

Comp 34I/44I - HCI

Spring Semester 2019 - Week 13

Dr Nick Hayward

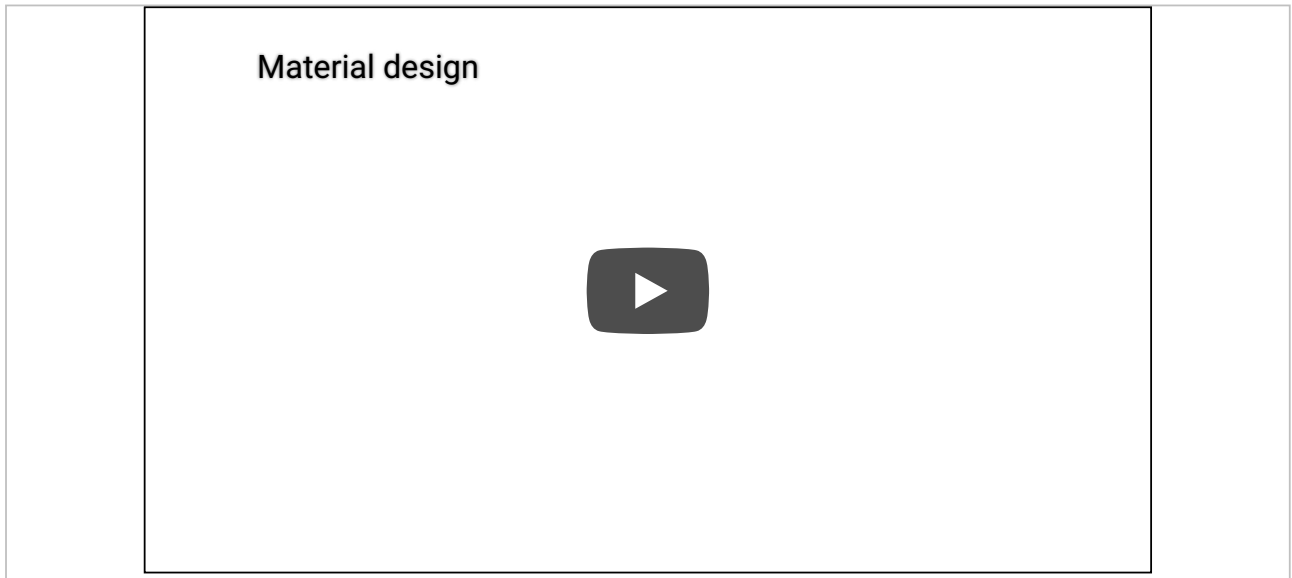
Principles for Usability

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



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

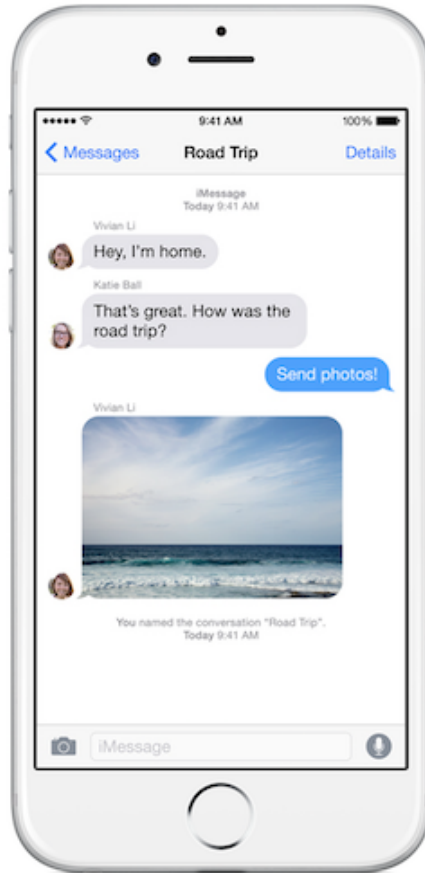
Principles for Usability

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



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

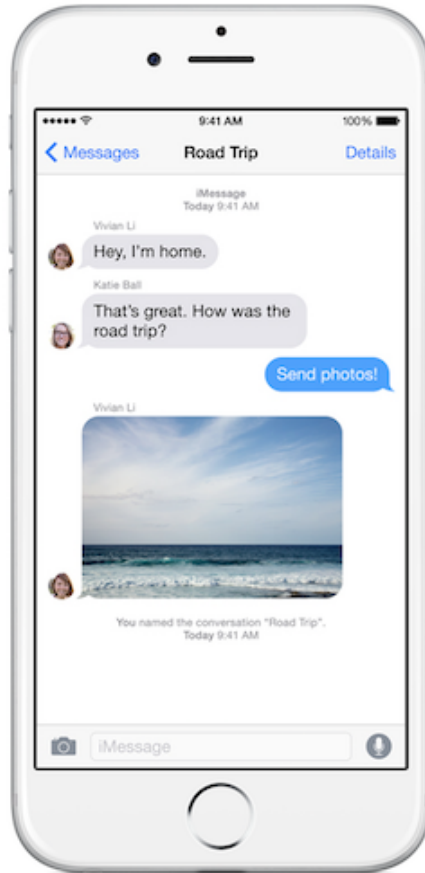
Principles for Usability

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

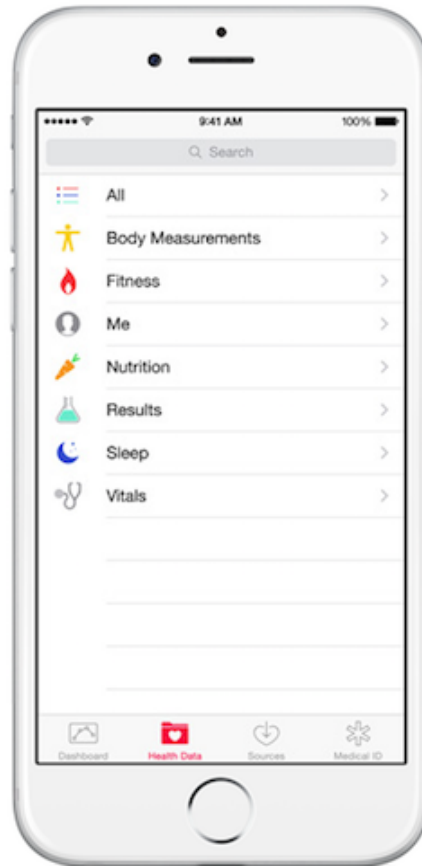


Messages for iOS 8

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

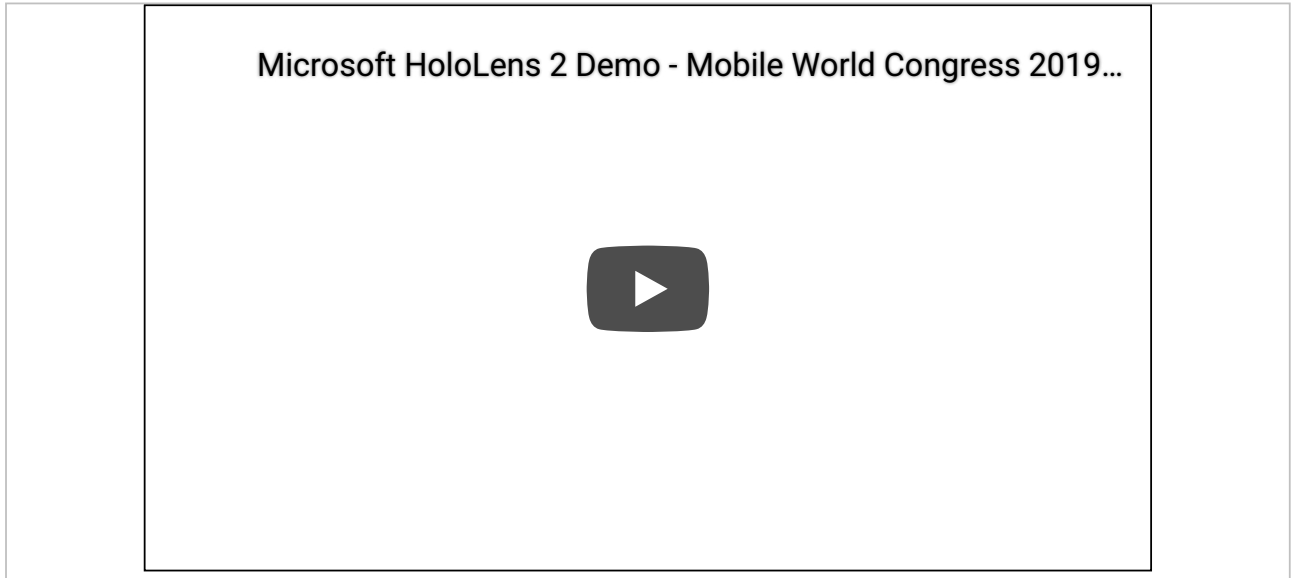
Macintosh UI



Source: YouTube

Video - Interaction Style

Microsoft HoloLens 2



Source: YouTube

References

- Carstens, A., and Beck, J. *Get ready for the gamer generation*. Tech Trends 49. PP.22-25. 2005.
- Cooper, A. et al. *About Face 3: The essentials of interaction design*. Wiley. 2007.
- Nielsen, J. *Heuristic evaluation*. Usability inspection methods. New York. John Wiley and Sons. P. 30. 1994.
- Tyldesley, D.A. *Employing usability engineering in the development of office products*. Computer Journal, Vol. 31. No. 5, PP. 431-436. 1988.