Interaction design essay

If a web site’s information is hard to read or doesn’t answer users’ key questions, they leave. Note a pattern here? There’s no such thing as a user reading a web site annual or otherwise spending much time trying to figure out an interface. There are plenty of other web sites available; leaving is the first line of defense when users encounter a difficulty. Usability specialists have expanded the ISO definition of usability, stating that a usable product is: 1. Easy to learn 2. Efficient to use 3. Provides quick recovery from errors 4. Easy to remember 5. Enjoyable to use 6. Visually pleasing Easy to learn One of the biggest objections to “ usability” comes from people who fear that it will be used to create products with a low barrier to entry, but which are not powerful enough for long, sustained use. But learning goes on for the life of the use off product. Users may require access to new functionality, expand their scope of work, explore new options or change their own workflow or process. These changes might be instigated by external changes in the environment, or might be the result of exploration within the interface.

An interface which is easy to learn allows users to build on their knowledge without deliberate effort. This goes beyond a general helpfulness to include built-in instruction for difficult or advanced tasks, access to just-in-time training elements, connections to domain knowledge bases which are critical to effective use. Allow users to build on not only their prior knowledge of computer systems, but also any interaction patterns they have learned through use in a predictable way.

Predictability is complementary to interface consistency. A consistent interface ensures that terminology does not change, that design elements and controls are placed in familiar locations and that similar functions

behave similarly. Predictability expands this to place information or controls where the user expects it to be. This concept has been discussed in connection with Palm Pilot design- and especially important if you make an interface which goes beyond the boundaries of simple platform design standards.

Good use of predictability requires careful user analysis and observation, but can make new functions easy to learn by providing controls where the user expects them to be. Efficient to use Efficiency can be described as the speed (with accuracy) in which users can complete the tasks for which they use the product. ISO 9241 defines efficiency as the total resources expended in a task. Efficiency metrics include the number of clicks or keystrokes required or the total time on task It is important to be sure to define the task from the user’s point of view, rather than as a single, granular interaction.

For example, a knowledge base which doled out small snippets of information might be very efficient if each retrieval was considered one task, but inefficient when the entire task of learning enough to answer a user’s question is considered. Navigation design elements such as keyboard shortcuts, menus, links and other buttons all have an impact on efficiency. When they are well-designed, with clearly expressed actions, sees time and effort are needed for the user to make navigation and action choices..

Making the right choices for efficient use of the software depends on an understanding of the users and how they prefer to work. For example, are they likely to use the interface infrequently or to be habitual users who might learn hidden controls and shortcuts? Do they use the keyboard, mouse or

other input devices? For example, keyboard shortcuts can be extremely efficient for proficient users who work with the interface intensively. If they are the primary interaction tool, they can slow own users who are unfamiliar with them, or with the software.

Similarly, an interface structured around a set of hierarchical choices which may be the best solution for one-time or infrequent users, might be frustratingly slow as the only way of interacting with a frequently-used program. Provides quick recovery from errors The ultimate goal is a system which has no errors. But, product developers are human, and computer systems far from perfect, so errors may occur. An error tolerant program is designed to prevent errors caused by the user’s interaction, and to help the user in recovering from any errors that do occur.

Note that a highly usable interface might treat error messages as part of the interface, including not only a clear description of the problem, but also direct links to choices for a path to correct the problem. Errors might also occur because the designer did not predict the full range of ways that a user might interact with the program. For example, if a required element is missing simply presenting a way to fill in that data can make an error message look more like a wizard. If a choice is not made, it can be presented without any punitive language. However, it is important to note that it is possible for n interface to become intrusive, or too actively predictive.) For those errors which are out of the control of the interface – system failures or other disasters – take a lesson from flight attendants and quietly, calmly guide the user through the process of helping the program recover from the problem. Some guidelines for preventing errors are: Make it difficult to take

incorrect actions. Design links and buttons to be distinctive, use clear language, avoiding technical Jargon, and be sure that dependent fields or choices appear together.

Make it difficult to take invalid actions. Limit choices when possible to those which are correct, provide clear examples for data entry, present only appropriate navigation options. Make it difficult to take irreversible actions. Provide the ability to back track, provide means to undo or reverse actions, avoid dead-end screens. Don’t indiscriminately use confirmations – users become insensitive to them. Plan for the unexpected. Allow for users to add new entries, take exceptional routes through the interface or make choices you did not predict.

Be polite about “ correcting” mistakes that may arise from this lack of foresight. Enjoyable to use Effectiveness is the completeness and accuracy with which users achieve specified goals. It is determined by looking at whether the user’s goals were met successfully and whether all work is correct. It can sometimes be difficult to separate effectiveness from efficiency, but they are not the same. Efficiency is concerned primarily with how quickly a task can be completed, while effectiveness considers how well the work is done. Not all tasks require efficiency to be the first principle.

For example, in interfaces to financial systems (such as banking machines), effective use f the system withdrawing the correct amount of money, selecting the right account, making a transfer correctly – are more important than marginal gains in speed. This assumes, of course, that the designer has not created an annoying or over-controlling interface in the name of

effectiveness. The quality of the user assistance built into the interface can have a strong impact on effectiveness. The effectiveness of an interface often relies on the presentation of choices in a way that is clearly understandable to the user.

The more informative an interface can be, the eater users are able to work in it without problems. Good interface terminology will be in the user's language and appropriate to the task. Another design strategy to increase effectiveness is to offer redundant navigation, especially for ambiguous situations. Although this may create inefficient paths, it allows the user to work effectively by making more than one choice lead to the correct outcome. This can be especially valuable in interfaces which support infrequent users or those often unfamiliar with the content domain. Http://www. Hospitality. Com/articles/more-than- ease-of-use. HTML 2. 2 Accessibility The focus of web accessibility is often on web development – the things that happen in HTML, CSS, or JavaScript after a site has been designed visually. Optimal accessibility should start much earlier, as part of the visual design process. We have created an anaphoric that highlights a few important principles of accessible design. Format (design) a standard page template: Don't assume that what you see is what other users will see. There is little consistency between platforms, browsers, monitor sizes, designated/default fonts and colors, and even individuals' tastes as regards viewing the Internet.

Consider a screen's real estate: Locate more important information left and top Do not assume screen resolution or monitor size Facilitate scanning: Most viewers (about 75%) first scan text and menus for information (and

ignore visuals!) Increase detail and complexity with linked pages (fewer than 20% read word- by-word) Standardize presentation and navigation Locate logos, menus and features consistently and predictably Link longer pages “ back to the top” Intuitively label links for content and page URL Reduce white space on main/menu pages that detail content indexes and facilitate searching Build content complexity through linked pages

Websites should be linked three or less deep within the site Visitors should always know where they are in your site and be able to easily retrace or return Make text easier to read Make liberal but consistent use of bullets, headings, sub-headings, and font size Separate blocks of text with white space Do not fill the screen with text: indent, center blocks of text with margins left and right into columns Fonts: Use standardized or common fonts if not using “ default” Font size display is affected by monitor size, screen resolution, as well as the browser’s settings.

Georgia (serif), Utrecht and Veranda (sans serif) have been pacifically designed for Web display; Times Roman (serif) and Helvetica and Ariel (sans serif) are also common. For maximum accessibility, font sizes should be coded in relative sizes rather than fixed or absolute sizes. If fixed: Minimum font size should be 10 (PC) or 12 (Macintosh) or medium or “ 3” Use a larger font size for sites attracting small children and seniors (Based on the Web Content Accessibility Guidelines (WAG) published by the Web Accessibility Initiative (WA’) which is part of the World Wide Web Consortium (WAC).

Research shows little difference in reading speed or user preference between 10-point Times Roman, Georgia, Helvetica, or Veranda fonts Use one font for

identification, directions and navigation; use another for content Do not use more than two per Web site Avoid formatting fonts (color, blinking, scrolling, FACE, etc. More often than not these do not display appropriately or are found annoying Use color Judiciously Either specify all colors (BACKLOG, TEXT, LINK, BLINK, and LINK) or none " None" will default to the settings on your visitor's computer Specifying only some colors will let others default; your designated colors may be an ugly combination with these defaults Use high contrasting background and text color, referable light background with dark text Avoid backgrounds that obscure text Use a browser safe palette of 216 colors These colors are standardized for all browsers (E, Netscape, Opera, Lynx) and platforms (PC and Macintosh).

These are defined as "#RUGBY" (Red, Green, Blue) paired values (00, 33, 66, 99, C, and IF) Images: Images should be no more than 75 pixels per inch This is the conveyable limit on the Internet; any more results in slow downloads with no increase in resolution or visibility Use Jpg files for images as photographs with shaded coloration; use . GIF files for images as graphics with broad fixed color fields

Code alternative, descriptive text to replace, and describe the content or function of all images: for the visually impaired, for those who turn off images in their browser, for libraries' Lynx browsers; for digitally-based devises; for 30% of all browsers In HTML code, designates the alternative text for an image. Our company's logo replaces the image or A blank replaces this graphic place holder or decorative graphic Avoid designating images as links If necessary, alternative text should describe the linked page's content Avoid designating images as text, decorative or otherwise

There can be little visual value given relative text sizes described above Avoid using transparent or colored single-pixel GIF images without good reason. Some people use these devices as shims to force page layout. They result in unusable pages for visitors who are browsing with image loading turned off Use tables conservatively to format presentation and design Generally specify the widths of tables and table cells in percentages, not absolute pixels.

Generally rows should “ shrink” or “ expand” to fit a screen size. Fixed width rows and increased font sizes are often not compatible Fixed width rows may dictate rational scrolling on small screens Avoid placing tables with paragraphs or floating them with text Avoid multiple lines of text in cells across a row Text-based Lynx will read the top line across a row before going to a second line below it See also Specify the widths of tables and table cells in percentages, not absolute pixels.

Links: Be as descriptive as possible in describing a link’s content Use a space I vertical bar I space to separate links which occur consecutively Do not use phrases such as “ click here” “ enter” Avoid images as links It is visually difficult to tell they are links!

Avoid roll-oversees for drop-down menus It is visually difficult to tell they contain links It is difficult to adequately describe content of the links Avoid Frames or use a non-frame alternative Java and Flash where possible Graphics that say nothing and distract from your content Graphics that bounce, spin, twist, or Just move without being vital to or illustrative of your content Scrolling text View your pages: Using Black and White settings to

check for color blindness accessibility Deleting images to check for accessibility for the visually impaired and images technology Across platforms (PC, Macintosh, Linux, etc.

With optional browsers (Internet Explorer, Netscape, Opera, Lines With optional text and window sizes http://WebMD. Org/resources/designers/ 2. 3 Cognition Cognition is the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses.. – Oxford. Cognition can be described in terms of well known (possibly interdependent) processes such as thinking, remembering, learning, daydreaming, decision making, seeing, reading, writing, talking. You can consider cognition to be of two types: experiential or reflective. Experiential: perceive, act and react to external events.

Requires expertise and engagement. Egg. Driving car, reading book, conversing, Reflective: thinking, comparing, decision making. Egg, Designing, learning, writing, etc. Both of these modes are used frequently, but both must be supported and enhanced differently from a design and development viewpoint. From a design perspective relevant information must be displayed in a means that can be understood at a glance, and the control systems must respond in a predictable fashion.. We want to provide user with the ability to make longer term plans and decisions, understand how to interact with and consciously control the Tate of the system.

We can also describe cognition in terms of the context in which it takes place, tools used, artifacts and interfaces used and people involved. Attention, Perception and Memory When designing our system and

considering how it will interact with people, we need to recognize typical human strengths and weaknesses – enhancing and supporting peoples' natural abilities and compensating for their weaknesses. We need to direct the user's attention to the appropriate information to aid them to complete their task while avoiding distractions via directing their attention to unnecessary or frivolous aspects of the interface.

The interface must also be understood by the user. It is best if they can understand the interface and what to do simply by looking at it; but if this is not possible the interface should allow the user to discover its use via well known interaction methods. Attention is The process of selecting things to concentrate on and involves sensory inputs (auditory and/or visual senses). Attention allows us to focus on information that is relevant and ignore (much) of the rest of what our senses are inputting. How information is displayed can greatly influence ease of directing attention.

When designing a user interface, it is critical to understand how attention can be used to direct the user in the most natural or logical fashion. Or conversely, not distract the user with information or events that hinder progress or understanding. While it is possible for people to be attentive to multiple tasks, they all might be detrimentally affected if each task requires too much attention from the user. Perception is how information is acquired, organized, identified and interpreted from the environment via different sense organs for the purposes of understanding the environment.

Much of the process of interface design is aimed at creating interfaces that provide the user with the optimal amount of information to achieve their

goals without clutter or confusion. Hopefully the user can tell at a glance which information they need, and where to find it, at any point in the system. To provide information to the user we can utilize sound, sight, and touch (assuming we have the necessary technological support) but care must be taken to make the information accessible and clear.

If multiple media are used then care must be taken to synchronize them it can be very confusing if the sound is out of synch with the mages presented to the user. Visual perceptual processing parallel processing to extract low-level properties of the visual scene. The eye processes visual information and is interpreted by the brain. Tuned to certain kinds of information: Intensity, color, shape, edge orientation, texture Occurs whether we like it or not and is independent to what we choose to attend to Visual working memory holds objects that are the focus of active attention, but only for a very short period of time e. . Experiments involving change-blindness show how short this working visual memory is. Only a few objects can be held in usual working memory. Color blindness may hinder some people’s ability to perceive certain color differences Interface designs must consider how the user will react to the interface. Care must be taken: To use images or icons that are clear and understandable (high enough resolution and culturally understood). To allow the user to control things like brightness, volume, contrast, bass/treble, input method To consider users who work in various environments that may hinder interaction methods (e. . Very noisy, poor lighting, etc). To consider users that may not be able to afford a lot of attention distractions, attention is elsewhere, no time for tasks, etc) To not require technology when not needed, or unnecessarily limit interaction

types. To consider possible physical, memory, mental or emotional impairments of the user. Learning is the acquisition of knowledge or skills through study, experience, or being taught: – Oxford Where ever possible, use of the system should be obvious from the interface and should not require memorization.

The user should be able to recognize from the interface what actions are required to complete their task as opposed to being required to remember it. Some of the things that can aid learning include: Consistency: whenever possible use a consistent method of presenting information and inputs to the user. Also follow accepted practices. This way the user wont have to learn how to use the system if they already are familiar with using the interface (or similar interfaces).

Contextual clues: providing information relevant to the current context allows the user to quickly explore or remember how to interact with the interface. Removing irrelevant clues for the current context also potentially avoids clutter, distractions and visual noise. Reinforced feedback: using multiple forms of media together can reinforce the instruction to the user of how to understand an interaction than one one method alone. Be careful to avoid sending mixed messages from the different media sources Frequently users will have individual (different) learning needs.

Different interaction types or media types will likely be adopted by users differently. Understanding the strengths and weaknesses of the users and their learning styles will allow you to define an interface that supports their needs in achieving their goals. Memory is the process of recalling various

kinds of knowledge to inform reason or actions. Unfortunately it is impossible to remember everything we encounter so the information we retain is decided via a filtering process, but it does not always work as desired.

For instance we forget things we want to remember and vice-versa, information we attended to is more likely to be remembered, information may be interpreted differently, the context or environment may also influence how memories are stored and/or retrieved. Since memory can be unpredictable, interface designs should minimize the amount f mental effort the user is forced to do while while achieving their desired goal. Some ways the interface design can assist the user to recognize what to do instead of remember: Provide information: Whenever possible describe the state of the system to inform the user where in the task they are at.

Remind: the user of impending requirements outside the normal stream of processing, to reduce the need to memorize them. (Though care must be taken to strike a balance between reminding them of things they might otherwise forget and annoying the user with interruptions.) Arrange: information into logical groups so the user can focus on elated information and tasks while being able to ignore unrelated information and tasks Allow the user to Look up or browse for information. Providing a search feature allows the user to use whatever memory they have of the data or interaction to find the answer for themselves.

Customization: is a good way to allow the user to define information or tasks themselves and avoid having to remember it. Allowing the user to save and recall the relevant information or tasks means that once they define their

customization, they can use it without having to remember how it works or go wrought the steps to recreate it. Http://CICS. Vii. Ca/-? Karamazov/SUCCESS/class_notes/ Cognition. HTML 2. 4 Miller 7+-2 One of the best-documented characteristics of working memory is its limited capacity. The short-term storage process of working memory can hold only about seven items at a time.

To deal with more information than that, the information must be organized into larger chunks. For example, words can be combined into sentences or stories; then more than seven words can be held in working memory. Psychologist George Miller pointed out the seven item limitation of working memory in a classic 956 article, “ The magical number seven, plus or minus two: Some limits on our capacity for processing information. ” As you can see from date, this Journal article was published in the early days of the encoding revolution… N fact, some people say this article started the whole idea of using computer concepts like information processing to understand human memory. The magic number seven is the number of chunks of information a person can hold in working memory at the same time. A chunk is a unit of some kind. It could be a letter, a word, or a short sentence. Think of it as a box or container in memory. Miller examined short-term memory tasks and found that typical subjects could hold about 7 chunks in memory at once. This was true whether the subjects were holding 7 letters in memory at once, 7 numbers at once, or 7 words at once.

Miller wrote in a humorous tone that he was being “ persecuted by an integer” (the number 7) in these studies. Old-time psychologists, before the encoding revolution, probably would have assumed that fewer words could

be held in memory than letters, because each word contains many letters. But this is not the case. Miller’s big discovery was that an organized whole (a chunk) unction’s as one item in primary memory. Miller realized the profound implications of this simple insight. If items can be grouped and treated as chunks in memory, then the capacity of memory can be increased by organizing and grouping things.

To demonstrate this to yourself, try holding the following sequence of numbers in memory, all at once. 741 4921 945 If you interpret this as a string of ten separate numbers, it exceeds the capacity of working memory. Ten chunks are too many to hold at one time in primary memory. But if you recognize two meaningful dates in the string of digits, you have only four hunks, and you easily hold the string of 10 digits in working memory. Chucking points to the importance of organization in overcoming the limits of memory.

If short term, working memory is limited to about 7 chunks, the only way to improve its capacity is to organize larger chunks. This turns out to be a common theme in memory research. Memory is improved by organizing little pieces into larger wholes. Http://www. Introspect. Com/chic_memory/magical_number_seven. HTML 3. Requirements specification 3. 1 Objectives To determine the appropriate medium to deliver this interface. To determine the target user for this interface. To develop a suitable design using the knowledge attained in section 2. To test the design against an end user before implementation of code.