Mobile User Experience

CSE 3203
Overview of Mobile Systems

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Content Overview

- Mobile user experience
  - Elements of user experience

- Multi-screen/device experience

- Design principles, patterns, and practices
  - Google's mobile app design principles
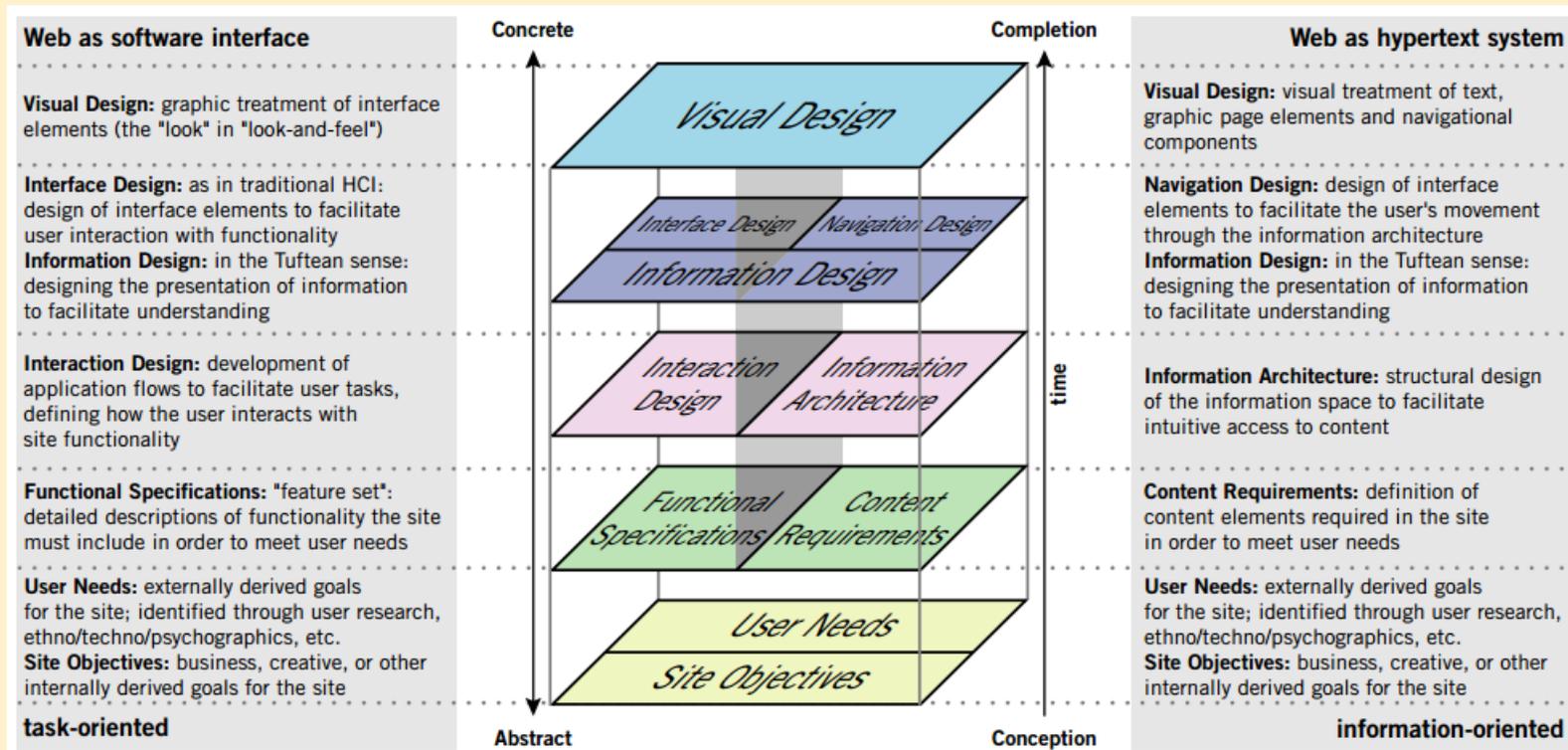
Mobile User Experience

- User experience
  - A person's perceptions and responses that result from the use or anticipated use of a product, system or service
  - encompasses all aspects of the end-user's interaction with the company, its services, and its products.
  - https://en.wikipedia.org/wiki/User_experience

- Mobile user experience
  - A person's perceptions and responses that result from the use of mobile devices and mobile applications or services running on these devices.
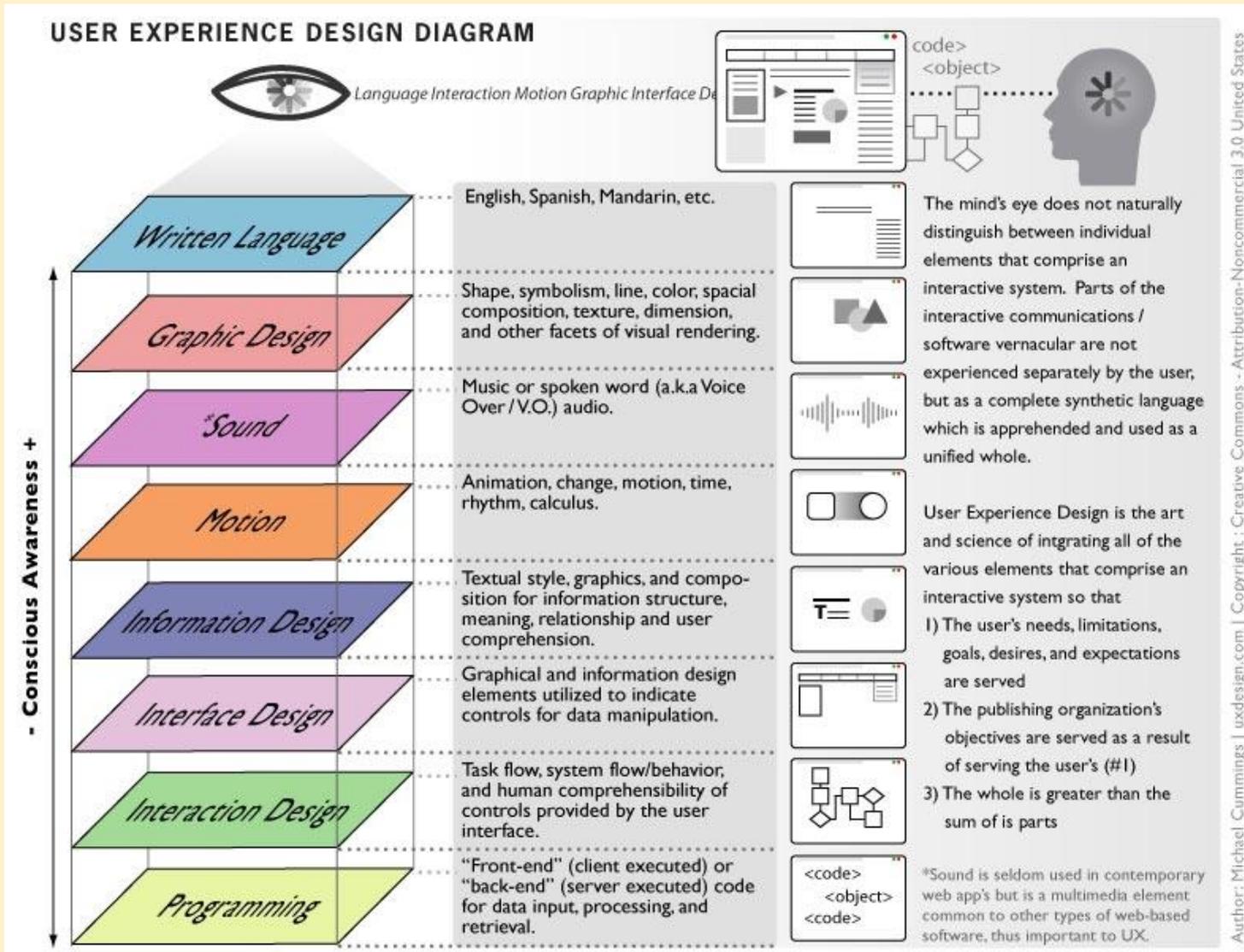 - the design of positive experiences during the use of mobile devices and wearables, and applications or services running on such devices. https://www.interaction-design.org/literature/topics/mobile-ux-design

Elements of User Experience

- Garrett has some initial discussion of the elements in the context of web
  - The details can be found in his book https://www.amazon.com/Elements-User-Experience-User-Centered-Design/dp/0321683684/

http://www.jjg.net/elements/pdf/elements.pdf or
http://uxdesign.com/assets/Elements-of-User-Experience.pdf

Elements of User Experience

USER EXPERIENCE DESIGN DIAGRAM

Language Interaction Motion Graphic Interface D...

Written Language — English, Spanish, Mandarin, etc.

Graphic Design — Shape, symbolism, line, color, spacial composition, texture, dimension, and other facets of visual rendering.

*Sound — Music or spoken word (a.k.a Voice Over / V.O.) audio.

Motion — Animation, change, motion, time, rhythm, calculus.

Information Design — Textual style, graphics, and composition for information structure, meaning, relationship and user comprehension.

Interface Design — Graphical and information design elements utilized to indicate controls for data manipulation.

Interaction Design — Task flow, system flow/behavior, and human comprehensibility of controls provided by the user interface.

Programming — "Front-end" (client executed) or "back-end" (server executed) code for data input, processing, and retrieval.

— Conscious Awareness +

The mind's eye does not naturally distinguish between individual elements that comprise an interactive system. Parts of the interactive communications / software vernacular are not experienced separately by the user, but as a complete synthetic language which is apprehended and used as a unified whole.

User Experience Design is the art and science of intgrating all of the various elements that comprise an interactive system so that
1) The user's needs, limitations, goals, desires, and expectations are served
2) The publishing organization's objectives are served as a result of serving the user's (#1)
3) The whole is greater than the sum of is parts

*Sound is seldom used in contemporary web app's but is a multimedia element common to other types of web-based software, thus important to UX.

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http://uxdesign.com/ux-defined

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More Discussions on Defining UX

- https://www.uxmatters.com/glossary/

- http://semanticstudios.com/user_experience_design/

- https://www.nngroup.com/articles/definition-user-experience/

- https://www.smashingmagazine.com/2012/07/elements-mobile-user-experience/

The Key UX Elements

- Usefulness, the functionality

- Content – and organization and presentation of content – information design and information architecture

- Ease-of-use
  - User interface
  - User interaction

- Performance features
  - Speed, security, integration, privacy, reliability, community, support, inter-operability, etc.

Mobile UX Design Considerations

- Consider the difference of user experience on mobile vs desktop
  - Site or app? Consider their pros and cons and select the most appropriate one

- Follow the general conventions and design principles

- Selectively apply design patterns and best practices
  - Adapt to screen size and density
  - Design for touch friendly UI

- Be aware of multi-screen use patterns

- Tools
  - Adopt a design language for consistency
  - Use a design tool to assist design and development

Differences of Mobile UX

- People use mobile devices differently because of their mobility and portability
    - Prefers short and simple interactions
    - Use for multiple purposes and interactions between apps.
    - Mobile device is not the only platform; usually used together with other devices – multi-device experience
    - https://www.thinkwithgoogle.com/advertising-channels/mobile-marketing/device-use-marketer-tips/

- Screen
    - Screen size is smaller http://www.statista.com/chart/2269/smartphone-shipments-by-screen-size/
    - Screen resolution is lower and density is higher http://developer.android.com/about/dashboards/index.html
    - Fragmented market: properties vary a lot among devices
    - Orientation: vertical screens accounts for 29% of usage overall

- Interaction method: touch is different form pointing device like mouse
    - https://www.nngroup.com/articles/mouse-vs-fingers-input-device/
    - Multiple input methods
    - New interaction methods: camera (scanner), voice

- Connection and speed: mobile device connection is less stable, inconsistent, and slower; variable connectivity; frequent switching among networks.
    - https://queue.acm.org/detail.cfm?id=2441756
    - https://www.thinkwithgoogle.com/marketing-resources/experience-design/speed-is-key-optimize-your-mobile-experience/

- Device capability:
    - Slower processors and memory
    - Limited multitasking and simultaneous browser tabs/windows
    - Mobile devices have much more functionality integrated: cam, mic, sensors, GPS, etc.

- More information
    - https://www.nngroup.com/articles/mobile-ux/
    - https://www.interaction-design.org/literature/article/mobile-usability-research-the-important-differences-from-the-desktop

Some Notes on Mobile UX

- UX is mainly for software products but it also has a hardware side, especially in the context of mobile devices.

- Example
  - Device size and user behavior
  - Screen types
  - Design of buttons (keyboard, home button, etc.)

General UX Design Principles

- Design for intuition (common sense) and meaningful – don't make users think/guess

- Design for consistency

- Design for simplicity, clarity, and ease-of-use

- Design for interaction

Best Practices for Mobile UX

- Design for touch (multi-touch, gesture)

- Design for small screen

- Design for rich integrated device features
  - Voice, device orientation and movement, sensors

- Design for focused micro functionality

Touch Friendly UI

- Rule of the thumb: thumb (one or two) oriented operation is common
  - http://www.uxmatters.com/mt/archives/2013/02/how-do-users-really-hold-mobile-devices.php
  - Aware of hot areas - http://www.lukew.com/ff/entry.asp?1649

- Touch targets
  - Touchable areas instead of links
  - Size of touch targets: http://www.smashingmagazine.com/2012/02/21/finger-friendly-design-ideal-mobile-touchscreen-target-sizes/

- Gestures
  - Gestures represent the future UI opportunities - http://www.lukew.com/touch/

- More
  - Provide interaction feedback
  - Activate the most appropriate pseudo keyboard
  - http://4ourth.com/Touch/
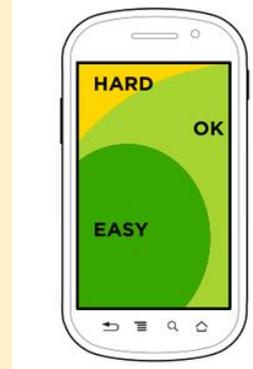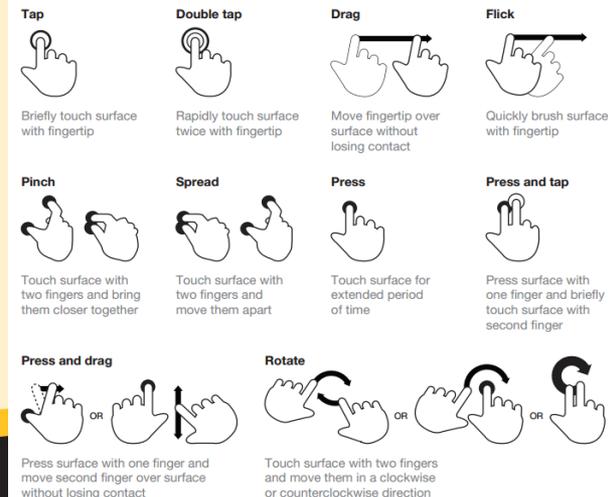
Design Patterns and Practices

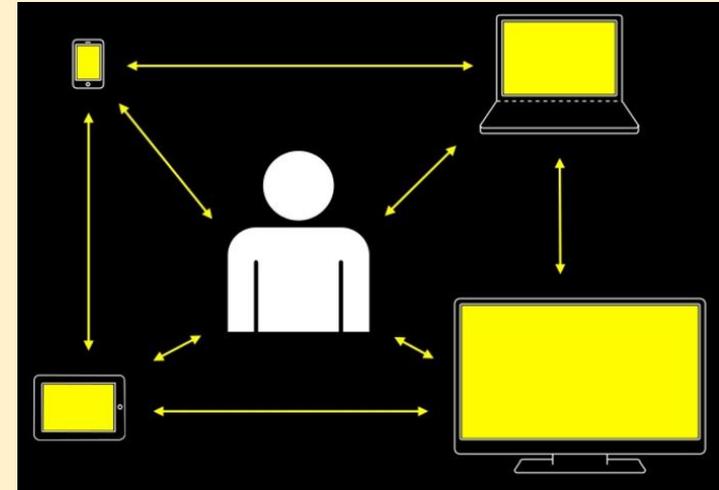- Articles and reports
  - Google https://www.thinkwithgoogle.com/marketing-resources/experience-design/principles-of-mobile-app-design-engage-users-and-drive-conversions/
  - Designing for touch http://4ourth.com/Touch/
  - https://alistapart.com/article/organizing-mobile
  - http://bradfrost.github.io/this-is-responsive/patterns.html
  - https://designmodo.com/content-patterns-mobile/
  - https://uxplanet.org/mobile-design-best-practices-2d16d37ecfe

- Resource and pattern collections
  - https://pttrns.com
  - http://www.mobile-patterns.com
  - https://www.interaction-design.org/literature/topics/mobile-ux-design
  - Android patters: https://unitid.nl/androidpatterns

- Books
  - Mobile UI Design Patterns https://www.uxpin.com/studio/ebooks/mobile-design-patterns/
  - Mobile Design Pattern Gallery https://www.amazon.com/dp/1449363636 - one sample chapter http://www.uxbooth.com/articles/mobile-design-patterns/
  - Designing mobile interfaces: http://4ourth.com/wiki/Designing%20Mobile%20Interfaces
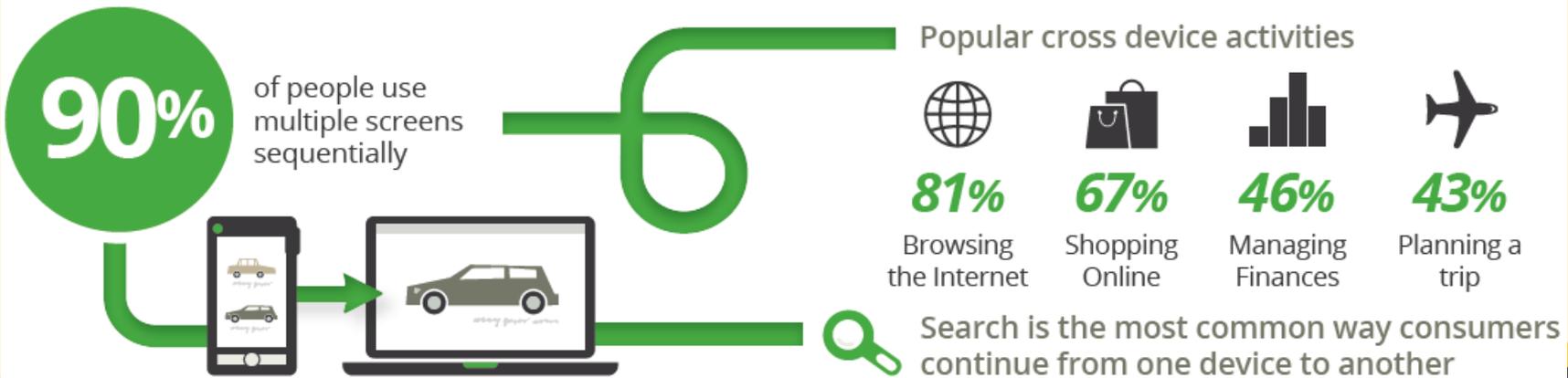
Multi-Device User Experience

- Multi-device or multi-screen usage involves the use of more than one device (screen) for a particular application or service.
  - These devices usually include mobile devices

- 57% of people use more than on type of device. As consumers balance their time between smartphones, tablets, PCs and televisions, they are learning to use these devices together to achieve their goals.
  - https://www.thinkwithgoogle.com/advertising-channels/mobile-marketing/device-use-marketer-tips/

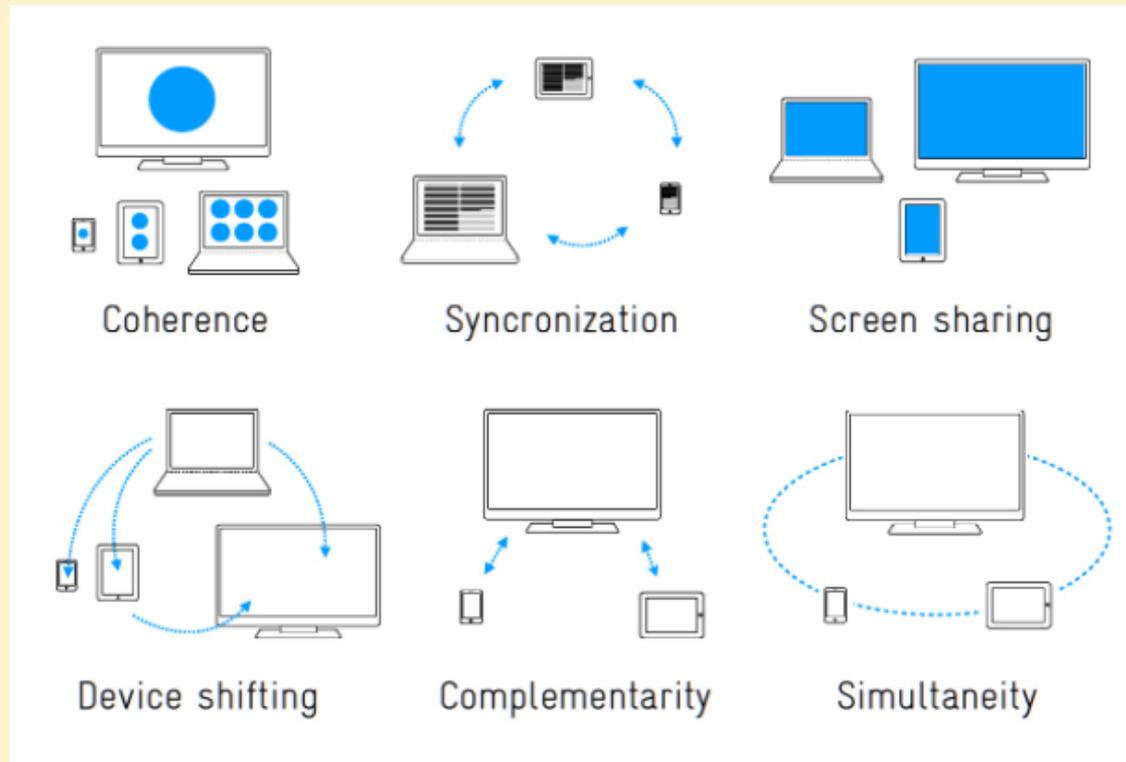## Consumers move between multiple devices to accomplish their goals

90% of people use multiple screens sequentially

Popular cross device activities

81%	**67%**	**46%**	**43%**
Browsing the Internet	Shopping Online	Managing Finances	Planning a trip

Search is the most common way consumers continue from one device to another

https://www.thinkwithgoogle.com/advertising-channels/mobile-marketing/multi-screen-world-infographic/

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Patterns of Multi-Device Experiences

- Six patterns of multi-device use
  - https://www.slideshare.net/preciousforever/patterns-for-multiscreen-strategies/

- Similar discussion but can also be found at https://www.upsidelearning.com/blog/index.php/2015/09/01/types-of-multi-device-experiences/ or https://vimeo.com/114552378

Design Languages

- A (UI) design language is an overarching scheme or style that guides the design of software product.
  - Or a cohesive set of design principles and patterns
  - https://en.wikipedia.org/wiki/Design_language

- Examples
  - Flat design https://en.wikipedia.org/wiki/Flat_design
  - Google Material design https://material.io/design/
  - Fluent https://www.microsoft.com/design/fluent/
  - Metro (Microsoft) https://en.wikipedia.org/wiki/Metro_(design_language)

Tools

- Design tools help designers and developers increase productivity and communicate with users

- Types of tools
  - Mockup/wireframe: focus on static UI
  - Prototype: focus on preliminary working product; more interactive

- Example tools
  - General design software like PhotoShop, illustrator, Visio, or even office tools like PowerPoint/Excel
  - Tools more specifically target UI or even mobile UI https://www.interaction-design.org/literature/article/don-t-build-it-fake-it-first-prototyping-for-mobile-apps

Learning Resources

- UX defined
  - http://uxdesign.com/ux-defined
  - https://www.nngroup.com/articles/mobile-ux/
  - https://www.uxmatters.com/glossary/
  - http://semanticstudios.com/user_experience_design/
  - https://www.nngroup.com/articles/definition-user-experience/
  - https://www.smashingmagazine.com/2012/07/elements-mobile-user-experience/

- General resources
  - https://www.interaction-design.org/literature/topics/mobile-ux-design
  - http://www.allaboutux.org
  - https://uxplanet.org

- Design Pattern Resources (see slide 14)

- Multiscreen experiences
  - http://previous.precious-forever.com/2011/05/26/patterns-for-multiscreen-strategies/
  - Levin https://vimeo.com/114552378 and her book http://shop.oreilly.com/product/0636920027089.do
  - https://www.thinkwithgoogle.com/advertising-channels/mobile-marketing/device-use-marketer-tips/
  - https://www.thinkwithgoogle.com/advertising-channels/mobile-marketing/the-new-multi-screen-world-study/

- Using design tools: https://www.interaction-design.org/literature/article/don-t-build-it-fake-it-first-prototyping-for-mobile-apps

- Learning UX at KSU
  - IT 4213 Mobile Web Development
  - SWE 4324 User-Centered Design
  - B.S. Interactive Design http://chss.kennesaw.edu/tcid/programs/bsid.php

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