Usability Engineering: Wonderful Mechanism for Transparent Information Transfer Cycle (ITC)

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Abstract - Usability Engineering is an application of Usability principle and mechanism in the field of user interface. Usability Engineering is an area which is concerned with human computer interaction useful in interactive user interface design. In usability engineering apart from engineering and Web Technology principle, psychology and cognitive science play an important role. Here in this paper various aspects of usability engineering particularly its advantages, contemporary needs are described. This article also mentions the methods, tools as well as its standards which are applicable in the field of Usability Engineering. Usability Engineering and its importance in information transfer cycle are also described with contemporary challenges and issues.

Keywords: Usability, Engineering, Information, ITC, Usability Engineering, Web Technology, Web and Internet Engineering, information Science Technology (IST)

I. INTRODUCTION

Usability is today one of the important most terms in the field of Information Science. The term usability is used to connote Usability Engineering, Usability Technology, Usability Techniques, Web's Usability, Usability Design. Usability Engineering is a mechanism of user interface design. Practically User interface design is based on user experience and as a knowledge discipline [01]. It is called as user experience design. Virtually Usability Engineering is useful in user interface design focused on Graphical User Interface or GUI. However Usability Engineering may be applicable in web based user interface, Command based interface Design and so on. Normally Usability Engineering is the system concerned with Human Computer Interaction (HCI). The principle and standard related to usability Engineering is changing day by day [02, 18].

II. OBJECTIVES

The main objective of this research paper includes:

- Knowing the basics about Usability.

- Learning the usability Engineering.

- Knowing the various methods of usability along with its standards.

- Learning the contemporary needs of usability engineering in information dissemination Systems.

- Knowing the essential components and gradients of Information Technology which is require for health Usability Engineering practice.

Before going to any discussion on the on the advanced topics let us recall the following

Usability: Usability is a kind context dependent mechanism in which user can perform any task with full effectiveness, efficiency as well as satisfaction. In usability task analyses play an important role [19].

Design:- Designing is actually nothing but the planning or convention of construction of any object. However the object may be a product or service or tool or a machine. Designing may be referred to as large objects like Interior Designing of a building or a small object like a dress.

Engineering: The creative application of scientific principles to design or develop structures, machines, apparatus, or manufacturing processes, or works utilizing them singly or in combination; or to construct or operate the same with full cognizance of their design; or to forecast their behavior under specific operating conditions; all as respects

an intended function, economics of operation and safety to life and property [ABET].

Website: As Wikipedia defines, a website, also written as Web site, web site, or simply site, is a set of related web pages containing content (media) such as text, image, video, audio, etc. A website is hosted on at least one web server, accessible via a network such as the Internet or a private local area network through an Internet address known as a Uniform Resource Locator. All publicly accessible websites collectively constitute the World Wide Web.

Interface: In the field of computer science, an interface is a tool and also a concept that refers to a point of interaction between components, and is applicable at the level of both hardware and software. This allows a component, whether a piece of hardware such as a graphics card or a piece of software such as an Internet browser, to function independently while using interfaces to communicate with other components via an input/output system and an associated protocol[19].

III. USABILITY ENGINEERING: MEANING

Usability Engineering is a mechanism in which usability plays an important and most vital role. Within usability user interface particularly user friendly design plays key role. Practically Usability Engineering was earlier considered as a tool and today is considered as an academic discipline which is mainly concerned with Human Computer Interaction and Cognitive science. The main aim of usability Engineering is designed and developed as a user friendly interface and website. In usability engineering the main study area is concerned with the design and development of interface, website, internet designing and so on [14].
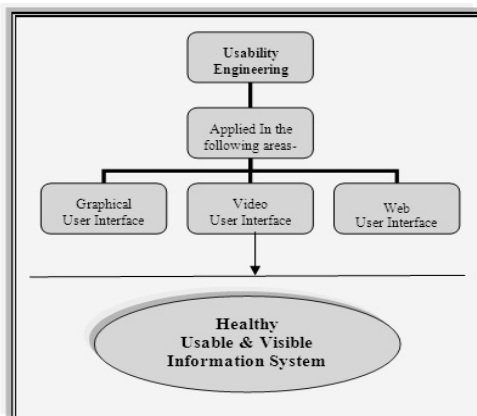

Fig.1 How Usability improving information atmosphere & accessibility

IV. USABILITY ENGINEERING: OBJECTIVE AND VALUES

The main aim and objective of Usability Engineering is nothing but the design and development of improved and healthy user friendly interactive design Though it is also important for the following reasons.

• Making Human Computer interface that have high usability or user friendliness.

• Making interface as per positive opinion and emotional scale and user demand.

• The main aim of Usability Engineering is to make more principle and standards recommendation.

• To design better Graphical User Interface and also Voice User Interface (VUIs)

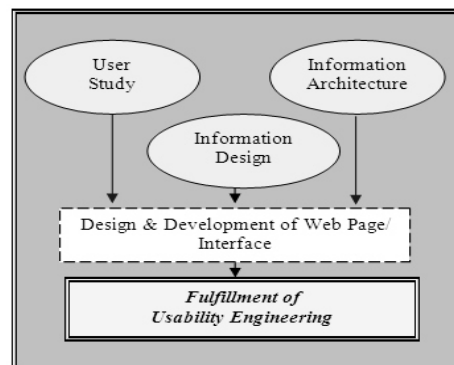• Design of wire-frames and other prototype.

Fig. 2 Prerequisite for Usability Engineering Fulfillment

V. USABILITY ENGINEERING: INFORMATION DISSEMINATION

Usability Engineering, no doubt, helps in the construction of a better and sophisticated information design and also dissemination. Usability Engineering is useful in user interface design and in the websites and Interface design Usability Engineers always take care of complete interface development. Information in electronic world mainly is disseminated by website, interface, blogs and others in all the areas, Usability principle is applicable. The figure 2 is helpful to know the usability Engineering principles of information dissemination system [12].

VI. USABILITY ENGINEERING: IMPROVED ITC

Earlier when usability Engineering began it was considered as a professional practice and most of the people in

this field were from computer science or cognitive science, but today usability engineers come from HCI and Usability Engineering field. Information Transfer Cycle (ITC) deals with collection, selection, organization and dissemination of information [02]. So ultimately Usability Engineering helps ITC in many ways. The main organization or foundations which mainly deal with ITC are the Information centers, Information Systems, Information Networks, Information Grids and Website. The Usability Engineering principle is applicable in a wide range of ITC activities like Information Design and Dissemination. As far as Usability in ITC is concerned, this is applicable in website, Interface, IRS design of concerned ISN [07].
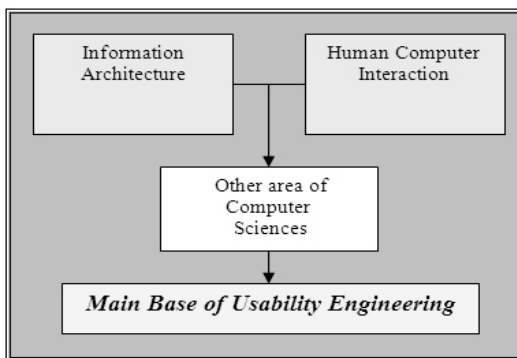

Fig.3 Main interaction of Usability

VII. USABILITY ENGINEERING: CONTEMPORARY METHODS

Usability Engineering has so many methods as well as tools such as Usability testing in which Usability Engineers check the potentiality of user interface conduct usability evaluations of existing or proposed interface. There are so many ways in which Usability Engineering is possible like

- Interviewing with the user interface.

- Focus Group.

- Questionnaires and survey to the user and website.

- Cognitive walkthrough.

- Heuristic Evaluations.

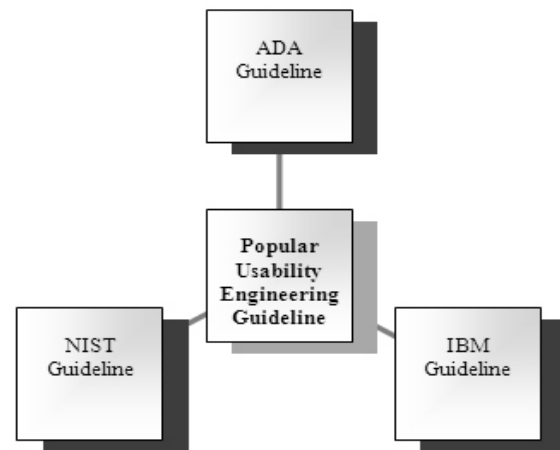- Cognitive task analyzing.

- Contextual inquiry and so on.

Fig. 4 Popular Usability Guidelines

Today many organizations and websites are helping for better Usability and for designing interface as per user need such as:

- Web static analyzer tool: which help HTML guidelines.
- Web category analysis tools to help in web category analysis.

VIII. USABILITY ENGINEERING: ESSENTIAL INTEGRATION

Usability Engineering being an interdisciplinary academic field is really an essential integration. First of all for any usability engineering it is essential that there should be proper information architecture and design. Secondly it must identify user need importance and for the integration of human computer interaction it is important. Virtually without developing of the process and information flow of the system usability engineers do the work [04, 11].

IX. USABILITY ENGINEERING: CONTEMPORARY STANDARD

There are so many standard and guideline we can see in the field of usability engineering like

1. ISO – 9241 (part -II) in which the standards of usability has been described.

2. National Institute of Standard and Technology has collaborated industry and realized the specification for successful in bio-metrics. Some of the most popular standards like -

- The web Accessibility Initiative Guidelines.

- IBM Guidelines

- NIST Guideline and so on

X. FINDINGS

- Still usability Engineering consider as a professional or practicing fundamentals.

- In India most of the cases (Government University) websites are not interactive and user friendliness is very limited.

- Not a single university in India offers Usability Engineering as MCA/MSC/B-Tech specialization.

- Usability Engineers has limited Standards and Guidelines compare to other internet and computer Guidelines.

XI. SUGGESTION

- To better Usability Engineering we need suitability of the self descriptiveness controllability and so on [05].

- Usability Engineering principles are useful in modern interfaces like – Voice user interface (VUI).

- The university or Engineering colleges should start academic program on usability engineering and related fields.

- The IRS of ISN, IC and documentation centre should use usability Engineering principle.

XII. CONCLUSION

Usability Engineering implies more than making recommendations to improve usability and interface. Today many organizations are using usability principle during creation of websites, Interface and Information Retrieval Systems (IRS) [06]. The engineering area like voice user Interface (VOI) is to be taken care of by more usability principles. Today user interface design has been a topic of considerable research on its aesthetics. Usability is today highly multidisciplinary. Information Dissemination system has very close relation with usability. Information can use this approach particularly in information systems, website design as well as Information Retrieval System and the like.

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