Topic 2: Interaction Design Process and Practice

SECV2113 Human-Computer Interaction

Faculty of Computing
Universiti Teknologi Malaysia

01 WHAT IS INVOLVED IN INTERACTION DESIGN

02 SOME PRACTICAL ISSUES

03 AGILEUX

04 DESIGN PATTERNS

05 OPEN SOURCE RESOURCES & TOOLS FOR INTERACTION DESIGN

WHAT IS INVOLVED IN INTERACTION DESIGN

What is Involved in ID?

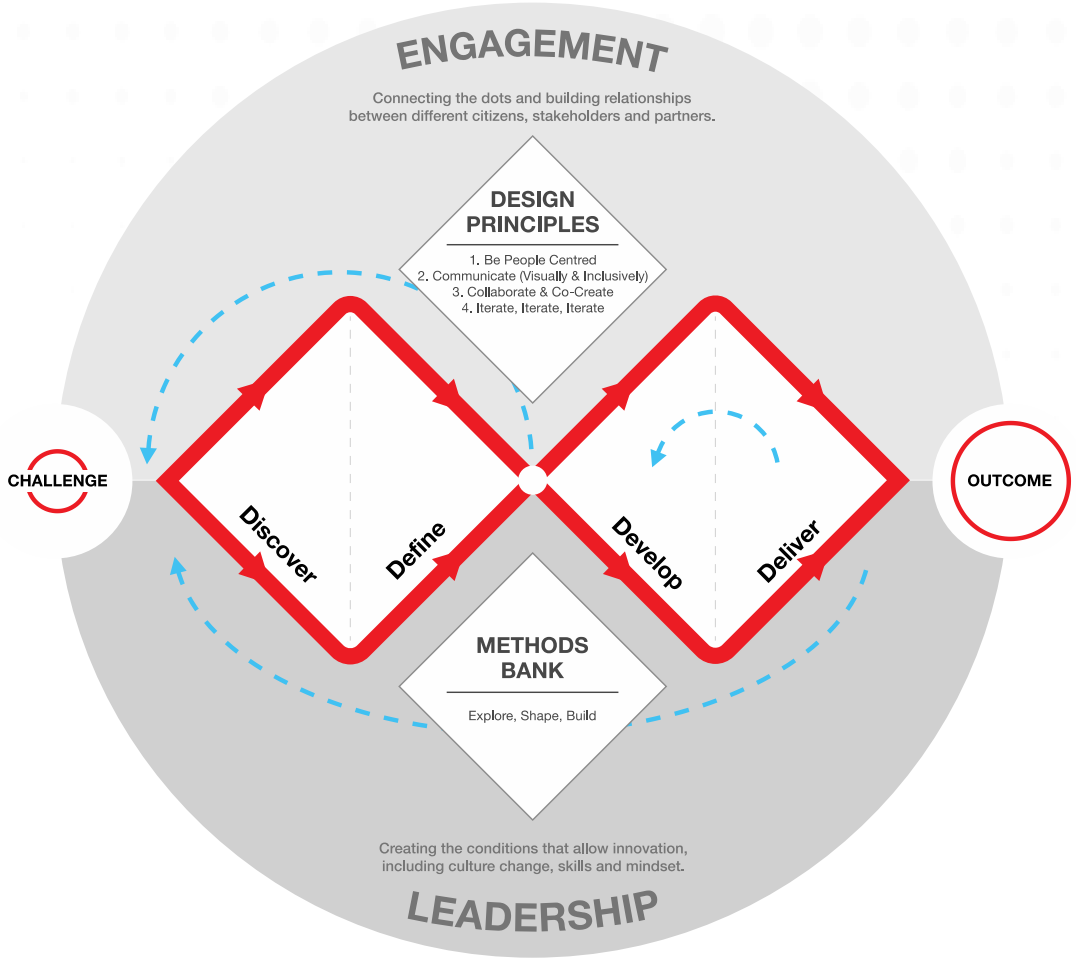
- It is a process:
  - Focused on **discovering requirements, designing to fulfil requirements, producing prototypes** and **evaluating** them
  - Focused on **users** and their **goals**
  - Involves trade-offs to balance conflicting requirements

- Generating **alternatives** and **choosing** between them is key

- **Four approaches**: user-centered design, activity-centered design, systems design, and genius design

The Double Diamond of Design

Discover → Define → Develop → Deliver



Source: Adapted from www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond

Who to Involve in ID?

- Identify stakeholders for the product
  - Individuals or groups who influence or are influenced by the success or failure of the project
  - Users are not the only stakeholders
  - Direct and indirect users, developers, executives, legislators

- Involving stakeholders is not always easy
  - May not need to involve all groups
  - Knowing the stakeholder groups is only the first step!

Degrees of User Involvement

- Member of the design team
- Small group or individual activities
- Online contributions from thousands of users
  - Online Feedback Exchange (OFE) systems
  - Crowdsourcing design ideas
  - Citizen engagement
- Participatory design
- User involvement after product release
  - A/B testing
  - Customer reviews

What is People-centered Approach?

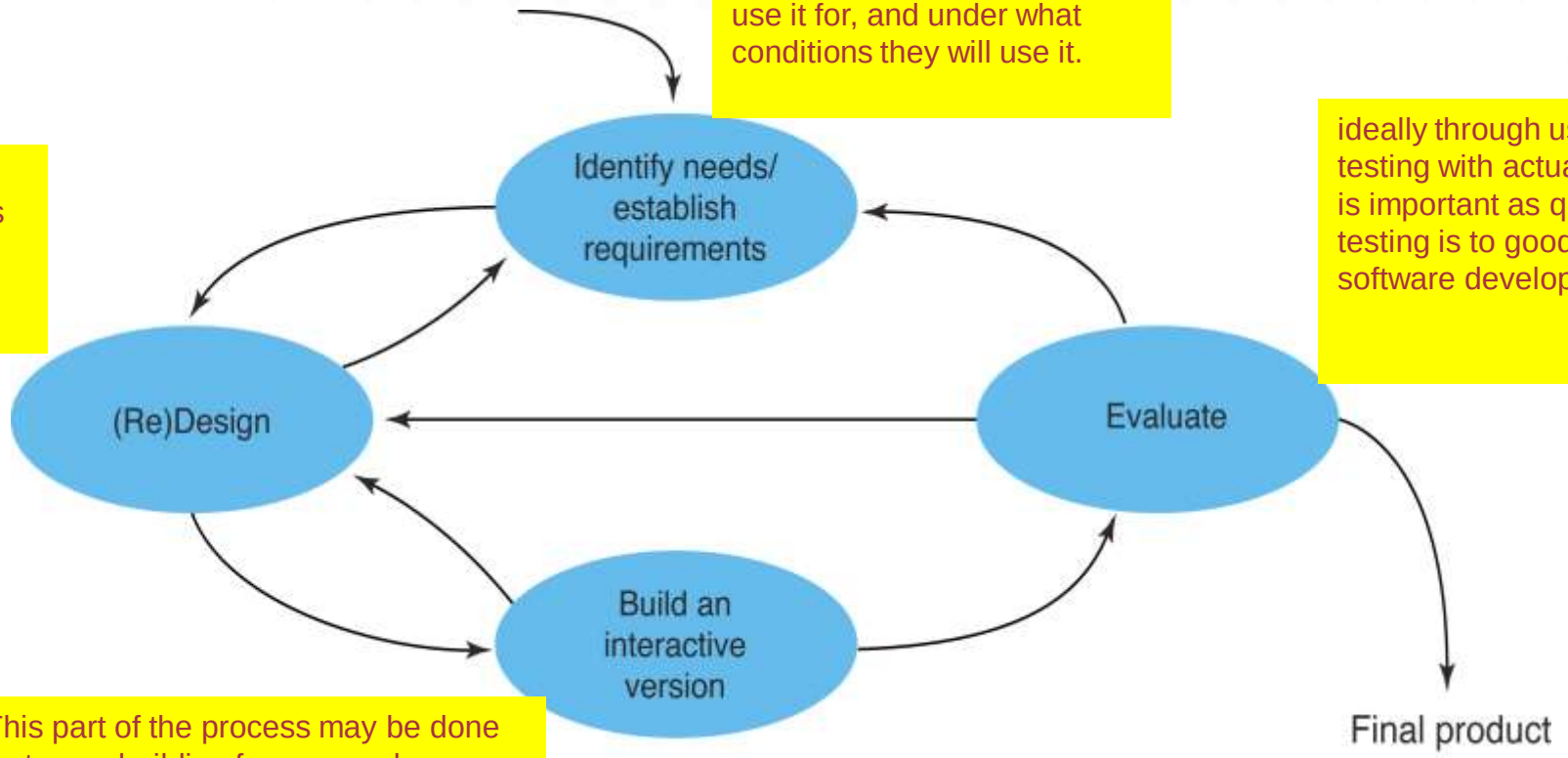
- **Three principles** for “useful & easy-to-use” products
  - Early focus on users and tasks
  - Empirical measurement
  - Iterative design
- Expanded to include
  1. People’s tasks and goals drive development
  2. People’s behaviour and context is studied
  3. People’s characteristics are designed for
  4. Stakeholders are consulted throughout
  5. Design decisions are taken in this context
  - Specific usability and user experience goals
  - Iteration through all interaction design activities

Four Basic Activities of ID

1. Discovering requirements
2. Designing alternatives
3. Prototyping alternative designs
4. Evaluating product and its user experience throughout

A Simple ID Lifecycle Model

Exemplifies a people-centered design approach



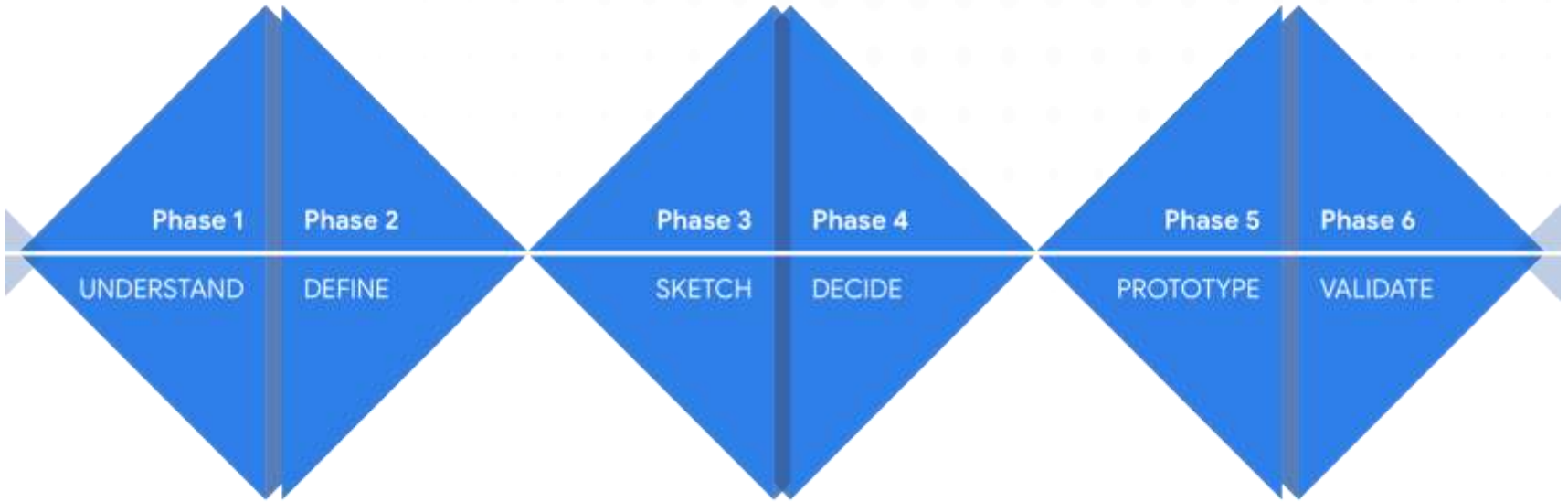
Identify the people who will use the product, what they will use it for, and under what conditions they will use it.

Identify conceptual model, task analysis, user analysis that must be met for the product to be successful.

ideally through usability testing with actual users is important as quality testing is to good software development.

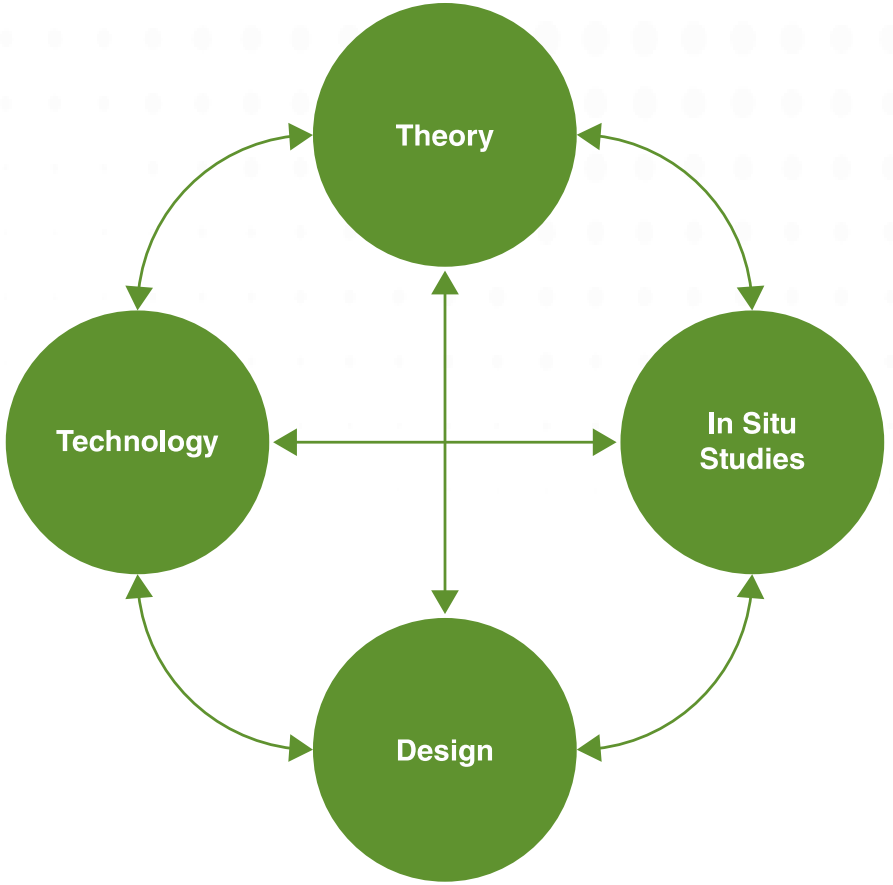
This part of the process may be done in stages, building from a rough concept (prototype) to a complete design

Another Lifecycle Model: Design Sprints



Source: designsprintkit.withgoogle.com/methodology/overview

Another Lifecycle Model: Research in the Wild



A framework for research in the wild studies

Source: Rogers and Marshall, 2017, p6. (used courtesy of Morgan and Claypool)

Activity

- Assume you are involved in developing a novel online experience for buying garden plants.
- Although many websites exist for buying plants online, you want to produce a distinct experience to increase the organisation's market share. Suggest ways of applying these five principles (see slide #8, no 1-5) in this task

SOME PRACTICAL ISSUES

....

Some Practical Issues

- How to find out what people need
- How to decide what to design
- How to generate alternative designs
- How to choose among alternatives
- How to integrate interaction design activities with other lifecycle models

How to find out what people need

- Users rarely know what is possible

- Instead:
  - Explore the problem space
  - Investigate potential users and their activities
  - Try out ideas with potential users

- Focus on peoples' goals, usability, and user experience goals, rather than expect stakeholders to articulate requirements

How to decide what to design

- Explore
  - What is the current user experience?
  - Why is a change needed?
  - How will this change improve the situation?

- Articulating the problem space
  - Team effort
  - Explore different perspectives
  - Avoid incorrect assumptions and unsupported claims

How to generate alternative designs

- Humans tend to stick with something that works
- Considering alternatives helps identify better designs
- Where do alternative designs come from?
  - ‘Flair and creativity’: research and synthesis
  - Cross-fertilisation of ideas from different perspectives
  - Users can generate different designs
  - Prompts to provoke thinking, e.g. SCAMPER
  - Seek inspiration: other products and domain
  - Different perspectives
- Balancing constraints and trade-offs

How to choose among alternatives

- Interaction design focuses on externally-visible and measurable behavior
- Technical feasibility
- Evaluation with users or peers
  - Prototypes not static documentation because behavior is key
- A/B Testing
  - Online method to inform choice between alternatives
  - Nontrivial to set appropriate metrics and choose user group sets
- Quality thresholds
  - Different stakeholder groups have different quality thresholds
  - Usability and user experience goals lead to relevant criteria

How to integrate ID activities within other models

- Integrating interaction design activities in lifecycle models from other disciplines requires careful planning
- Software development lifecycle models are prominent
- Integrating with agile software development:
  - It incorporates tight iterations
  - It champions early and regular feedback
  - It handles emergent requirements
  - It aims to strike a balance between flexibility and structure

AGILEUX

Technical Debt in UX

- Making compromises that are expedient in short term, but cause problems in long term

- Refactoring to correct pragmatic trade-offs

- UX debt arises from trade-offs
  - A history of neglecting UX
  - Large portfolio of products developed independently

Agile Development

- Short (one to three week) timeboxes of iterative development (sprint, iteration, cycle)
- Early and repeated customer/user feedback
- Re-prioritization of work based on customer or user feedback so that emergent requirements can be handled
- Many approaches, for example, eXtreme Programming (XP), Scrum, Kanban, and DSDM

AgileUX

- Integrates techniques from interaction design and agile methods
- AgileUX requires balancing research and reflection for good UX with rapid iterations incorporating user feedback
- In Agile iterations, requirements are elaborated and re-prioritised, rather than specified up-front

AgileUX (cont.)

- All techniques in UX are still relevant, but when to use and how much needs careful planning
- Focus on product, not design, as deliverable
- Cross-functional teams
- Three practical areas: user research, aligning work practices, and documentation

User Research

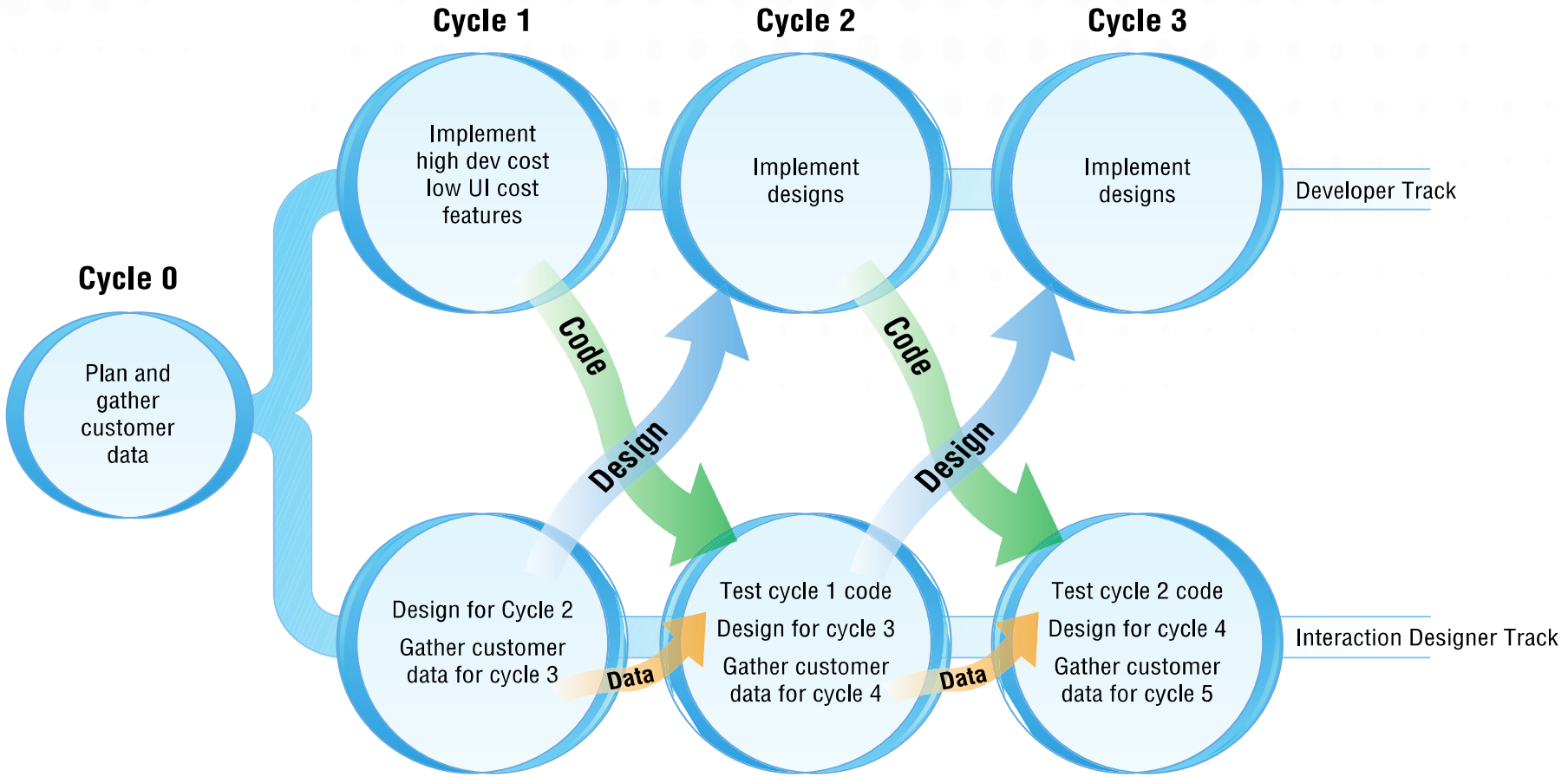
- Seeks to characterise users, tasks, and context through data gathering and analysis

- Detailed user research cannot be fitted within a limited timebox
  - Some user research can be performed in iteration 0 (zero), before implementation starts
  - Ongoing program of user research over a longer period of time

Aligning Work Practices

- Designing a complete product upfront causes problems because of re-prioritization
- Some upfront work is needed (technical and UX)
- Use a dual tracks approach:
  - Create product vision before development starts
  - Do design work one iteration ahead of development
  - Some teams work two iterations ahead

Dual Tracks Approach to AgileUX



Source: Sy, D. (2007) Adapting usability investigations for development, Journal of Usability Studies 2(3), May, 112–130.

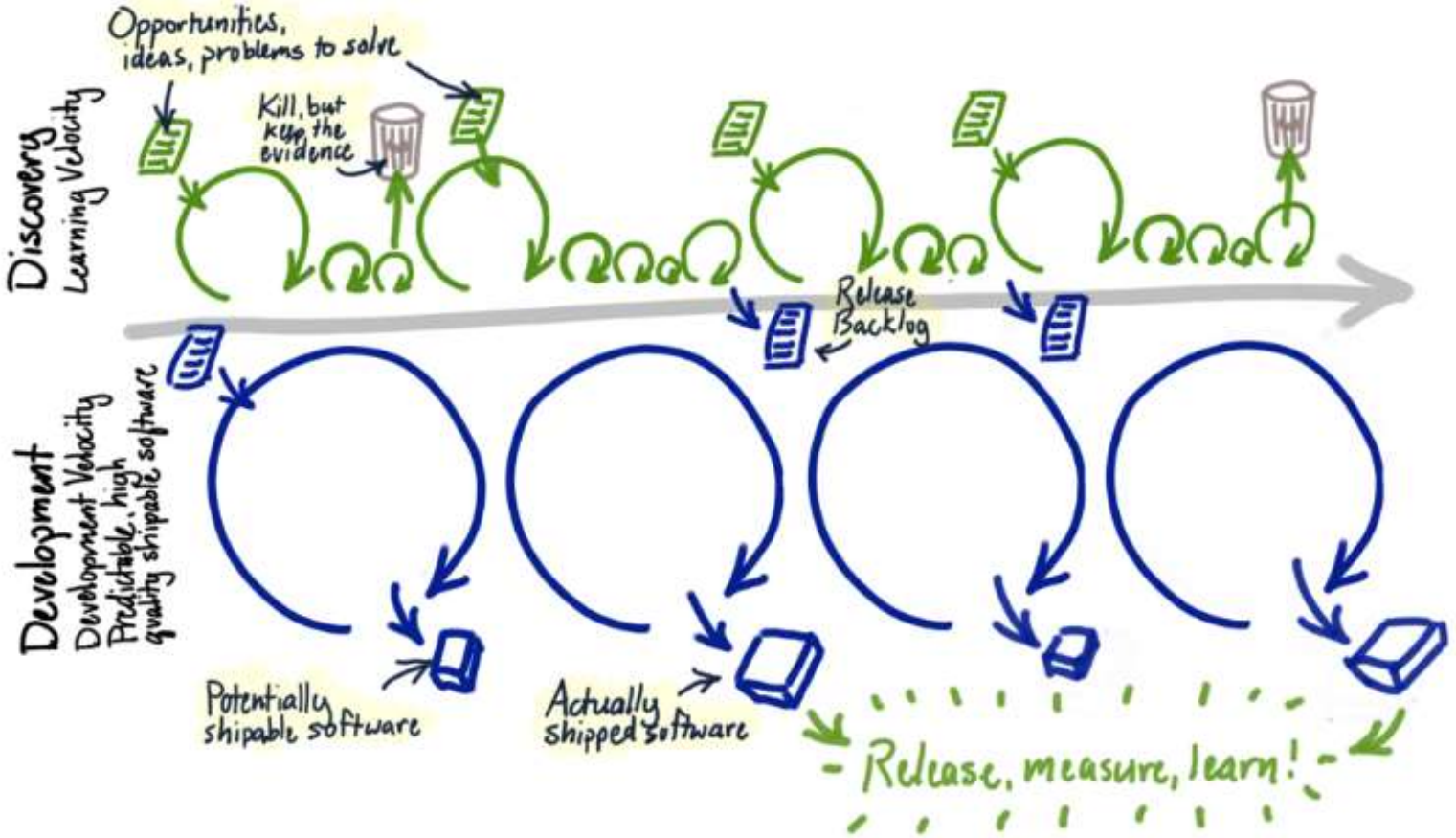
Aligning Work Practices (cont.)

- Advantages of dual tracks approach:
  - No design time wasted on features not implemented
  - Usability testing and contextual inquiry could be done on the same customer visit, saving time
  - Timely feedback on the designs was received from developers and customers

- Agile flexibility supports schedule changes if a problem is found

- Parallel tracks is commonly used

Dual Tracks: Discovery & Development



Source: www.jpattonassociates.com/dual-track-development

Documentation

- Common communication approach for UX designers
- Agile encourages minimal documentation so more time can be spent on design and discussion
- Only use documentation where needed. Ask:
  - Can the amount of time spent on documentation be reduced?
  - Who uses documentation?
  - What is the minimum needed by readers?
  - How efficient is the sign-off process?
  - Is there duplication anywhere?
  - How polished does documentation need to be?

DESIGN PATTERNS

....

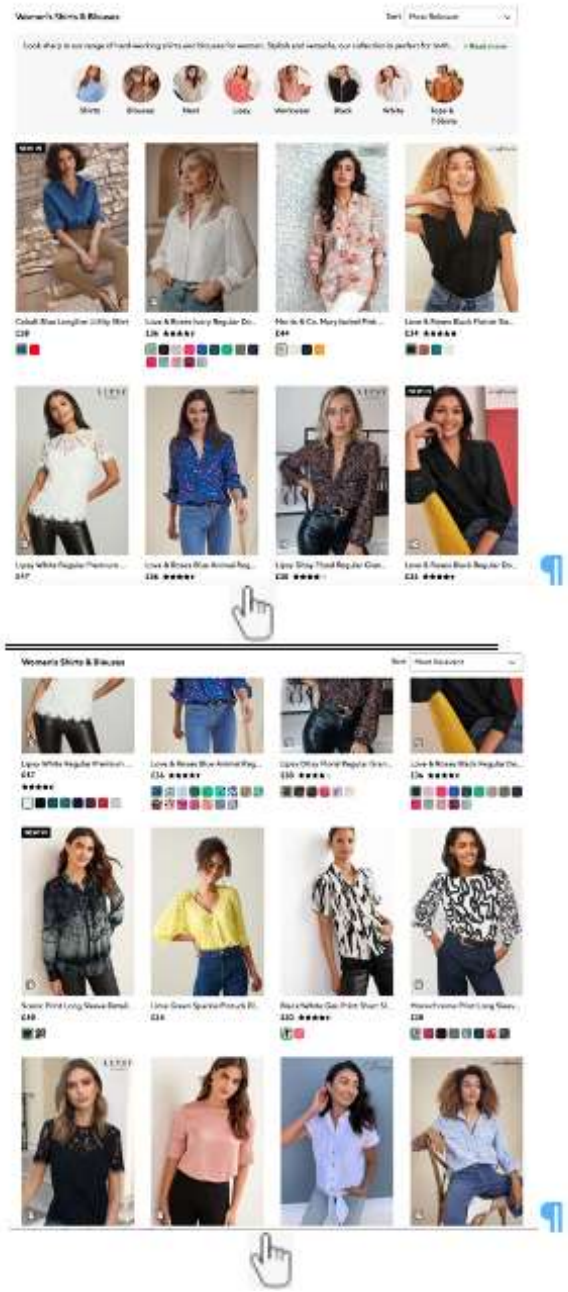
Design Patterns

- Capture design experience:
  - A solution to a problem in a context
  - Can be instantiated in many ways: generative

- Patterns may be individual, in languages, in catalogues, galleries, or libraries

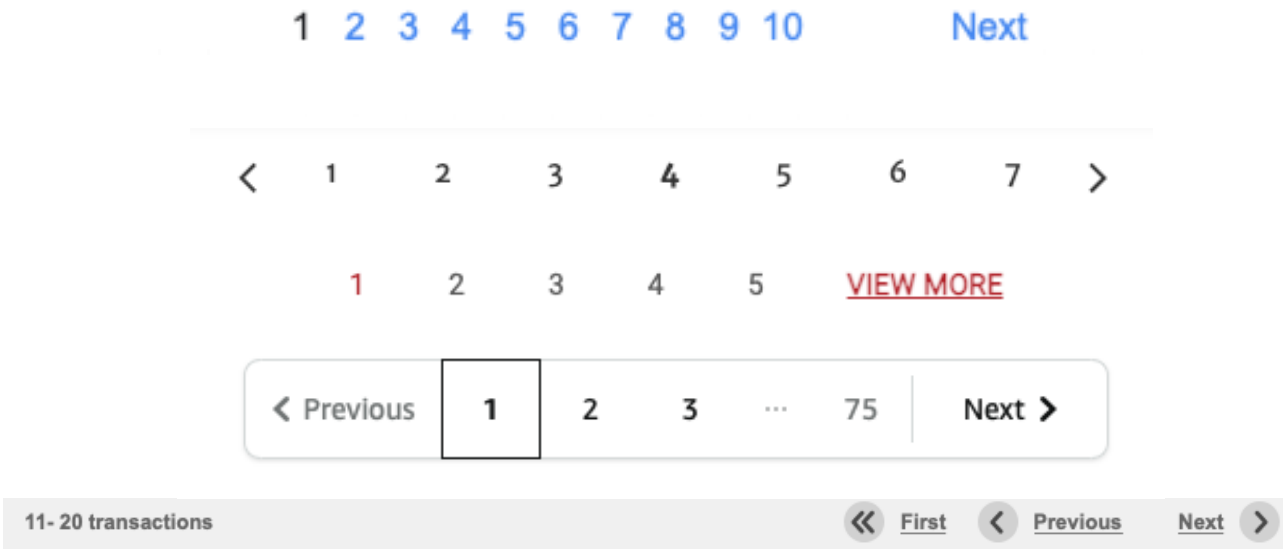
- Patterns often are associated with software components, for example, GitHub or platform websites

Design Patterns



Continuous scrolling

Pagination



Bad Design Patterns

- Capture design experience — but that doesn't necessarily mean good design:
  - Anti-patterns: Don't do it this way! (classing e.g.: "click here")
  - Dark patterns: deliberate tricks

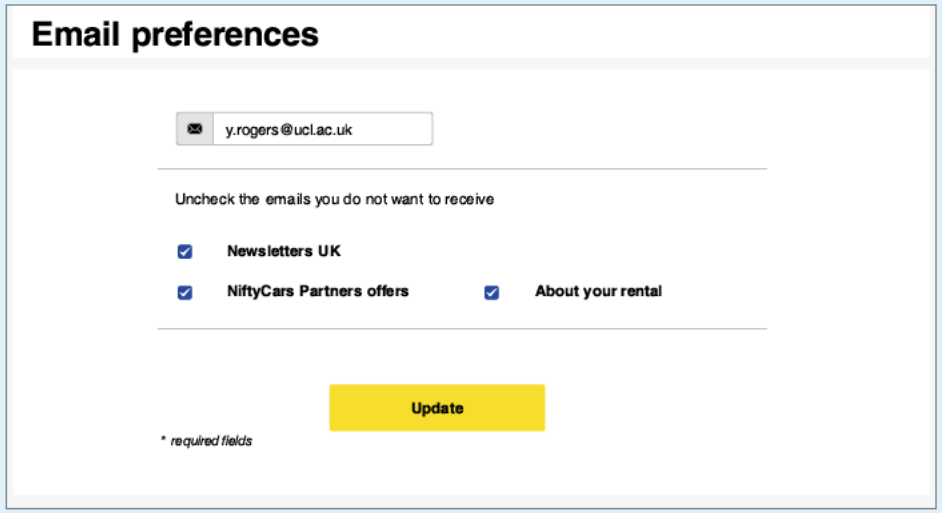


Figure 1.9 Dark pattern for a car rental company

Design Language and Systems

- Structured collection of patterns and components
- May also include brand or accessibility guidelines
- Reduce effort, support learning between designers and increase collaboration
- Larger chunks of design can be **reused**
- User flows, e.g. overflow.io or uxarchive.com)

OPEN SOURCE RESOURCES & TOOLS FOR ID

....

Open-Source Resources

- Components, frameworks, systems available free of charge
- Community-driven
- Available for interaction design:
  - Design pattern libraries
  - Bootstrap framework

Tools for Interaction Design

- Tools **support** all aspects of the design process:
  - Creativity, sketching, simulation, brainstorming, library search, mind mapping, and video capture
- Tools integrate together to **speed up prototyping**
- Tooling landscape changes all the time
- **Interactive wireframes or mockups** can be produced using, for example:
  - Sketch©
  - Balsamiq©
  - Axure©
  - Figma©
- Higher-fidelity prototypes can be produced by linking interactive wireframes to design pattern library with software components

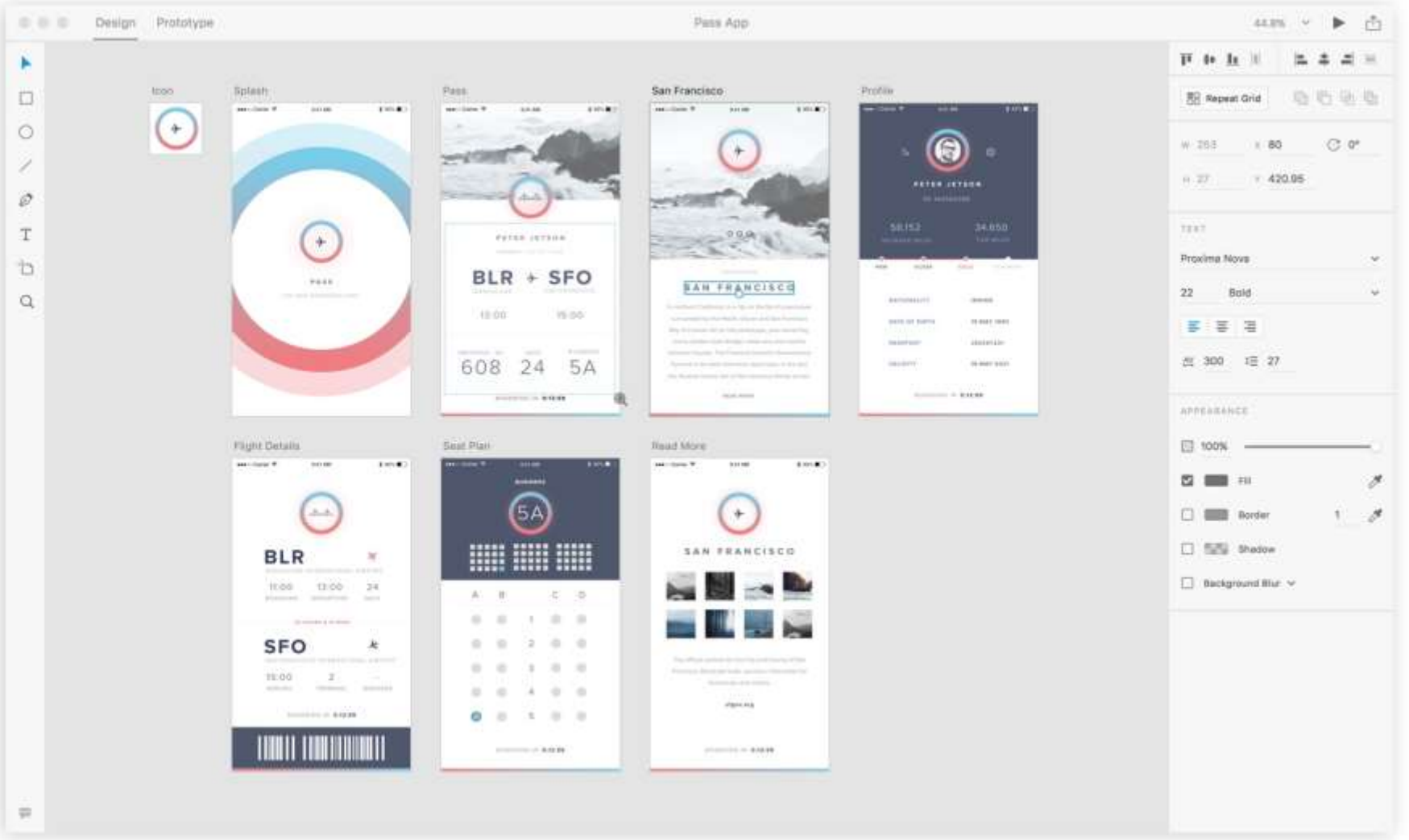
Balsamiq


Mockups
Flow
Sign Up
Sign Up Form
Sign Up Form – Entry
Sign Up
Beenstagram
First Post

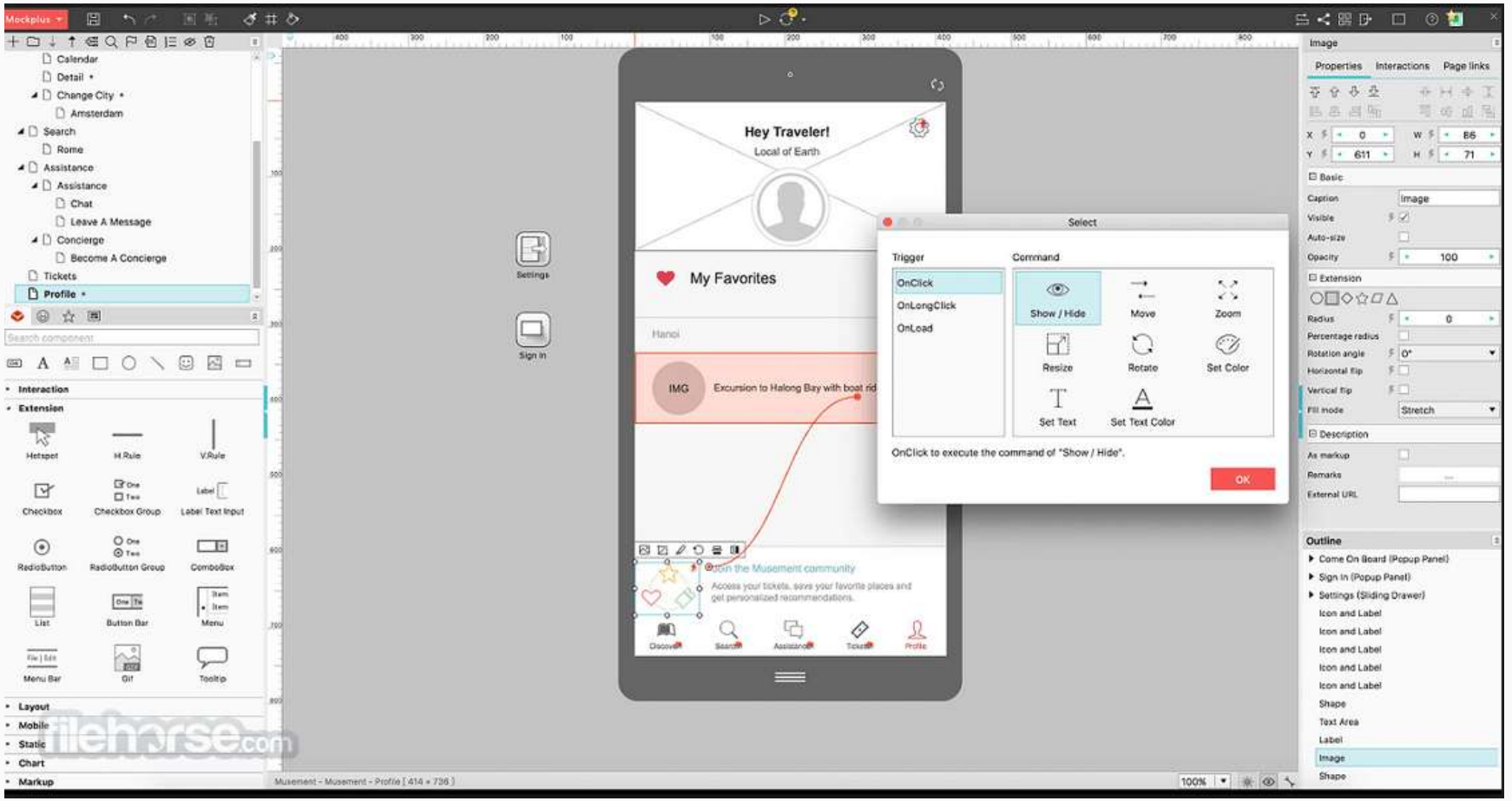
Axure


Axure_Branded_Website_Example – Axure RP Pro 6.5 : Licensed to Axure
Pedal Forward
AT YOUR OWN PACE
WHAT'S YOUR PASSION?
MODELS
FIND A DEALER
ABOUT
FAQS
THE FOODIES
by Angela Lawson
For those with a discerning and refined palette, the Foodie has a zest for life and a passion for savoring flavors in new destinations. Whether frequenting the latest farm to table restaurant, an unexpected mom and pop shop, or while in pursuit of your most loved taco truck, the Foodie fixie will get you there in no time.
Me, my food and my bike...
Footnote and Label
TwitterButton
Interactions
Add Case... Edit Case... Delete Case
OnClick
Case 1
Hide Callout2: Twitter Button fade 500ms, Callout1: Scrolling Fixies fade 500ms
Set TwitterButton to Selected
Show TwitterBubble
Show Callout3: Click to Play Video fade 500ms
Bring Callout3: Click to Play Video to Front
OnMouseEnter
OnMouseOut
Dynamic Panel Manager
The Foodies
TwitterBubble
VideoPanel
OverVideoPanel
BikePanel
BikePanel1
BikePanel2
MarqueeTimer
Callout1: Scrolling Fixies
Callout2: Twitter Button
Callout3: Click to Play Video
FINAL Callout: CONGRATULATIONS
Widgets
Image
Text Panel
Rectangle
Placeholder
Button Shape
Dynamic Panel
Horizontal Line
Vertical Line
Image Map Region
Masters
Background

Adobe XD


Design
Prototype
Pass App
Splash
Pass
San Francisco
Profile
BLR
SFO
608
24
5A
SAN FRANCISCO
Flight Details
Seat Plan
Read More
Repeat Grid
Proxima Nova
Bold
APPEARANCE
Fill
Border
Shadow
Background Blur

Mockplus


Mockplus
Calendar
Detail
Change City
Amsterdam
Search
Rome
Assistance
Assistance
Chat
Leave A Message
Concierge
Become A Concierge
Tickets
Profile
Interaction
Extension
Layout
Mobile
Static
Chart
Markup
Hey Traveler!
Local of Earth
My Favorites
Hanoi
IMG
Excursion to Halong Bay with boat rid
Join the Museument community
Access your tickets, save your favorite places and get personalized recommendations.
Discover
Search
Assistance
Tickets
Profile
Settings
Sign In
Select
Trigger
Command
OnClick
OnLongClick
OnLoad
Show / Hide
Move
Zoom
Resize
Rotate
Set Color
Set Text
Set Text Color
OnClick to execute the command of "Show / Hide".
OK
Image
Properties
Interactions
Page links
Basic
Caption
Visible
Auto-size
Opacity
Extension
Radius
Percentage radius
Rotation angle
Horizontal flip
Vertical flip
Fill mode
Stretch
Description
As markup
Remarks
External URL
Outline
Come On Board (Popup Panel)
Sign In (Popup Panel)
Settings (Sliding Drawer)
Icon and Label
Shape
Text Area
Label
Image
Shape

Summary (1)

- Four basic activities in interaction design process
  - Discovering requirements
  - Designing alternatives
  - Prototyping
  - Evaluating
- People-centered design rests on three principles
  - Early focus on users and tasks
  - Empirical measurement
  - Iterative design
- Understand problem space before starting design
- Involve stakeholder groups throughout development
- Generate alternative designs and evaluate them

Summary (2)

- AgileUX refers to approaches that integrate UX design and agile development
  - Needs a balance between research and reflection, and rapid iterations
  - Requirements are repeatedly re-prioritized, which seeks to avoid wasted effort
  - UX design activities need careful planning: when, how much, and how to take forward
- Design patterns and implementation libraries support good user experience design (look out for anti- and dark patterns)
- Open source resources, for example, on GitHub, make development of standard applications easier and quicker
- A range of digital tools to support interaction design in practice is available