Human Computer Interaction(HCI)

HCI is a knowledge that indicate the relationship between system and human. It performs how system can interacts with human diversely. During the performance, the interaction can produces a series of inputs and outputs, the inputs and outputs combine together will actualize a task which can lead to a purpose or a target;

HCI come from three areas: Computer Science; Cognitive Psychology; and Fine Arts Design.

Computer science Union Cognitive Psychology Union Fine Arts Design is HCI.

Firstly, HCI relates to computer, Without input, output, Graphical User interface (GUI) and algorithm, human computer interaction will no longer exist.

Secondly, HCI relates to Human, it's mostly like concern about human behavioral science and human knowledge. HCI doesn't interest on the psychological dynamics of individual person, it interests on the purpose of group of people doing one thing. For example, what decision of people make for buy or not to buy a product.

Thirdly, HCI relates to design. This might be the closest point link human and system together. For example how do we design an interface that people can know where is the button to click or where is the label that indicate narrative.

HCI development started at twenty century. Its development can trace back from human adapt Computer to Computer adapt human;

Early manual work;

Manipulate work by control language;

Graphic user interface;

Network user interface;

Multi-channel, multimedia/intelligent of human-computer interaction;

(1980) Indicator light and mechanical switch build up a manipulative interface; Terminal and keyboard build up character interface; Multiple input devices and raster graphics display build up graphical user interface;

This time, people were focused on what feedback that computer can return after interaction. The words human-computer interaction have been express as HCI rather than human computer interface.

(1990) PC; work station; WIMP(W-windows, I-icons, M-menu, P-pointing device)interface, VR techniques, scientific computer models formed a new human-computer interaction;

This time, along with processing chip, multimedia technique, internet Web develop and popularize, people were focused on more intelligent interaction, multi-mode, multi-channel, multi-media interaction , virtual interaction, human-machine interaction etc. The main purpose was put human as first priority.

(2000~) multi-channel interaction and multi-media interaction has actualized in human computer interaction, and lots of products produced.

Multi-media: touch pad; free-folding and flexible screen which made up e-book etc.

Multi-channel: Microsoft "TabletPC" digital ink; Microsoft office applied for different language; IBM/Via Voice; IPhone touch technique with multiple touch point on screen;

The potential of "human-machine interaction" has applied to everyone's life, Almost all the Smartphone has geospatial information and tracking techniques.

However, human-machine interaction has experienced several evolution and developing stages. For now, the graphical user interface (GUI) that dominate most of the systems is under criticize, and the new interactive techniques are still developing, so people start argue what kind of interaction will dominate the further life.

"Natural-human-machine interaction" use people's basic skills to build up. It emphasize that people don't need special training or don't need any training. However it's hardly to define what are the basic skills, as basic skill can also split into different levels. Maybe everyone can learn typing, but doesn't means everyone can learn how to drive plane.

Normally when people transit from daily environment into cyber environment, the skills that learn from daily environment can be define as basic skills, but still not accurate. We can't judge whether to require training in human-computer interaction technology is good or bad.

To avoid the training or reduce the training is the desire from human however, to actualize the desire is difficult. It doesn't determine by human's will, purpose, characteristic, occasion and the cost of task of human-machine interaction which decide the natural procedure of human-machine communication should achieve.

Therefore natural human-machine interaction should manipulate directly by command language and natural language. The ideal human-computer interaction model is "user freedom".

Human computer Interaction often refer the visible part which human can actually feel about it. It must involves the understanding from human to system, that will maximize the usability and "friendliness" of system.

To determine the "friendliness" of human computer interface, operating System is one of the key point. People use input and output device to actualize the interaction, the device can be keyboard, mouse, screen and any other electronic device. To help the devices interact with human, operating System were born. Its role is to help machine understands what human wants.

At beginning, people use keyboard to type each command, operating system receive the command and then execute it, after that System will return the results to screen. Each command need to be clear and unique. However, along with the develop, command become multiple types, devices also become more and more powerful, flexible.

Serve for human is first priority of HCI. Any design; develop; test must consider in human benefits; No matter how great a system is, if majority of people find out it's hard to use, then it isn't a good HCI System. We need to make sure HCI adapt human and not in opposite way.

Therefore a useable System need to be:

- Easy to learn;
- Easy to remember how to use;
- Effective to use;
- Efficient to use;
- Safe to use;
- Enjoyable to use;

To achieve “easy to learn” and “easy to remember how to use”, we need to Consider more general.

Firstly, we need to define the difficulty about manipulate the system. That will depends on human ability. Like I mention before, really complicate system require training however, in this case we discuss more general system in our daily environment which don’t require training.

Secondly, even though the system doesn’t require training, but people still need time to familiar the steps to manipulate the system. So how long need to take for familiar a new system is a important question.

Generally group of teenage and group adult can quickly familiar the system. They have interest and passion to learn the new stuff. However, group of old people may find out it’s difficult. Only thing they care about is safe life and convenience life. If the system consider about group of old people who can also actualize “easy to learn” and “easy to remember”, then locate the difficulty of operating system at old people group is a good decision to make.

Once “easy to learn” and “easy to remember how to use” have been actualize in old people group, and system is interacting with old people successfully, we can assume most of the teenage and the adult will find out it’s easier than old people. This will maximize the capability and usability of the system for all age of people.

“Effective to use” and “Efficient to use” are actually demonstrate the feasibility of the system. Does system interacts with human as expect. Does system actually solves the problem as expect. Therefore to maximum the effect of system we need to consider where the system is placed and when to use the system that will create the effect and the most efficiency. Same system put in different platform can have different effect. For now Smartphone is the biggest platform in the world, basically everyone have a Smartphone. If system supports Smartphone, then it can be use effectively. If system want to be use efficiently, then guideline will be necessary. The guideline can be a label on each interfaces or it can be a small introduction place on the beginning of main page.

Safely to use the System is quite important, if the system isn’t safe to customer, “Effective to use” and “Efficient to use” will no longer exist anymore. Make sure the system you design is not affect the environment, human’s health and it doesn’t bring any trouble to human.

“Enjoyable to use” can reflect a functionality of the System, if the function is powerful and multiple, then customer will enjoy to use it. Use colorful graphical interface will attract people’s attention. And make sure all the interfaces are clean and clear.