A RESEARCH UPON DESIGN AND CHARACTERISTICS OF UBIQUITOUS COMPUTING ENVIRONMENT

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Abstract—The article defines the ubiquitous computing technologies that support u-learning (ubiquitous learning). The purpose of this article is to provide basic information related to u-learning (ubiquitous learning). Ubiquitous computing is new areas which attract the new researchers. The u-learning (ubiquitous learning) definition and its characteristics are also compared and discussed to suggesting final definition of u-learning. For that u-learning (ubiquitous learning) applications are explained to additional improve the understanding of u-learning concept.

Ubiquitous Computing is reflected as promising technological path of innovation. This article explores that which application fields have already proved their potential for realizing the vision and new technology? , What are the official, legal and social challenges which may be addressed and how can policy-makers give? The recent developments in research and business we deal these questions and clarifying the findings by example in retail, logistics & health care. The further efforts those are necessary to make ubiquitous computing applications economically maintainable and socially compatible concluded in that article.

I. INTRODUCTION

Ubiquitous Computing is deliberated to be virtual realism turned inside out. Virtual realism invites the worker into the computer and portion of a world elsewhere facilitation. Everything is surrounds a computing device so we can say that everything is a medium. Ubiquitous Computing forces the computer to aware in the world with general public.

Ubiquitous Computing (or Pervasive Computing) devices are entirely connected and continuously presented. Ubiquitous Computing (or Pervasive Computing) trusts on the junction of wireless technologies, progressive electronics and Internet. The researchers’ objective that working in Ubiquitous Computing (or Pervasive Computing) is to make smart products that communicates unremarkably. The products are connected to the Internet and the data they produce are simply available.

Ubiquitous computing is an unavoidably growing topic in computing. In our homes or offices we can found many devices which are already equipped with computers. However people still use them but not considering them as computers like their washing machines and telephones.

Technology and applications using PDAs, other mobile devices and extended "dump" machines (like Radio, TV etc.) to arrangement prototypes for the demo of ubiquitous computing situations is consider in research.

Ubiquitous Computing research has reached at a crossroad: A point of merging where a technology prolif erated environment meets with technology that creates use of the possibilities and ability of people to interact with it. Improvements in the various arenas of technology allow us to create
objects and environments that offer computing and communication resources. The observation that individuals indirectly interact in circumstance with their situations with technology is a key to understanding systems and their usage. Quantitative relationship between computer and user, Ubiquitous Computing increases various issues beyond it.

In the late 1980s the idea of ubiquitous computing originated in Research Center, where the humanities and social sciences were considered to be vital in considerate to create this unseen technology.

In 2005 Sakamura & Koshizuka said that a new trend of information and communication technologies is can considered as ubiquitous computing. Late Mark Weiser vision to allows public and the situation with the mixture of many computational technologies to interchange information and facilities at any time and everyplace.

II. UBIQUITOUS COMPUTING IN A GLOBAL ASSESSMENT

The research policy of most developed nations for ubiquitous computing and its linked ideas have found their approach in their past. The new technologies are used to recognize precise different purposes which may be for maintaining a scientific-technological position of superiority via ensuring and expanding economic attractiveness to converting and revolutionizing civilization.

In late 1990s ubiquitous computing was already most important citizen and armed research advancement bodies’ agenda of the United States. The most important movements in information technology of these bodies are signify issues of ubiquitous computing like universal networking and embedded systems. While here was no inclusive socio-political idea.

Ubiquitous Network Society denoted an imperative attention of the public and manufacturing research agenda in Japan. The aim of this program to mainly convey by production, a great transmission of fast wireless networks and consumer-oriented facilities it means pretty in the habit of mobile infrastructures in Japan. This idea is known as “u-Japan”.

In recent years, Korea has specifically fast-tracked the growth of its broadband network and it is one of the frontrunners in implementing original ICT (Information and Communications Technology) in their products.

III. UBIQUITOUS LEARNING

A new learning paradigm is Ubiquitous Learning which is also known as u-learning.

We can say that it is expansion of previous learning patterns for example we transfer from conventional learning toward Electronic-learning (eLearning) after that from E-learning toward Mobile-learning (m-learning) then today we are ever-changing to u-learning.

Conferring to researcher Lyytinen, “the development of ubiquitous computing has been fast-tracked by the enhancement of wireless telecommunications abilities like open networks, nonstop rises in computing power, better-quality battery technology, and the development of flexible software architectures”. But, as stated by Hwang (2008), there is no perfect definition of u-learning due to quick variations of the learning environments. Till today, researchers have dissimilar opinions in describing the term “u-learning”.
Figure 1: the classification of four learning situations

Figure 1, it is detected that the Desktop-Computer Assisted Learning systems offer low flexibility and low level of embeddedness. Thus, the learning situation is static. Compared to desktop-computer assisted learning section, Mobile Learning is primarily about growing learners’ ability in order to clutch together their learning environment, therefore enabling them to learn at anytime and anywhere.

In Pervasive Computing, learner might get information from their learning atmosphere via the communication among the embedded devices and atmosphere. However, this makes the accessibility of pervasive learning are really localized and limited. The limitations of pervasive learning have been overcome by Ubiquitous Learning over the adding of high mobility hooked on the learning environment. The communication among devices and the embedded computers in the environment permits learner to study while they are moving, hereafter, assigning them to their learning environment.

The researcher Ogata introduced their definition of u-learning by comparing the classification of learning environments. By comparison, the researchers characterized both pervasive learning and mobile learning as ubiquitous computing.

Later, Dey Casey supported following definition:-

\[ u\text{-learning} = e\text{-learning} + m\text{-learning} \]

Here in order to form u-learning environments using the addition of m-learning into e-learning environments.

According to Boyinbode and Akintola (2008), “a situation or setting of pervasive learning refers to U-Learning Environment (ULE)”, the situation appearance clearly that u-learning would be applied in a u-learning environment.
According to Mark Weiser (1991), ubiquitous computing is the technique of increasing the usage of computers and creates it accessible all over the physical environment. That’s produced a result that the computers will be efficiently unseen to the user, and ultimately combine with their daily lives. To support the statement, Zhang (2005) defines ubiquitous computing atmosphere as “a well-defined area that combines a group of embedded systems which is improved by computing technologies”.

So, we create it essential to contain ubiquitous computing environment in the definition as to obviously distinguish among the explanation on u-learning and the idea of m-learning.

**IV. PURPOSES OF UBIQUITOUS COMPUTING**

Various applications of ubiquitous computing are probable in the business, public and private fields due to its cross-cutting character. This study focuses on the societally important and revolutionary applications in craft, logistics, manufacturing, transportation, as well as individual documentation.

Cheap based Radio Frequency Identification transponders are committed to product packing and larger containers. The Retail Applications are based on it because using of RFID it is becomes promising to recognize goods at any time and at any point beside the supply chain.

Due to that it is also possible to forecast supply and demand for assured products more rapidly and precisely to establish locating, picking, packing and delivery more efficiently. Therefore, the scope for investing in new IT infrastructures and equipping products with RFID transponders is very limited. Consequently, RFID labels are quiet too expensive for many low priced goods or those with a very small profit margin.

In Germany automobile industry use of RFID is one of the pillars in Industrial production and material management. Where the technology has been consumed mainly in in-house processes here applications develop principally for the areas of production logistics, regulate of machines and equipment as well as the optimization of the utilization and availability of production facilities. Preliminary point is the data automatically together during manufacturing, which swaps excessive number of manual counting; scanning; data collection and control operations. This can cut waste and production walkouts caused by a lack of loading equipment and almost completely avoid misused items.

A person’s identity is a significant article of many applications of ubiquitous computing. Nowadays, this plays a role mostly in applications for access control or payment procedures. The importance of this function wills escalation in future, because innovative applications would not only be location and situation dependent, but modify complete to garb the individual user.

**V. UBIQUITOUS COMPUTING IN THE WORKPLACE**

The UbiquiTrain system is based on a database of preparation content to which users connect via desktop computers and wireless systems. UbiquiTrain loads preparation content according to an algorithm that contains a number of context-related signs. The first sign centers on the user’s agenda.

For example, if there is forthcoming consultation called by the user, Ubiqui-Train would load training content on how to lead consultations. As the meeting time approaches, this training content lifts to the top of the list of issues available. A second sign appeals the situation of the user’s current actions.

If the user is employed on a task related to an item on his or her to-do list, UbiquiTrain would load consistent content, as well. For example, the user working on a proposal would sign UbiquiTrain to
call up training content on written communication in general and proposal writing in particular. UbiquiTrain clamps content at the prepared would workers ask for it. The system does not demand the user’s attention.

VI. CONCLUSION

In this study research in Ubiquitous Computing and in particular in the area of context aware systems is presented. This study hints on numerous subjects, such as context achievement, sensing and observation, demonstrating and prototyping situation awake Ubiquitous Computing systems. U-learning aims at lodge beginners in their knowledge by providing acceptable information at anytime and anyplace as they desire for it. To promote a more effective application of u-learning, we have provided definitions and characteristics of u-learning.

These descriptions and features will be assist investigators to understanding the concept of u-learning and provide help to application designers to plan & develop u-learning applications. We know that Ubiquitous Computing is already additional than a ordinary technology vision. RFID technology has already touched a high degree of development and is incoming further application zones.

REFERENCES