ERGO-DESIGN AND CONTENT DEVELOPMENT CONSIDERATIONS FOR AN INTERACTIVE MULTIMEDIA KIOSK
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ABSTRACT

e-Kiosk System is defined as computer terminal system which providing information interactively and installed into public access area, offering limited access into any information and transaction system for various group of users using typically short dialog time, and simple user interface.

The success of Kiosk System implementation widely depends on several factors including appropriateness of the services provided, the attractiveness of the user interface design (Visual Communication Design Aspects), and accessibility of the information structure provided, how communicative the system that any average user would be able to perceive any information or messages provided in the system content easily. (Human Cognitive System and Computer Interaction Aspects)

Basic aspects of user interface design related to human cognitive system have been considered into most computer software applications recently especially those applications using the standard of Graphical User Interface (GUI). But different from the most software applications designed intentionally for user assumed had been familiar to any computer application before, in public Kiosk System, the potential user could be possibly anyone who is totally unfamiliar to any computer interface system (computer illiterate) should be taken into consideration, hence the basic aspects of human cognitive system should be considered as the most important factor in designing more intuitive and user friendly interface system model.

This paper will review several basic aspects of human cognitive system related to human perception of visual information, the basic of visual communication design concepts, and will be concluded into several guidelines and recommendations of designing successful user interface system for public information kiosk.

Keywords: Cognitive, User Interface, Information Kiosk, Interactive.

1 INTRODUCTION

Designing user interface for multimedia devices is not easy. There are so many aspects that must be observed. User Interface is a representation of a system of logic that computers will interact directly with the human logic as a user. User Interface will term refers to the variety of technology applications ranging from electronic displays, computer software applications, web applications, mobile applications, applications to the Public Information Kiosk.

Holfelder 1994, describes a system of e-Kiosk as a "... computer-based information system in a place accessible to the public, offering access to information or transactions for the group of users who constantly, various, anonymous, using the time a short dialogue, and simple user interface that is typical."

Public Information Kiosk designed for a variety of conditions aimed Users: from age, gender, cultural background, level of education and understanding, even the physical limitations that different. Therefore, the access, usability, visual communication, human cognitive system to be crucial in the process of interface designs Kiosk.

The success of Public Information Kiosk system such will depend on several key factors, including: Content or Services in accordance with the needs of the public, attraction or attractiveness of the user interface being used (visual aspects of communication design), how easily the structure of the information available can be accessed by the user and how the system is clearly understood by users. (This aspect of Accessibility and Cognitive Aspect of Human-Computer Interaction System)

Aspects of the basic design of the user interface associated with the system Cognitive many people have learned and applied to most software that uses the concept of Graphical User
Interface (GUI). However, a special system for Public Information Kiosk, the fact will likely be used by users who may blind and do not have experience specific to the computer system interface, so the basic aspects of human Cognitive system must serve as the basic reference for interface design that Public Information Kiosk Users even the computer illiterate can be attracted to use, and use the Public Information Kiosk se-se-comfortable and intuitive as possible.

2 THEORY REFERENCE

2.1 Perception

Gestalt Theory review: how human mind understanding information’s

To avoid misperception that may occur in designing the layout of user interface design, we will first ask a very fundamental question: "how people can accept, understand the objects and the structure of visual information that are on the screen. This Question based on principles of which human perception in making groups and combines objects and visual information. "Scientific study what is called the Gestalt psychology", by Köhler, Wertheimer, Koffka, and in the year 1920-an attempt to answer some questions above. Essence of their research can be resuming in several series of Gestalt laws. These principles are also important to understand how the public see and understand the user interface content as the Public Information Kiosk. The ideal User interface design is defi ned as a non misunderstanding and there is no change in the memory long-term users, have been due to meet the main principles of Gestalt.

The principles can be described by table below:

<table>
<thead>
<tr>
<th>Law dexterity (Succinctness)</th>
<th>![Diagram]</th>
</tr>
</thead>
<tbody>
<tr>
<td>This law can also be called the Law of Good Shape, states that the perception we tend to see the object as the formation of a perfect and simple, as easy to remember. Example of application on the use of icon, symbol or monogram</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Law Proximity (Proximity)</th>
<th>![Diagram]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects near each other to form such groups. Application of this principle it is important to provide some ease in identifying the object or a snippet of information as a group.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unity Law</th>
<th>![Diagram]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects that formed a closed formation are also understood as a group. This effect can change the grouping shown in the previous examples.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unified Law (Equality)</th>
<th>![Diagram]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects that are similar are also the candidate of the system by human perception.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legal continuity (Continuity)</th>
<th>![Diagram]</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a tendency for the human perceptions assume continuity on the objects that exist. In the image next to the system we perceive as the two images have the straight line, not as the two retire to a corner of mutual distance</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legal Experience (Experience)</th>
<th>![Diagram]</th>
</tr>
</thead>
<tbody>
<tr>
<td>We tend to associate the object with which we see things that we already see / understand. Cognitive systems we tend to not be considered as images in addition to the letter 'E' because the experience we did not say so.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Gestalt psychology: how human understanding information

2.2 Pre-Attentive Variable

Some data elements can be identified and worked in Pre-Attentive : they can provide information / messages before the user will be aware for further collection of information presented on the screen. Pre-Attentive elements will stimulate Cognitive system to respond to user information element with colligate intuitive, immediately, and work on the subconscious level.

Elections organizing data model will be able to visually inform the user about the structure and the type of data that is displayed.
Visual appearance of individual data elements can also provide information and work on the unconscious user: where the elements are similar will be associated as related to one another.

This principle is the development of Gestalt theory about the law of similarity, and continuity of objects. Some of Pre-Attentive Variable

<table>
<thead>
<tr>
<th>Color difference</th>
<th>position &amp; alignment</th>
<th>brightness</th>
<th>orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color saturation</td>
<td>Size</td>
<td>Texture</td>
<td>Shape</td>
</tr>
</tbody>
</table>

Picture 1. : Variabel Pre-Atentif

3 ASPECTS OF VISUAL COMMUNICATION DESIGN AT THE E-KIOSK CONTENT

Aspects of Visual Communication Design at the e-Kiosk Content

In 2002, a group of researchers found an interesting fact related to the aspects of visual communication design at the interface. Stanford Web Credibility Project, examine what factors in the website the most important interface for the user that affect the confidence of user information or the content contained in a website. Of research that conclude that the most important factor for the user is the "visual appearance" of the website. Users will be more likely to trust the information presented on the website with the attractive looks and professionally well designed.

Donald Norman one of the renowned teachers in the field of interaction design, concluded. A system that interfaces with visually well designed, attractive, fun for users, so will affect the user's interests in exploring the structure of all content / information that is contained in a display interface, and users will become more tolerant of the obstacles that occurred during the process of interaction. In other words, interactive system will be more easy to use, if the user likes to use and enjoy.

Implementation aspects of the human Cognitive user interface design plays an important role in the first structure to determine whether the information will be displayed in easily understood by not intuitive or user in general.

But the human is unique, each human has a cultural background, aesthetic tastes, emotions, impressions, experiences, and associations and preferences vary. Every human being is part of a culture where color, typography and the image will have meaning and message. In other words, when we can understand the unique characteristics of our users, the emotional response and depth of the impression for user input and can be directed.

Here are some important aspects of visual communication in the design: colors, typography, space / Spaciousness and Blocking, Corner & Curves, texture and rhythm, Pictures, cultural Reference

4 DESIGN RESULT

Designing Physical Interface Structure

The first thing done when starting to design a user interface, is determining the physical structure of the display windows, page and control panel, because this is one of the aspects that determine the perception of the early start when the user interacts with the computer system. In general there are 3 types of structures display windows, which is determined based on the number, type and structure.
Information to which you want to display, the limited space on the monitor screen, and the user level, with the description as follows:

**Layout arrangement on User Interface**

Visual flow associated with the trend in the flow of user browse a page that is displayed on the screen. This is still closely associated with the concept of visual hierarchy as described above.

Visual hierarchy is well-planned place as "focal point" in a position that will attract the user first, and will continue on the blocking element to the next information element at the end that is not important.

**Iterance Visual Motifs**

There are 3 important aspects of regulation in the page: visual hierarchy, visual flow, grouping (grouping) and the juxtaposition (alignment).

Visual Concept Hierarchy and Grouping / Alignment play an important role in all aspects of visual communication. Are the principle elements of the information with the show the most important elements of information?

Which would be submitted? In other words, the user must be able to immediately attract the intuitive conclusion that the structure of the information displayed on the interface page layout view with just a glance.

**User Needs Study**

Before starting the design concept and determine the appropriate interface to be applied to
public information Kiosk system, the need to be done into the characteristics of the user as shown in the following table:

<table>
<thead>
<tr>
<th>User Characteristic</th>
<th>User Interface Concept</th>
<th>Limitations:</th>
</tr>
</thead>
</table>
| Most users not familiar with e-Kiosk | • Appearance of a simple interface, and facilities information explanation.  
• Kiosk has only one function or application-specific transaction.  
• Avoid Computer-Look on the interface design. The design interface is simple effective and efficient manner, directly to the needs of the user for system | • Mobility impaired  
• Dexterity impaired  
• Visually impaired  
• Auditory impaired  
• Mental backwardness, Dyslexia, etc | that accommodate user interface with certain physical limitations |
| Kiosk is the use of some alternative options other options for the majority of potential users | • Design Kiosk interface must have a charm which can attract the user  
• Design fresh, fun, not boring, so the user, and create a user interested in exploring the system still further  
• Interface is designed in such a way so that the user is able to minimize its frustrating | Most of the users on the public area does not have enough time and tend to hurry |
| Kiosk users will leave if not feel comfortable | • Design should be made comfortable and enjoyable  
• User-Friendly Design  
• Avoid Computer-Look on the interface design | The design interface is simple effective and efficient manner, directly to the needs of the user for needed system |
| If there is dissatisfaction in the user using the Kiosk system, the user will never use it again or more severe acts of vandalism | • Interface, Function and reliable system must be so satisfying for the user  
• Minimaze potential errors or system crashes, and other obstacles during the process of interaction that lead to feeling frustrated at the user | |
| • Ad some users who have certain physical | • apply the draft recommendations | |

### 5 CONCLUSION AND DISCUSSION

Below is a table of general recommendations related to the Kiosk interface design based on the results of research the author:

<table>
<thead>
<tr>
<th>Kiosk Applications should be designed as may be intuitive</th>
<th>Avoid the appearance of the interface &quot;Computer-Look&quot; / &quot;Windows-Look&quot;</th>
</tr>
</thead>
</table>
| • Restrict Options / Option as possible  
• Touchable Monitor Touch Screen in the area must be clear enough  
• Add user guide for the use of necessary provides simple navigation buttons [Start] [Next] [Back]  
• Applications designed not complicate the user causing frustrating vandalism | • Avoid using Title Bar in applications such as Windows  
• Must not be visible / no indication of the existence of a Computer Operating System Interface that is displayed behind  
• Users do not think that until they are in the computer (Designed as a user friendly possible)  
• Avoiding the use of computer terms (such as "files"; "directories", "server"; "spooling" and the like) |

**Tabel 2 : Study of user characteristic that suitable to user Interface**
### Operations are simple and familiar: "Point-and-Click"

- Buttons are sized large enough
- Avoid Clicks (double-clicking)
- Avoid the menu or Pull Down Pop Up
- Avoid any activity or scroll bar scrolling
- Kiosk Design interface with different designs Web-Site

### Give a response back (Feedback) Rapidly

- Provide a response back (Feedback) as soon as possible
- There is a sound indicator that the user touches
- Can use the visual highlight
- The response is not longer than 2-3 seconds, so that the user does not think the system crash occurs
  If this is the time required to wait for the response, it can show progress bar or indication message reads "please wait a moment ..."

### Avoid using the cursor

- To have more eyes glued on the user object that is displayed on the field and the interface is not disturbed by the existence of the cursor.
- Use more touch screen recommended.

### Limit the amount of text that is too much

- Avoid the dominance of text on the display interface
- Blocking of text are rarely read by the user
- It may cause the user avoid Kiosk

### Application that is used should be quite fun and fast access

- Applications create user will be fun and enjoy the ease of interaction
- access speeds to prevent the occurrence of the user feeling frustrated

### Back to the beginning automatically when the Kiosk system idle for 5 minutes

- Information Kiosk in general does not require facilities’ exit '/' out ', because users tend to leave immediately when the Kiosk is to obtain information without the required return to front page

### REFERENCES


