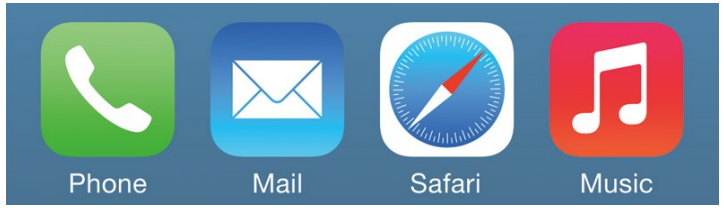
HCI

Some Basic Concepts

HCI Basic concepts

- **Affordance** – defines what an object can be used for or what somebody can do with that object.
  - Metaphors in web design might come in the form of words or imagery that's used to communicate something other than literal meaning.
  - The most direct type of affordance is a label. If an interface is targeted at beginners, or if the interface is fairly complex and includes many abstract concepts, then labels are a good way to explicitly indicate function.
  - Example - the most common example the door handle (push, pull). If you want to pull something there should be something to grab it. If you have to pull something there is no need a grab handle



HCI Basic concepts

- **System model vs User model** – you have a system and the system does something. Any system can be described with diagrams. It is what really happens and how the system works. A user model in contrast is what a person thinks it would happen and how the system works. The person who's using the system after several interactions has a user model how the system works. In the ideal case there should be no difference between system and user model.
  - Example – how works a car – physics, chemistry, engineering etc.
  - From user perspective – wheel, gears, and several buttons
  - Approach to use metaphors
  - The greater the distance between two model the more problems
  - In the past devices where mechanical. Most of the systems where visible abacus for example doing math
  - In the case of the car things a complicated. As thinks become more complicated for example computers – you have a screen but the state of the system can not be expressed as simple – bits of the registers etc. Should have visualization interface which clearly express what the state – screen, speakers, printers output devices

  https://www.youtube.com/watch?v=aMn7ud6Fnmw

HCI Basic concepts

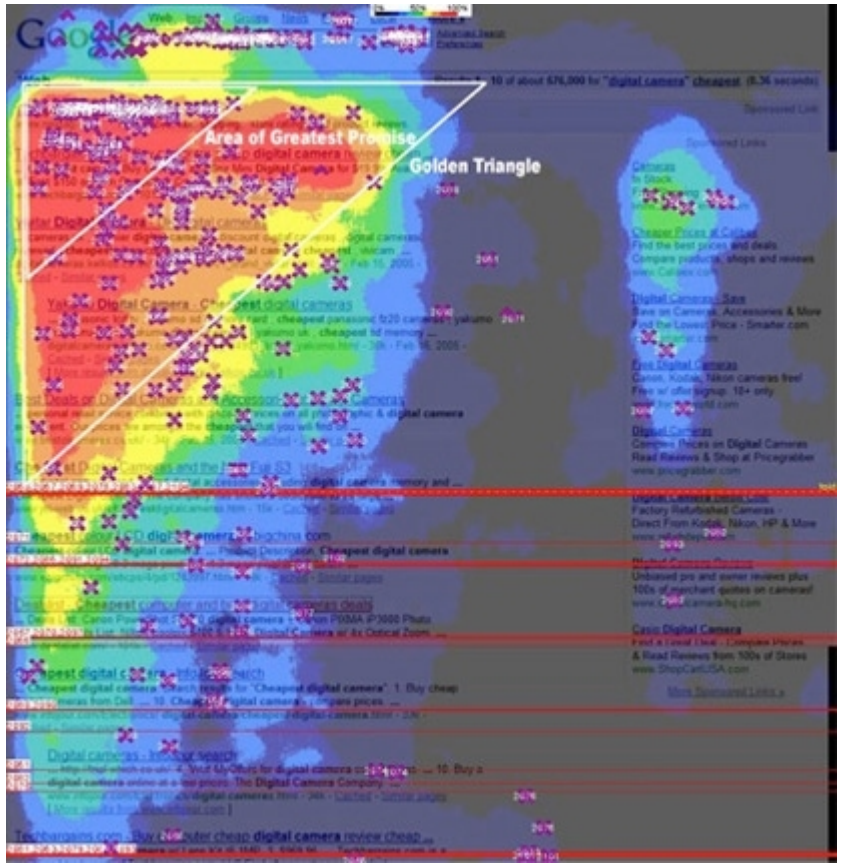
- **Information overload** – notifications text message, sounds. People don't have infinitive capacity.
  - **The critical resource is the user attention**
  - Focus of attention - the single source or location of sensory input that a person attends to at a given time, such as the point in space that they're looking at and able to devote mental resources to interpreting. In some cases, expertise can reduce the need for attentional resources, leading to the effect of being able to attend to multiple sources.
  - The more popups and widgets you have on the screen the less attention you can dedicate to the one that actually matters.

F-pattern

F-pattern (2005 study conducted by Jakob Nielsen)

people read Web pages in an **F-shaped pattern** that consists of two horizontal stripes followed by a vertical stripe. The findings showed that people do not read the text on webpages word-by-word, but instead generally read horizontally across the top of the webpage, then in a second horizontal movement slightly lower on the page, and lastly scan vertically down the left side of the screen

Google Golden Triangle



HCI Basic concepts

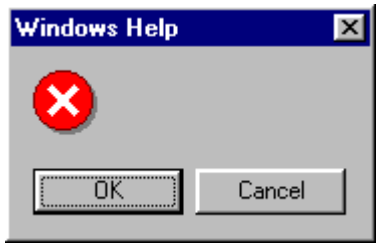
- **Modes vs modeless** – multiple state systems - depending in which state the system is in if press one button or another it does one thing but if the state is different the same buttons give a completely different result. The key idea is that not the same result. This has some negative side effects because the person has to know what the state system is in before press any key. Users are confused.
  - Example – Numlocks key, Caps lock key, Vim (text editor)
  - Modeless – each button does the same thing each time independent of the system states
  - Quasimode - shift temporary the state of the system (the shift button on the keyboard for example) – compromise giving more advance control but eliminate the confusion in the person

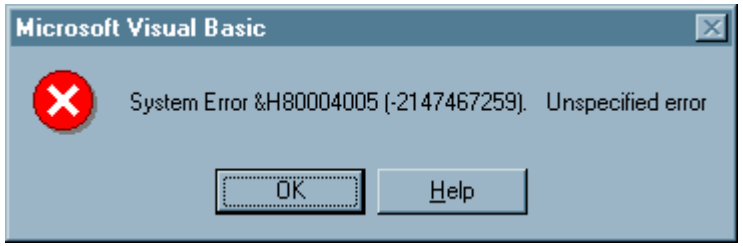
HCI Basic concepts

- HIG – Human Interface Guidelines (Apple, Windows, Android)
  - Defines a set of conventions that help of you are developer to fit nicely with the rest of the ecosystem.
  - The central aim of a HIG is to create a consistent experience across the environment (generally an operating system or desktop environment), including the applications and other tools being used. This means both applying the same visual design and creating consistent access to and behavior of common elements of the interface – from simple ones such as buttons and icons up to more complex constructions, such as dialog boxes.
  - **Consistency**
    - A consistent app implements familiar standards and paradigms by using system-provided interface elements, well-known icons, standard text styles, and uniform terminology. The app incorporates features and behaviors in ways people expect.

HCI Basic concepts

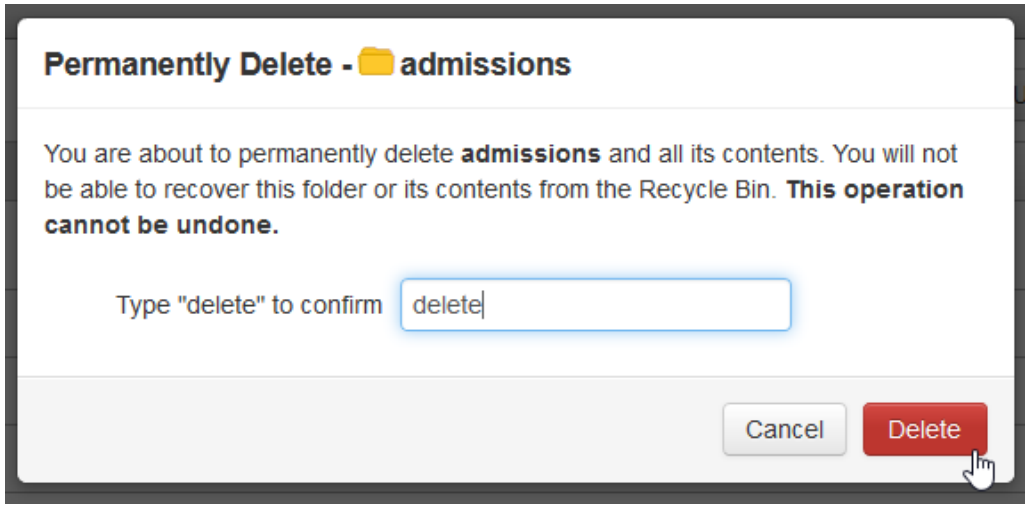
- Error Messages and the Cooperative Principle
  - According to Apple, a good alert box message says what went wrong, why it went wrong, and what the user can do about it (Apple Computer Macintosh Human Interface Guidelines 311).





HCI Basic concepts

- Forgiving UI – if somebody makes a mistake interface should allow user to undo it. If something can not be undone there should a warning
  - Example – permanently delete folder
    - Should be made more complex to increase the distance between the action and the result. For example by incident press y key … better to type something
    - Should not be possible to be done by accident

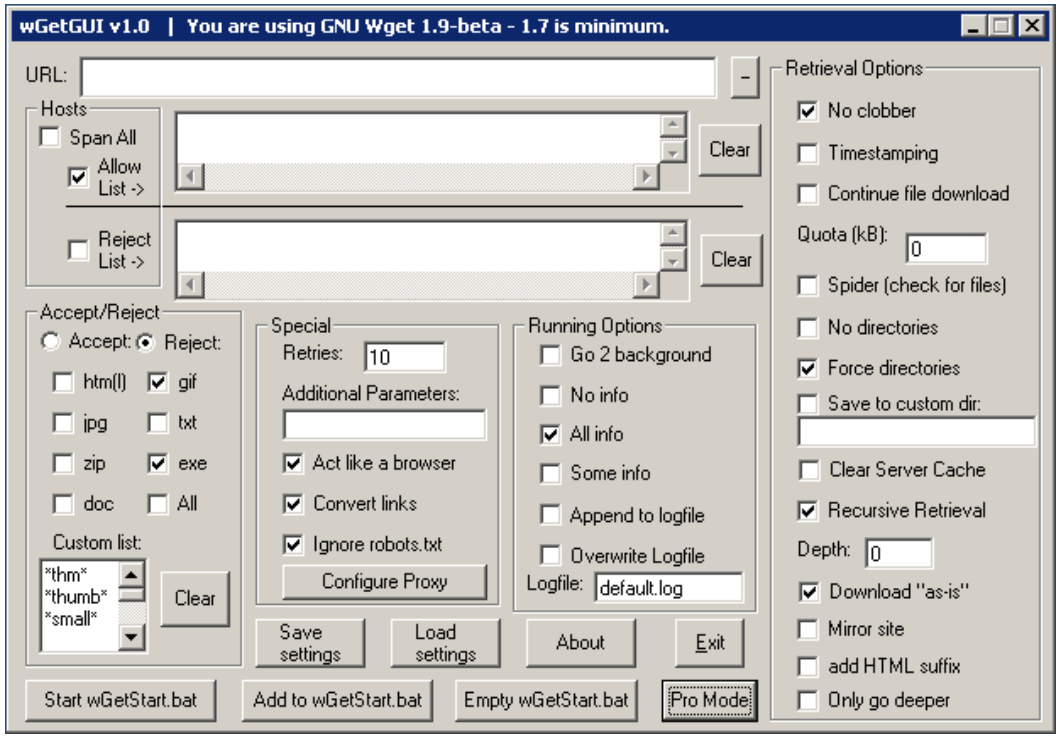


HCI Basic concepts

- **Fitts' law** - the effort need to act upon an object is a function of the size of that object and the distance of that object
  - Example – press a button – if is a big button is easier; if close to me again it is easier; in contrast if have a tiny button and is far a way it is difficult to act with it; If you have a widgets – copy and delete file one by side density packed is a big mistake. Because this is a recipe to force users to make mistakes – data loss etc.
  - Given a screen which areas are very easy to access – the edges and the corners; no need to calculate exactly the distance to the object.

HCI Basic concepts

- Hick's law - describes the time it takes for a person to make a decision as a result of the possible choices he or she has: increasing the number of choices will increase the decision time logarithmically.



https://blog.codinghorror.com/this-is-what-happens-when-you-let-developers-create-ui/

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- Perception – 250ms