

Comp 34I/44I - HCI - Slides

Spring Semester 2018 - week 3

Dr Nick Hayward

Vision & Interfaces

positive highlighting and focus

- peripheral vision useful as a trigger for the fovea to focus
- moving, overt objects and triggers quickly draw the fovea's attention
- *searching* is another important role for our vision
 - *peripheral vision plays key role*
 - *dependent upon search target, style, colour, movement...*
- design can help our vision focus upon search target
 - *text decoration, highlighting, weight, emphasis...*
 - *bold that **pops***

text example I

Test I

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text example 2

Test 2

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Vision & Interfaces

text example 3

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Image - Vision & Interfaces

web safe & browser colours

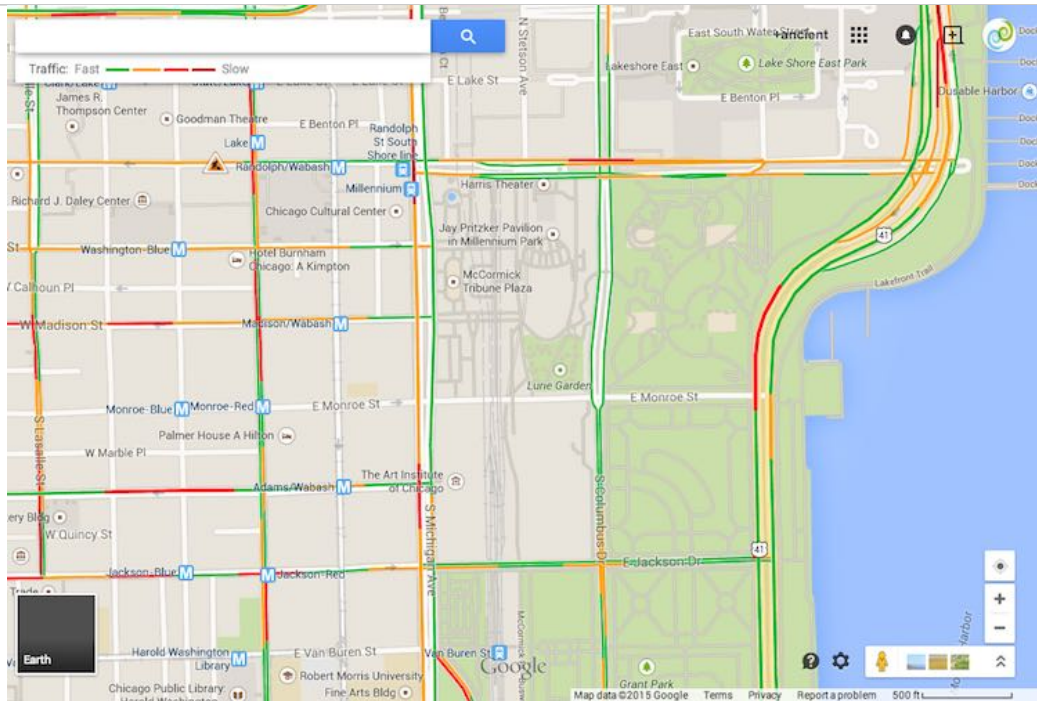


Safe Colours

Browser colours & colour blindness (source: VisiBone)

Image - Vision & Interfaces

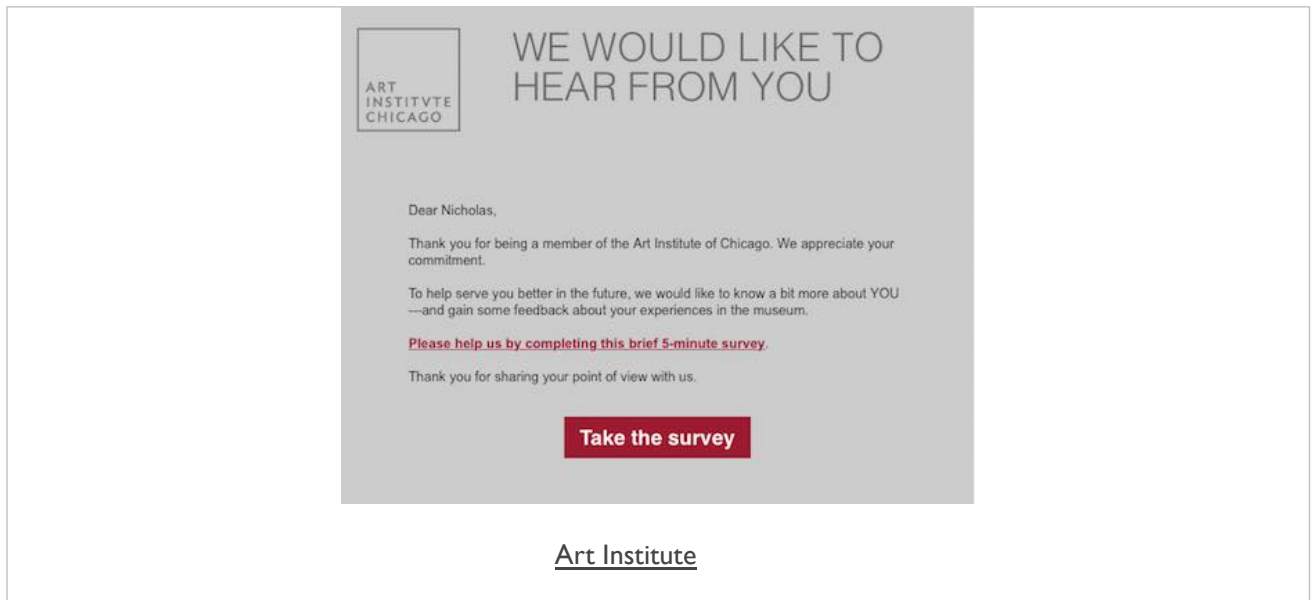
design pop...



Traffic

Image - Vision & Interfaces

design example



Email Survey - (source: Art Institute Chicago)

Users & Interaction

consideration of interaction

- GUIs tend to present graphical controls for user interaction
 - *buttons, drop-down boxes and menus, sliders...*
- users interact either directly or indirectly
 - *gesturing on a touchscreen...*
 - *pointing device such as a mouse, keyboard...*
- inherent assumption users know required actions for a given application

Users & Interaction

hierarchical breakdown

- normally a predictable model involving a hierarchical breakdown
 - **goals:** *user's high-level goal for interaction with application*
 - write a letter, take a photo, read a book, book a holiday...
 - goals become **what** the user wants to do
 - instead of **how** they will do it
 - **tasks:** *allow a user to fulfill their goals*
 - perform some general steps
 - follow a structured path of activities
 - **actions:** *user carries out their tasks by performing interface actions*
 - specific operations in the user interface
 - click a button, select a menu item, drag and drop an element, text entry...

example

Example - user editing of photo metadata within image library application

- users wants to edit some metadata for a photo in their image library application
 - *open the required image document in image application*
 - *select a menu item to view the current metadata record*
 - *edit existing text entries in the metadata record*
 - *enter new text for missing data*
 - *spell check user input*
 - *preview the updated image metadata*
 - *tag or categorise the image*

Users & Interaction

example

Example - user editing of photo metadata within image library application

- click a menu item to select metadata record
- click on *edit* option to start modifying record
- delete some data from the record
- enter some new text data
- click the *update* or **save** button to close the metadata record

Users & Interaction

patterns emerging

- important to realise and understand is that a predictable pattern emerges
- **goals** often achieved by means of various sets of **tasks**
- **tasks** often be achieved by various sets of **actions**
- such interface patterns can be achieved in multiple ways
 - e.g. *both keyboard shortcuts and mouse inputs*
- pattern from **goal** to **task** to **action**
 - *will, more often than not, be the same*
- necessary to keep such actions flexible and re-usable
 - *combine and mix them to achieve multiple disparate tasks*

Video - Users & Interaction

filter photos based on metadata

- Filter photographs based on metadata
- Source: Adobe Lightroom Tutorials

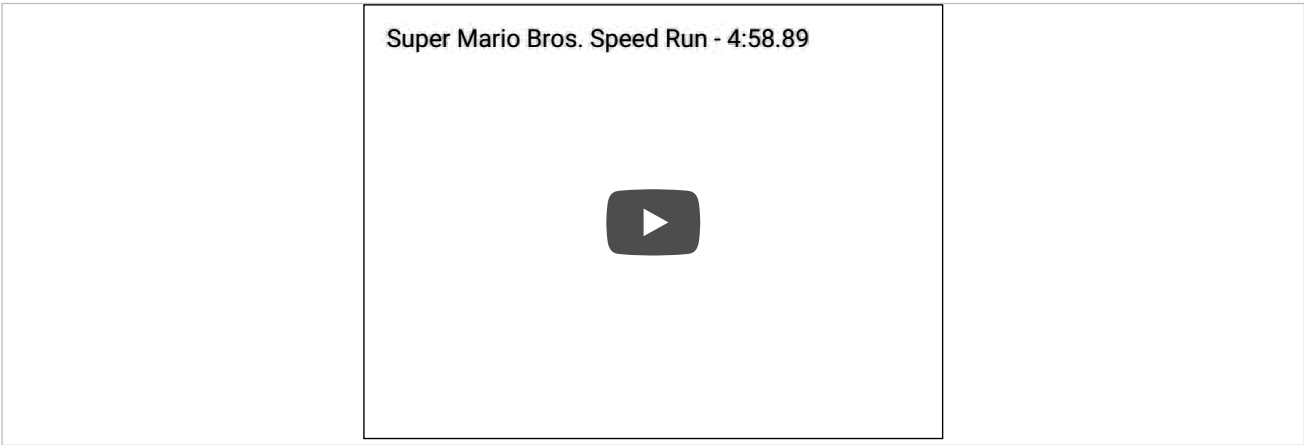
stages of action

Stages of Action

- tends to be easier and quicker for experienced users
 - *tasks are known to achieve goal*
- new users more hesitant at first
 - *uncertain of the required actions to accomplish a task*
 - *may be uncertain of the tasks necessary to achieve their goal*
- some users consult documentation, online tutorials, help forums...
- many simply begin with exploratory approach
- user may continue cycle of exploration through application
- continue until goal completed satisfactorily
 - *or, until the user gets stuck and can't move on*

Video - Users & Interaction


Super Mario Bros. speed run



Super Mario Bros. Speed Run - 4:58.89 - Source: YouTube

Video - Users & Interaction

Super Mario Bros. standard play

	<div>NES Game: Super Mario Bros. (1985 Nintendo)</div> <div></div>	
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NES Game: Super Mario Bros. (1985 Nintendo) - Source: YouTube

Users & Interaction

seven-stage action cycle model

- formalised model named **Seven-Stage Action Cycle Model**
 - Norman, D. *The Design of Everyday Things*. Basic Books. 2013.
- the model consisted of the following steps:
 1. *Identifying an immediate goal*
 2. *Forming an intention to act*
 3. *Determining a plan of specific actions*
 4. *Carrying out the actions*
 5. *Observing the results by perceiving the state of the system and the world*
 6. *Interpreting the results*
 7. *Evaluating whether the actions had the desired results*

Users & Mental Models

intro

- mental models formed as a user learns tasks within an application
- conceptual representation in our user's mind of how a system works
 - *how to operate an application's interface*
- naturally reflects a user's current stage of learning and understanding
- this understanding is subject to change
 - *changes to reflect new learning, experience...*
 - *may diminish or disappear as a user forgets details over time*
- a user relies on a mental model for an application, scenario..,
- user's will also develop expectations based upon such models
- compare a user's mental model to a system's implementation model
 - *can begin to explain usability issues and problems*

Users & Mental Models

elements of a mental model relative to apps & UIs

1. interface appearance
2. interface concepts, syntax, general rules...
3. navigation map
4. plans and strategies for accomplishing tasks and reacting to problems &c.
5. heuristics, conventions...
6. perception of application's implementation model

Users & Mental Models

interface appearance

- users form visual images of the **places** they encounter and repeatedly use within an interface
 - e.g. *various pages, screens, tabs, windows...*
- for most users, recall of mental images will be vague and inherently imperfect
 - *excluding those with eidetic memories*
- interface familiarity leads to familiarity with general layout
 - *frequency of use is also important*
- a user is unlikely to be able to sketch in detail an application's interface from a mental model

Image - Users & Mental Models

Super Mario Kart - 1992



Super Mario Kart - 1992

Image - Users & Mental Models

Mario Kart 64 - 1996



Mario Kart 64 - 1996

Image - Users & Mental Models

Mario Kart 7 - 2011



Mario Kart 7 - 2011

Users & Mental Models

Mario Kart through the years...

Super Mario Kart - 1992	Mario Kart 64 - 1996	Mario Kart 7 - 2011
		

Users & Mental Models

interface concepts, syntax, general rules...

- application is designed to solve a problem or meet a specific requirement
- syntax and rules required known as either
 - **application domain, business domain, or problem domain**
- **problem domain** may actually be pretty small
- user may only need to know a handful of concepts
- more complex and involved applications can be designed with inherent assumption of
 - *experience and prior-knowledge*
 - *a thorough understanding and awareness of required domain*
- awareness of problem domain gained via
 - *education, training, experience...*
- other applications may need to communicate and highlight their domain's concepts
 - *games, e.g. role-playing and fantasy, often seen as extreme example*
- simpler games also require adaptation to their domain's objects, goals...

Users & Mental Models

interface concepts, syntax, general rules...cont'd

- many scenarios only require a user's cursory understanding of an application
 - *e.g. users may not need to know about URLs to use a web browser*
- semi-automated apps following pre-defined paths reduce user learning curve
 - *online ticket sites, package delivery...*
- many complex applications, e.g. MS Word, still allow a user to get started quickly
 - *users may be unaware, or even care, about advanced options*
 - *learning can be built upon initial, cursory understanding and usage*

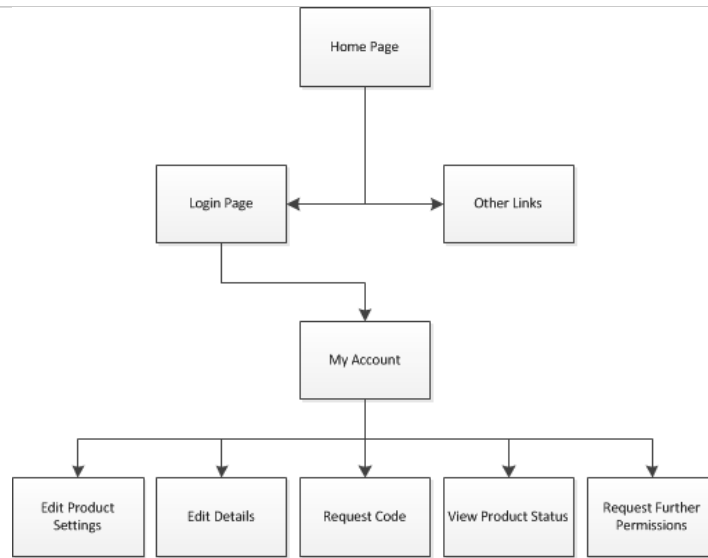
Users & Mental Models

navigation map

- many applications include the notion of places
 - *pages, screens, tabs, windows...*
- a **navigation map** will be formed by a user
 - *allows a user to differentiate between these places*
 - *return quickly to common places*
- navigation becomes a regular action for users in applications
- maps often applied to comparative applications
 - *expectation of similar usage and interaction*
- multiple options for same location
 - *users may not always be aware of competing routes*
 - *preferred routes often take precedence*

Image - Navigation Map

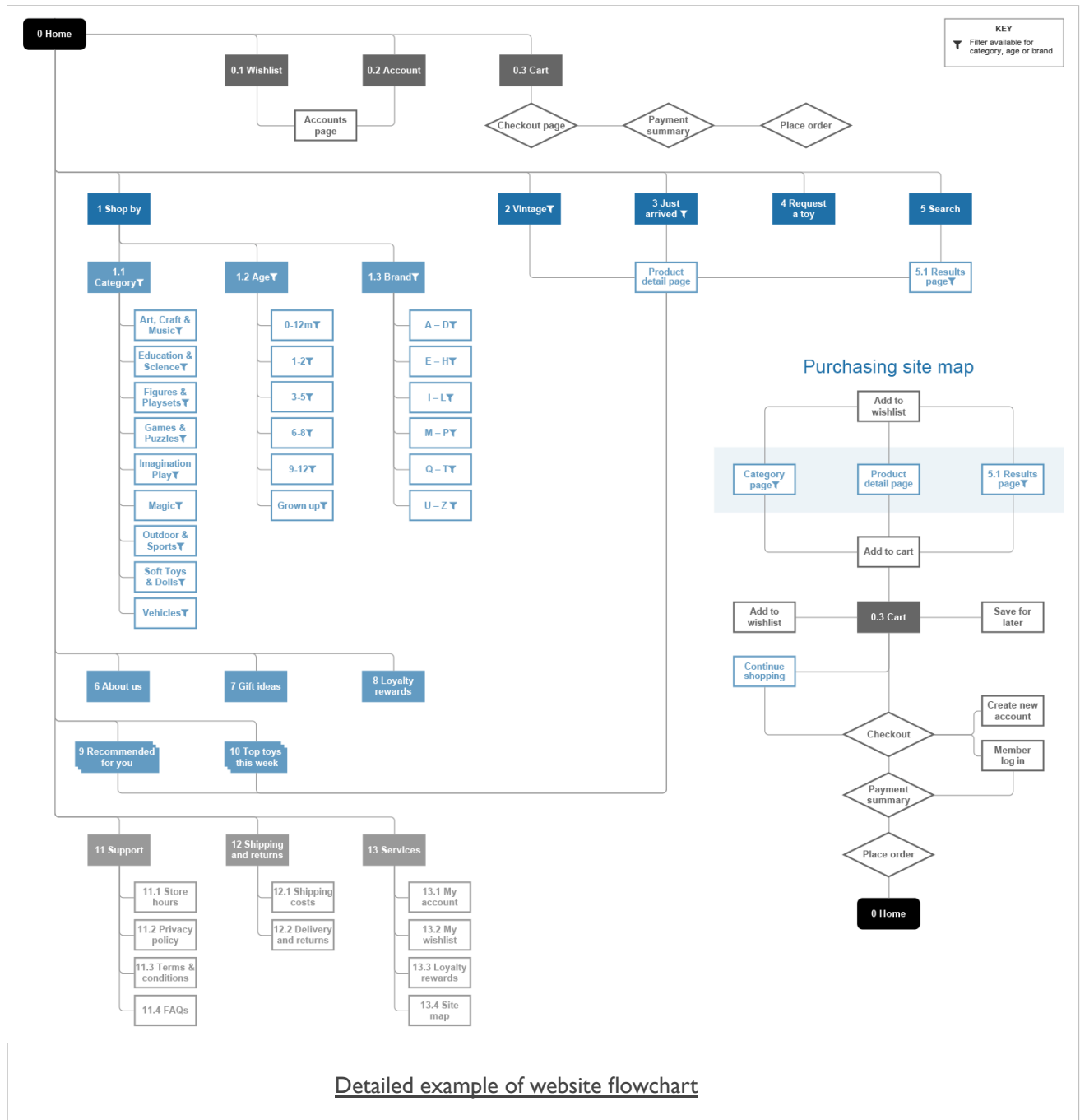
simple website example



Simple example of website flowchart

Image - Navigation Map

detailed website example



References

- Norman, D. *The Design of Everyday Things*. Basic Books. 2013.