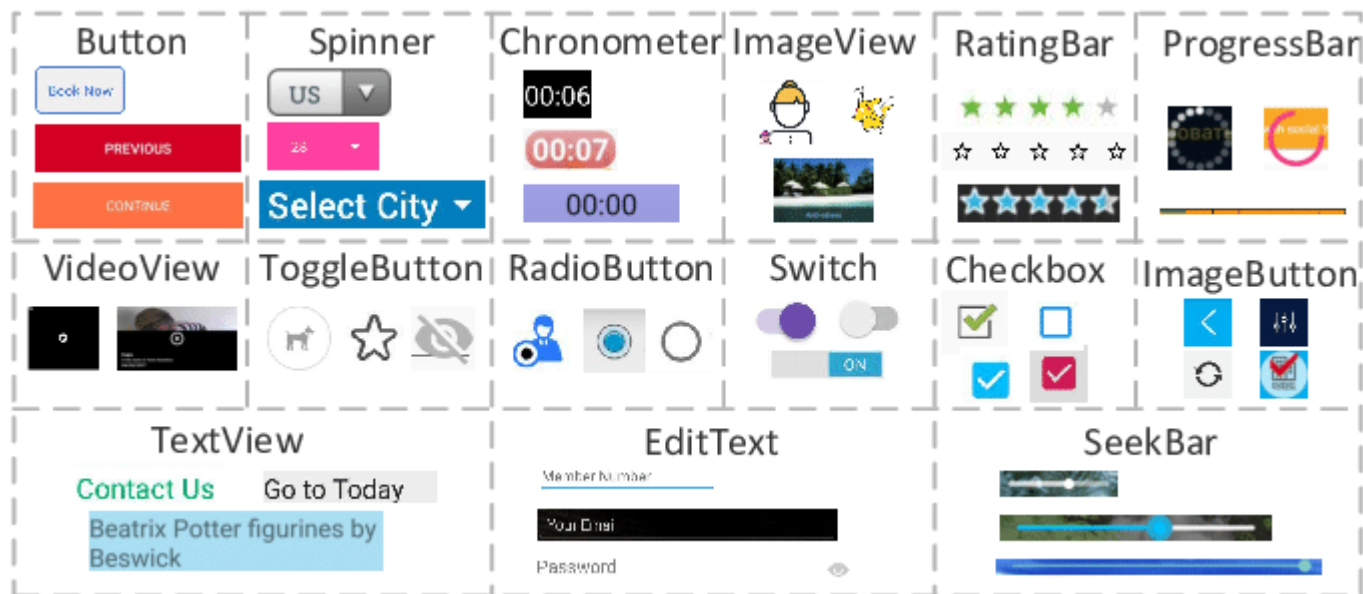
Interaction Types

Interaction Types

- Ways a person interacts with a product
 - Instructing
 - Conversing
 - Manipulating
 - Exploring
 - **Responding** (Christopher Lueg et al. (2019))

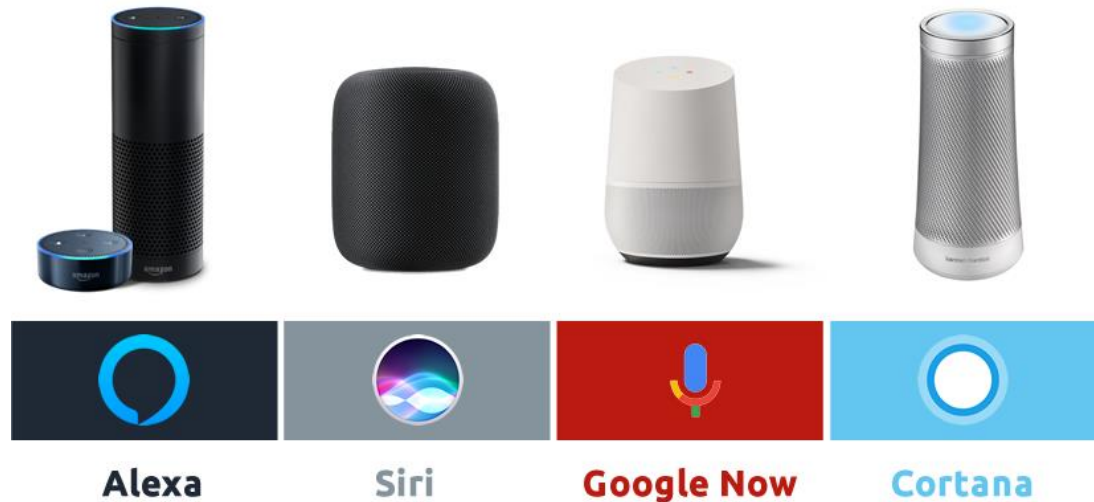
Interaction Types -Instructing

- Users issue instructions to a system
 - Typing
 - Selecting options
 - Touch
 - Speaking



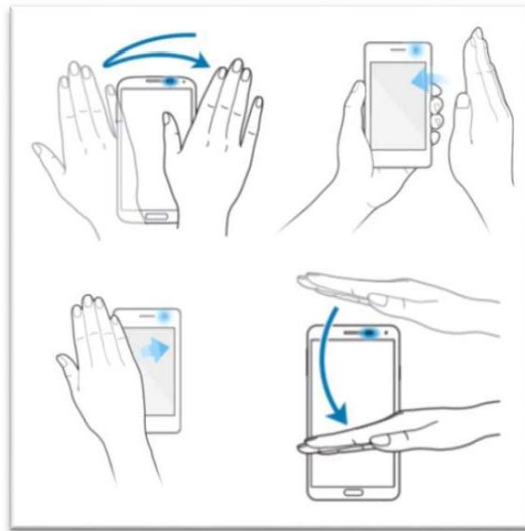
Interaction Types -Conversing

- Users have a dialog with a system



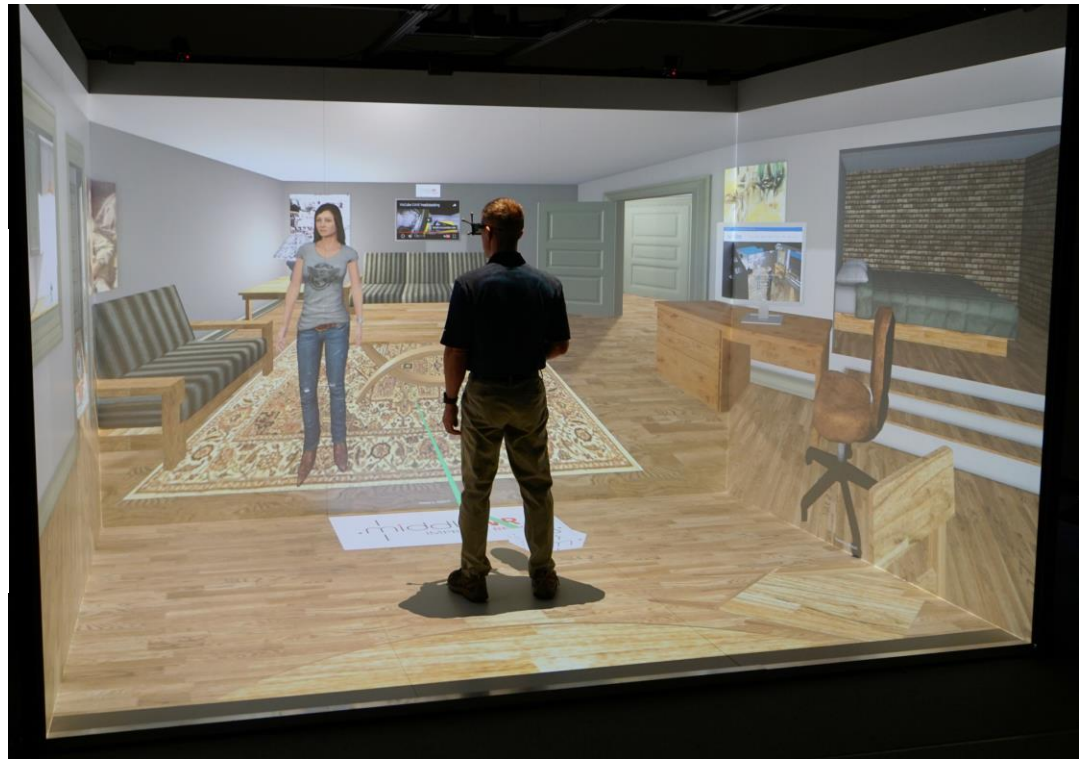
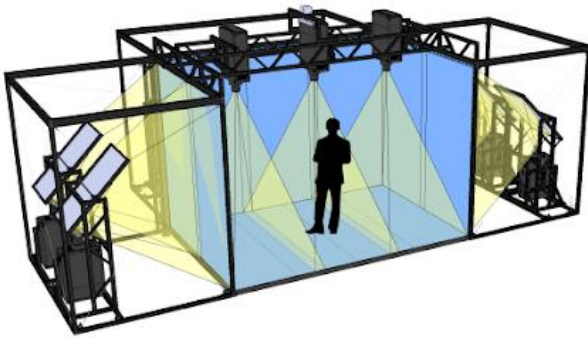
Interaction Types -Manipulating

- Users interact with objects in a virtual or physical space
 - Using physical controllers
 - gestures made in the air
 - Physical toys and robots embedded with technology



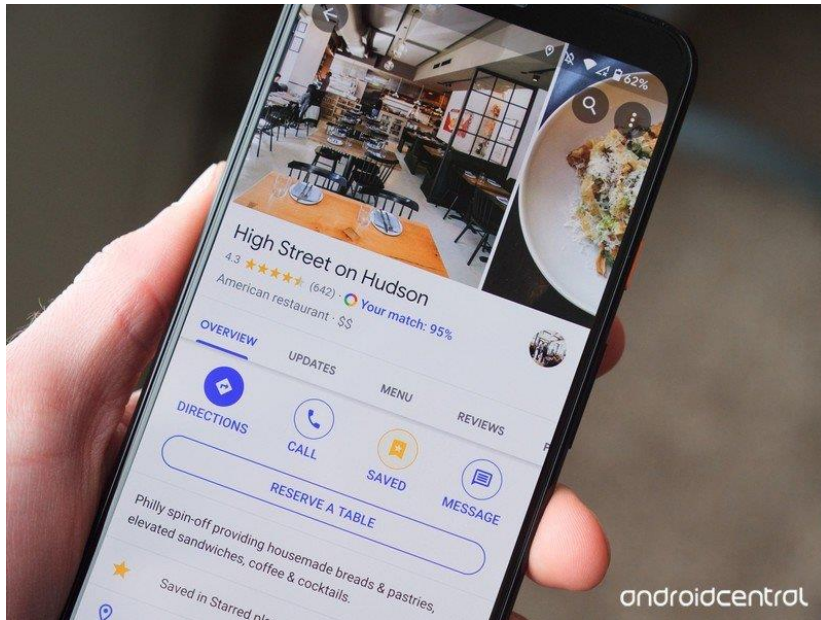
Interaction Types -Exploring

- Users move through a virtual environment or a physical space



Interaction Types - Responding

- Systems that initiate a request for a user to respond



Summary

- Different design disciplines follow different approaches, but they have commonalities that are captured in the double diamond of design.
- It is important to have a good understanding of the problem space before trying to build anything.
- Involving users in the design process assists with expectation management
- There are many ways to understand who users are and what their goals are in using a product
- A fundamental aspect of interaction design is to develop a conceptual model.
- A conceptual model is a high-level description of a product in terms of what users can do with it and the concepts they need to understand how to interact with it.
- Conceptualizing the problem space in this way helps designers specify what it is they are doing, why, and how it will support users in the way intended.
- Decisions about conceptual design should be made before commencing physical design (such as choosing menus, icons, dialog boxes).
- Interaction types provide a way of thinking about how best to support the activities users will be doing when using a product or service.