Comp 341/441 - HCI

Spring Semester 2019 - Week 13

Dr Nick Hayward

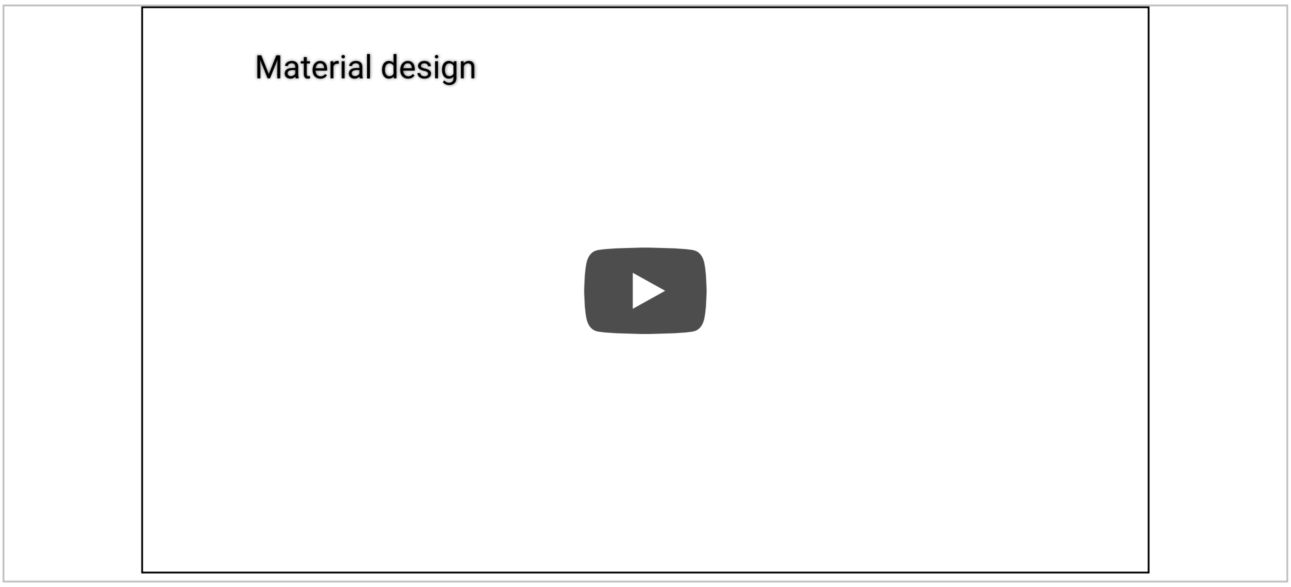
Principles for Usability

feedback

- plays a crucial role in reinforcing users' perception, expectations, general experience...
- principle of feedback states that designers should offer users confirmation or acknowledgement for the result of an action
  - *good or bad, successful or unsuccessful*
- distinguish two types of feedback
  - ***activational feedback***
    - provides evidence that a given control was actioned successfully.
    - e.g. a button pressed, menu item selected, slider control moved to a new position
    - feedback may be offered visually, in a tactile manner for physical controls, an audible alert
  - ***behavioural feedback***
    - provides evidence an action etc has had an effect of the application, system...
    - e.g. app closes an open, active window, shows a dialog window and status message, audible sound...

Video - Principles for Usability

material design



Material design

Google's Material Design

Source: YouTube

Principles for Usability - Feedback

Fun exercise - part 5

Continue the design of a company's online services, which are available as both a responsive web application and mobile app...

Then, outline the following

- *activational feedback* in the UI and UX for the web app and mobile app
- *behavioural feedback* in the UI and UX for the web app and mobile app
- role of *consistency* and *affordance* in these design choices for both web app and mobile app

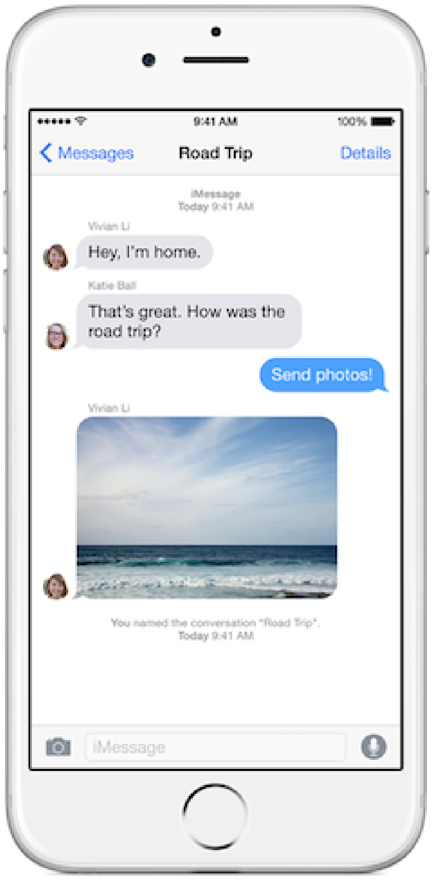
Principles for Usability

constraints

- apps and interfaces need to be designed and tested to prevent invalid states
  - *incorrect, invalid user interaction, invalid actions…*
- constraints may take various forms
  - *check correct relationships between elements and actions*
  - *check elements active only as needed*
  - *actions only performed when default data etc available*
  - *menu items active relative to contextual requirements*
  - *physical products often display such constraints*

Image - Principles for Usability

Message app on iOS



iMessage
Today 9:41 AM

Vivian Li

Hey, I'm home.

Katie Ball

That's great. How was the road trip?

Send photos!

Vivian Li

You named the conversation "Road Trip".
Today 9:41 AM

Messages for iOS

Source - Apple

Principles for Usability - Constraints

Fun exercise - part 6

Continue the design of a company's online services, which are available as both a responsive web application and mobile app...

Then, outline the following

- variant *constraints* in UI design for the web app and mobile app
- role of *feedback* to promote *constraints* in the UI design for the web app and mobile app
- role of UI conventions and *mapping* to help promote UX *constraints* in the web app and mobile app

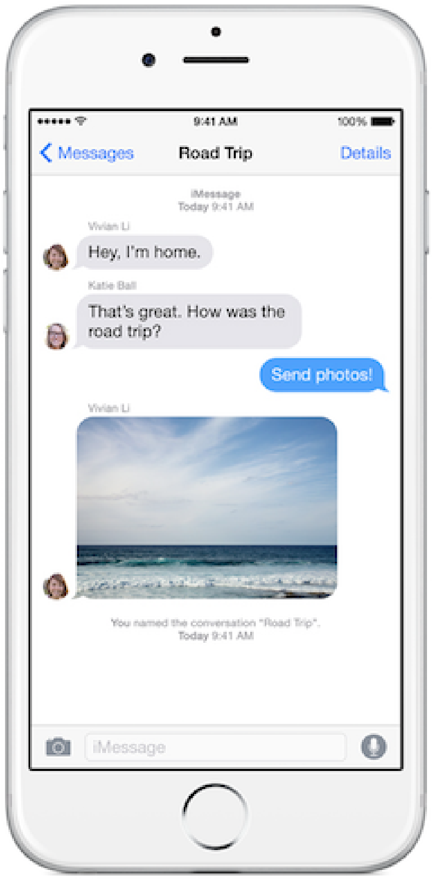
Principles for Usability

naming

- names and labels key aspect of human communication, thought, understanding...
  - *also an important consideration in design*
- naming helps users understand the application
  - *their current location relative to navigation*
  - *the data and information they are viewing*
  - *action they can and cannot perform...*
- good naming helps a user form a correct mental model
- do not confuse naming with the use of technical jargon and terms
- precise, consistent naming helps us form unambiguous instructions, help, feedback...
- naming helps identify as well as differentiate between aspects of the design and functionality
- names should be unique relative to the context and the application
- namespaces are useful relative to application design and development

Image - Principles for Usability

good(ish) naming



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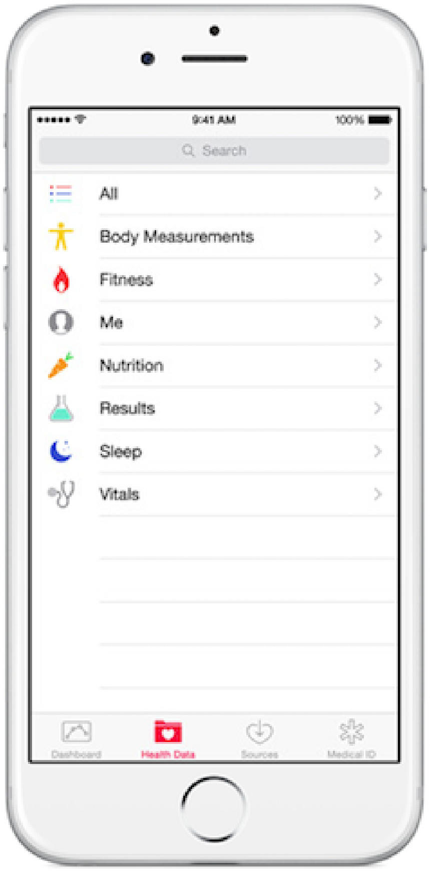
Messages for iOS 8

Source - Apple

Image - Principles for Usability

bad(ish) naming



Health for iOS 8

Source - Apple

Principles for Usability

naming guidelines - a few thoughts

- does the name accurately reflect and describe its intended target?
  - *consider the action of the element relative to the name*
- is the name clear, concise, and free of ambiguity?
- use concise, easy to remember names
  - *better than longer, hard to remember descriptions*
- does the name inherently assume prior knowledge from the user?
  - *consider naming relative to perceived domain knowledge*
- acronyms are useful, but assume prior knowledge of the domain
  - *be careful when using acronyms, and consider cultural bias*
    - e.g. VAT well known in Europe
- carefully consider capitalisation, and ensure consistency for chosen pattern
  - *e.g. This Is Capitalised...This is Capitalised...This is not Capitalised (fully)...*
- users should be able to pronounce a name...not helpful if they have to check first

Image - Principles for Usability

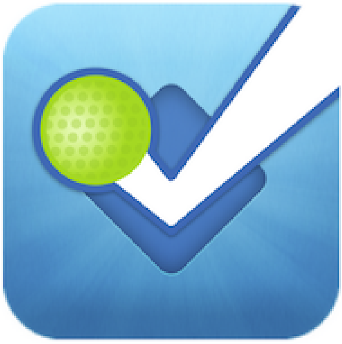
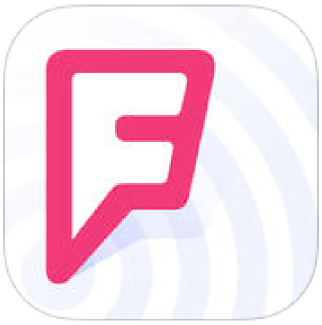
cultural naming concerns

Calpis Water	Pocari Sweat

Source: Calpis | Pocari Sweat

Image - Principles for Usability

bad naming and icon

iOS 6 icon	iOS 8 icon
	

Positive user experience

- we need to be able to identify traits of a positive user experience
  - *conversely, understanding a negative experience is also helpful*
- application allows a user to feel they are in control
- helps develop a sense of confidence and competence with the application
- helps encourage high productivity and efficiency
  - *enables and encourages our user to develop a sense of* ***flow***
- allows simple, routine tasks to be completed as quickly and easily as possible
- produces valid, useful output for the user
- user feels confident with the validity of produced results, calculations...
- considered aesthetically pleasing
- exhibits acceptable, sufficient performance to avoid unnecessary delays and waiting
- stable and reliable for the user...no *blue screen of death*
- makes it easy for a user to correct or modify any errors, mistakes...
- inspires trust and confidence in the user with logical, well-ordered design, navigation...

Negative user experience

- application leaves a user with a sense of feeling a lack of control
- overwhelming the user, creating a sense of incompetence and inadequate ability
- hinders the user from improving productivity and general efficiency
  - *prevents a sense of **flow***
- simple tasks and routine patterns prove overly complicated for the user
- output from the application is flawed, incorrect, poorly formatted...
- the app may produce unreliable results and calculations
- the UI design is aesthetically disorganised, cluttered, unappealing...
- slow in performing tasks, and exhibits unnecessary delays and lags in performance
- unstable, buggy, and prone to crashing...
  - *user loses data due to poor performance*
- **excessive complexity** and difficulty in general functionality
- **too much work** involved to use the application in general
- design that conflicts with a user's perception of previous applications, iterations of a design, and competing products

Violating Design Principles

- issues that arise in usability
  - *consequence of poor interpretation, implementation, or misunderstanding general design principles*
- reconsider Norman's design principles
  - ***lack of consistency***
  - ***poor visibility***
  - ***poor affordance***
  - ***poor mapping***
  - ***insufficient feedback***
  - ***lack of constraints***

Designing an interaction concept

intro

- app's **interaction concept**
  - *basic summary of our base, fundamental idea of how the user interface will actually work*
  - *describes presentation of the UI to the user*
  - *general interaction concepts that allow a user to complete tasks*
- inherent benefit is that it will often highlight initial usability issues
  - *including navigation, workflow, and other carefully considered and planned interactions*
- every aspect cannot be defined and outlined at the initial design stage
- follow a more agile approach instead of formal specification documents
- prototyping a particularly effective method for
  - *testing different design ideas*
  - *receiving feedback through peer reviews and associated usability testing*
  - *representing and communicating intended design to a client etc*
- lightweight written records as supplemental and supporting material

Designing an interaction concept

analysis of interaction concepts

- interaction styles
- information architecture basics, which often include the following
- a data model
- a naming scheme, or defined glossary of preferred names and labels
- a navigation scheme
- a search and indexing scheme
- an outline of a framework for interactions and workflow
- an outlined concept for transactions and any necessary persistency
- AND, a framework for the general visual design of the application

Designing an interaction style

- app's **interaction style**
  - *fundamental way it presents itself to a user to allow interaction with available functionality*
  - *many different concepts for interaction styles and overlap*
  - *many will employ a variety or combination of these interaction styles*
- an application might present the following styles to its users
  - ***menu driven options*** *- user is able to select options from menus, sub-menus*
  - ***forms*** *- user able to enter data, respond to queries by completing forms*
  - ***control panel options*** *- may show data visualisations, summaries, quick access options*
  - ***command line*** *- allows expert, power users to control the app using commands and queries*
  - ***conversational input*** *- user may interact in a back-and-forth dialogue or conversational style*
    - a sense of question asked and reply returned
  - ***direct manipulation*** *- direct user manipulation of objects within the app on the screen*
  - ***consumption of content*** *- app is simply a way to consume content*
    - e.g. e-Book readers, music and video players...
- an app will normally use a combination of the above interaction styles

Image - iPhone

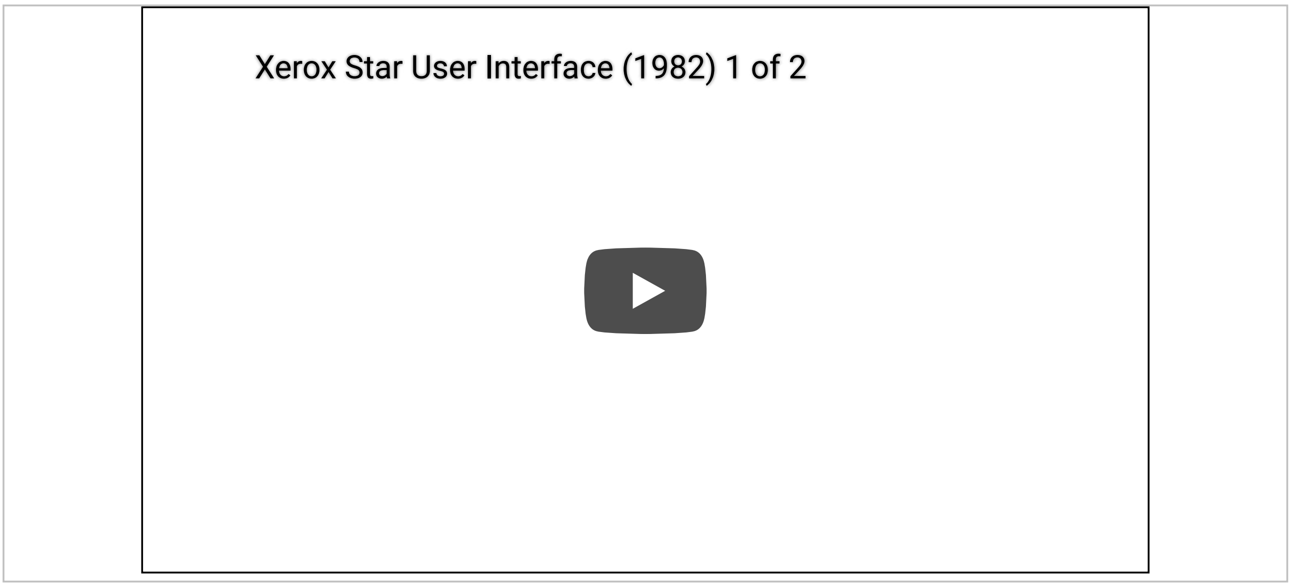
considerations of mobile application interaction styles

Apple iPhone

- Source - Apple iPhone

Video - Interaction Style

Xerox Star

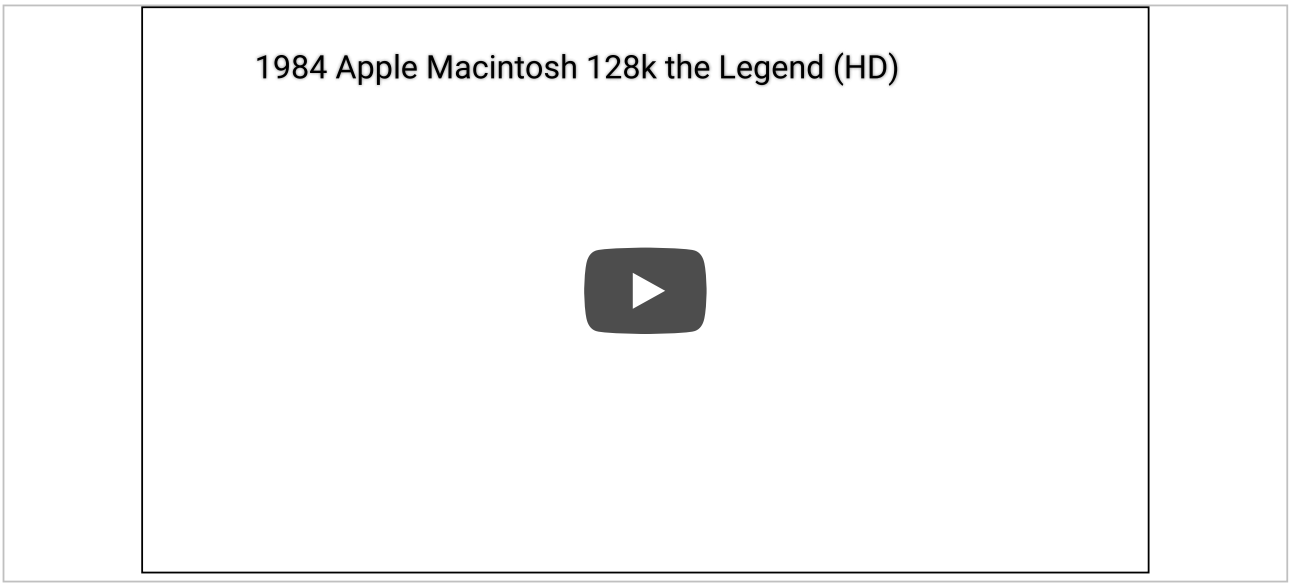


Xerox Star User Interface (1982) 1 of 2

Source: YouTube

Video - Interaction Style

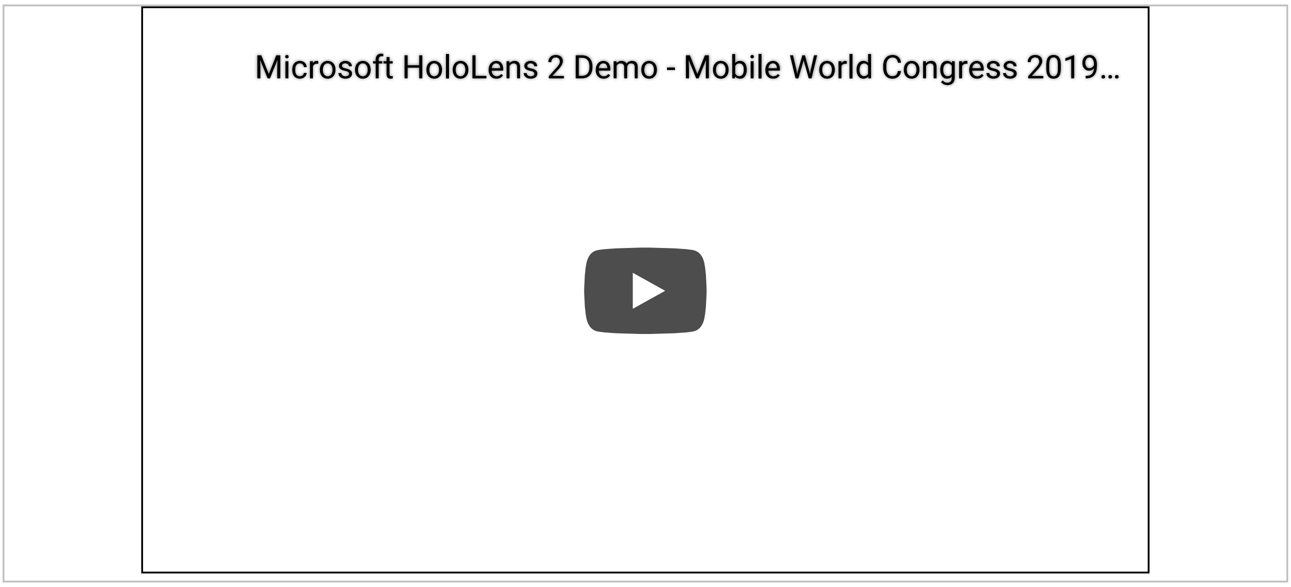
Macintosh UI


1984 Apple Macintosh 128k the Legend (HD)

Source: YouTube

Video - Interaction Style

Microsoft HoloLens 2



Source: YouTube

References

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