Screen Design Concepts

GUI Terms

GUI (graphic user interface): invented at Xerox Palo Alto Research Center (PARC). Consists of windows, buttons, mice, icons, visual metaphors, drop-down menus.

Modes (modal): a different state the program can enter where the effects of a user's action changes from the norm – a behavior detour. Usually confusing and frustrating. ***Ex.*** TAB key is effected by modes in email window. Use TAB to jump from field to field such as from subject to CC; Use TAB key in body window and it behaves as it does in a word processor program by pushing a word over a block space.

Locus of attention: feature in the physical space that you are actively thinking about. It is less about what you need or want to focus your attention on (which is an active process) but what you can't help but attend.

Visibility: it is CURRENTLY accessible to human senses or is in recent memory. For an interface to work well, certain elements must be visible at certain times while other elements must be invisible. The user can tell the status or state that the machine is in.

Mapping: relationship between two things, between controls and their movements and the results in the environment. *Natural mapping* - take advantage of physical analogies and cultural standards = immediate understanding

Direct Manipulation: must consist of the following elements – 1. visual representation of the manipulated objects 2. physical actions instead of text entry 3. immediately visible impact of the operation. To sum up: visual feedback is essential basically seeing what we are doing while we are doing it.

Natural and artificial constraints: Represents within the interface a reduction in the number of alternative actions. It allows the user to feel there is only one right way to do something. It also creates a safety net so you cannot harm your information.

Designing for error: assume an error will be made and plan on it. First rule of robot law – do no allow harm to come to humans. Think of an error as an action not completely specified or finalized.

Standardization: actions, outcomes, layouts, and displays follow a rule created by another interface or guidelines. Make related actions work the same way as previous systems which makes it easier to remember.

Affordance: perceived and actual properties of a thing that determine how it can be used. Users make assumptions prior to experience as to how something will work. Designers must design into interfaces visual cues that describe possible behaviors and actions to take. ***Ex.*** Sliders verses toggle buttons verses radio buttons verses pulldown menus… consistency makes them easy to remember and expect how they will react in future interactions.

Iconography

Icon- representation looks like object (car is a car); resemblance of signifier and signified.

Index- indirect reference (shadow of object, tread of car); causal relationship between signifier and signified.

Symbol - stands in the place of the object (car logo); contract that is arbitrary between the signifier and signified (we must agree on it)

Abstract iconography – the most basic requirements to represent an object. Simple.

Realistic iconography – photorealism or more specific details attained to represent an object.

Audience Research

Persona – developing a very specific person and designing an interface to fit just their needs. Different than attempting to develop an interface that pleases everybody.

Elastic user – programmers and designers generally change the needs of their user to fit the needs of their development project.

History

Command Line Interface: navigation using a teletype machine. type in a line of code and hit the return key; wait for the mainframe to respond; the teletype would type out the mainframe's response and then you could type in another line of code. etc.

Multiplexing: ability to see simultaneously two views on one monitor (similar equivalent is the MS-DOS or UNIX screen in a windows GUI environment)

GUI Metaphor / Direct Manipulation Systems:

Mouse: invented by Douglas C. Engelbar in '60s at the federal government 'Augmentation Research Center'. Before it was coined a mouse it was called an "X-Y Position Indicator for a Display System"

If…Then Conditional Statements: During the ENIAC's development, the project's engineers and mathematicians discovered that with some minor modifications they could perform what would be considered a conditional branch--the IF-THEN statement in modern programming languages.

Batch Processing: punch a whole stack of cards and run them through the reader all at once (otherwise known as batch processing), Otherwise known as a Macro