MASENO UNIVERSITY

CIT 114: SYSTEM ANALYSIS AND DESIGN

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Factors that should be considered in user interface design paper

1.1 Explanation of terms:

User:
A person who makes use of something, in this case a system.

Interface:
A program that controls a display for the user (usually on a computer monitor) and that allows the user to interact with the system. It can also be termed as user interface.

Design:
An arrangement scheme.

UI:
Short form of User Interface.

System:
A group of independent but interrelated elements comprising a unified whole that work together to accomplish a certain task.

1.2 Introduction

User interface design involves coming up with a suitable, usable and appealing face that a user will see and interact with in any given program or system.
The user interface is important since the users are able to run queries, commands right from the first thing that they see on their screen in the program or system.
A well designed user interface is likely to be welcomed by a user rather than a poorly designed user interface that will face various obstacles including rejection from the users.
When designing a user interface is best that one starts from knowing your users, including understanding their goals, skills, preferences, and tendencies. This will help build a great looking interface that users can use and interact with.
Something to note is that a user who uses a system for the first time will find it difficult to use a poorly designed user interface in that it is not welcoming and hard to use since it is all mashed up and contains very advanced functions.
The main aims of designing a user interface it to create maximum usability and functionality as well as maintain its aesthetic beauty since users are driven by beauty unlike the developer. It is therefore important to have graphical user interface designers whose main work is to come up with the design of the way the user interface looks like.

1.3 Goals of a user interface design

Some of the goals of a user interface design include:

1. Provide Functionality to users.
2. Assist users to follow instructions so as to achieve a certain goal.

3. Contain aesthetic value without distracting functionality.
4. Maintain consistency that leverages what the system is all about.

1.4 Factors to consider in designing the user interface

Factors that should be put into consideration include the following:

1.4.1 Simplicity

User Interfaces should be as simple as possible. Consider the simplest of the users, the lowest in the chain in terms of level of skills, should be able to follow the prompts and instructions without struggling yet able to find what button to clean, where to do something and how to do it in a most simple way.
They avoid unnecessary elements and are clear in the language they use on labels and in messaging.
A simple user interface makes it faster to use and unnecessary functions are reduced. In a fast paced environment, it is necessary to increase speed and a less advanced user interface increases speed of processes carried, since searching for functions is faster. Also learning of the user interface becomes easier and simpler to the user hence less cramming of functions and reduces the time taken for users to familiarize themselves with the system, program or site.

To achieve simplicity, **Reduction** is used to eliminate what is not necessary.
This technique has three steps:

1. Decide what essentially needs to be conveyed by the design
2. Critically examine every element (label, control, colour, font, line weight) to decide whether it serves an essential purpose
3. Remove it if it isn't essential. Even if it seems essential, try removing it anyway, to see if the design falls apart.

Another way of creating simplicity is **double duty**, in which you try to combine elements to make them serve multiple roles in the design.
For the essential elements that remain, consider how you can minimize the unnecessary differences between them with **regularity**.

1.4.2 Create consistency and use common UI elements.

By using common elements in your UI, users feel more comfortable and are able to get things done more quickly.
It is also important to create patterns in language, layout and design throughout the system or program to help facilitate efficiency.
Once a user learns how to do something, they should be able to transfer that skill to other parts of the site, system or program.
There are four views of consistency: internal consistency, external consistency, real-world consistency, and when not to be consistent.
The first point, internal consistency states the same conventions and rules should be applied to all elements of the GUI.

1.4.3 be purposeful in page layout.

Consider the spatial relationships between items on the page and structure the page based on importance. Careful placement of items can help draw attention to the most important pieces of information and can aid scanning and readability.

1.4.4 Strategically use color and texture.

You can direct attention toward or redirect attention away from items using colour, light, contrast, and texture to your advantage. However, different colours portray different meanings and should be used at the right place.
For example:
Red- indicates danger, an error, or something has been done in the wrong way.
Yellow- indicates a warning, something requires your attention.
Green – indicates correctness, success or an action has been completed or done in the right way

1.4.4.1 Color Design Principles

The three basic principles can also be applied to color:

1. Color organization
2. Color economy
3. Color communication.

Color Organization

Color organization pertains to consistency of organization. Color should be used to group related items. A consistent color code should be applied to screen displays, documentation, and training materials. Similar colors should infer a similarity among objects. One needs to be complete and consistent when grouping objects by the same color. Once a color coding scheme has been established, the same colors should be used throughout the GUI and all related publications.

Color economy

Color economy, suggests using a maximum of 5±2 colors where the meaning must be remembered. The fundamental idea is to use color to augment black-and-white information, i.e. design the display to first work well in black-and-white.
Color emphasis suggests using strong contrasts in value and Chroma to draw the user's attention to the most important information. Confusion can result if too many figures or background fields compete for the viewer's attention. The hierarchy of highlighted, neutral, and low-lighted states for all areas of the visual display must be designed carefully to provide the maximum simplicity and clarity.
Color communication deals with legibility, including using appropriate colors for the central and peripheral areas of the visual field. Color combinations influenced least by the relative area of each color should be used.

Red or green should not be used in the periphery of the visual field, but in the center. If used in the periphery, you need a way to capture the attention of the viewer, size change or blinking for example. Blue, black, white, and yellow should be used near the periphery of the visual field, where the retina remains sensitive to these colors.
If colors change in size in the imagery, the following should be considered: as color areas decrease in size, their value (lightness) and Chroma will appear to change.
Use colors that differ in both Chroma and value. Avoid red/green, blue/yellow, green/blue, and red/blue combinations unless a special visual effect is needed. They can create vibrations, illusions of shadows, and afterimages.
For dark viewing situations, light text, then lines, and small shapes on medium to dark backgrounds should be used in slide presentations, workstations and videos. For light-viewing situations, use dark (blue or black) text, thin lines and small shapes on light background. These viewing situations include overhead transparencies and paper.

Color Symbolism
The importance of color is to communicate. Therefore color codes should respect existing cultural and professional usage. Connotations vary strongly among different kinds of viewers, especially from different cultures. Color connotations should be used with great care. For example: mailboxes are blue in the United States, bright red in England and bright yellow in Greece. If using color in an electronic mail icon on the screen, color sets might be changed for different countries to reflect the differences in international markets.

1.4.4.2 Use of Colour branding

When designing a user interface, it is necessary to consider the company or organisation of whom the system is built and designed for. This leads to colour branding where a certain colour is a branding of a certain company. Let's say organisation **X** uses the colour branding of **Blue,** then that means that whenever a user glances at first at the system, program or site, he/she will see the colour **Blue** will be able to associate the system to organisation **X.**

1.4.5 Use typography to create hierarchy and clarity.

Carefully consider how you use typeface. Different sizes, fonts, and arrangement of the text to help increase scalability, legibility and readability.

1.4.6 Make sure that the system communicates what's happening.

Always inform your users of location, actions, changes in state, or errors. The use of various UI elements to communicate status and, if necessary, next steps can reduce frustration for your user.

1.4.7 Consider the defaults.

By carefully thinking about and anticipating the goals people bring to your site, you can create defaults that reduce the burden on the user. This becomes particularly important when it comes to form design where you might have an opportunity to have some fields pre-chosen or filled out.

1.4.8 Organization

Consistency, screen layout, relationships and navigability are important concepts of organization. The user interface should be ordered and not chaotic thus showing clarity of ideas coming from the designers. The object that a user can interact with should be arranged in a way the user can understand what is happening and the flow that is present in the system to accomplish a certain task.

1.4.9 Navigability

There are three important navigation techniques: - provide an initial focus for the viewer's attention - direct attention to important, secondary, or peripheral items - assist in navigation throughout the material. The user interface should allow the user to navigate from one section to another with a lot of ease and should not confine the user to only one section. The user should be able to see features that he/she can use to navigate from one section to another within the system. Examples of such tools are: breadcrumbs, pagination, tabs and scroll bars.

1.4.10 Consider Accessibility Options

Consider that your audience of users may a percentage of users who are blind, semi-visually impaired, deaf or may have be challenged in some way. It is essential to ensure they also have access to the system using special aids such as screen readers, captions so that they are able to do what other users can do with little difficulty. While such aids are created, ensure that all other factors are maintained while at the same time providing the facilities that they require to utilize the system or program. This will result to a mere 100% acceptance by all groups.

1.4.11 Avoid Discrimination, strong words, sexual depictions, violence, drugs etc.

When coming up with a system, the user interface should not depict discrimination, strong words such as vulgar, sexual depictions, violence, drugs and weapons may it be in the graphical structure such as icons and pictures since the audience may be offended by the depictions leading to rejection or even law suits.

1.4.12 Language and Region considerations

The user Interface should portray a language that users can understand depending on the region or country or even literacy levels. If the system has been made for France then French must be used since it is the language that

most or majority of the people understand, if possible give options of other languages that the users can use alternatively. This may require use of translation options or tools or rather designing the user interface in different languages all together. This can be an option when starting the system or when installing the system.

1.5 References

- Jesse James Garrett's *The Elements of User Experience: User-Centred Design for the Web and beyond (2nd Edition).*
- Peter Morville and Louis Rosenfeld's *Information Architecture for the World Wide Web: Designing Large-Scale Web Sites.*