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### **RESEARCH ARTICLE**



# Increasing the Ubiquity that based on Key Value Model in Ubiquitous Computing

Anil Kumar Mishra<sup>1</sup>, Pushpa Yadav<sup>2</sup>, Latika Singh<sup>3</sup>

<sup>1</sup>CS/IT & ITM UNIVERSITY, INDIA

<sup>2</sup>CS/IT & ITM UNIVERSITY, INDIA

<sup>3</sup>CS/IT & ITM UNIVERSITY, INDIA

<sup>1</sup> [anilkrmishra@itmindia.edu](mailto:anilkrmishra@itmindia.edu); <sup>2</sup> [yadavpushpa6228@gmail.com](mailto:yadavpushpa6228@gmail.com); <sup>3</sup> [latikasingh@itmindia.edu](mailto:latikasingh@itmindia.edu)

*Abstract- Context-awareness is one of the individuals in the everywhere processing paradigm, whilst a new beautiful model is usually a critical accessor on the wording in any context-aware method. In this context, this papers gift any checklist-based way of characterizes ubiquitous research computer software projects with regards to a few ubiquitous research qualities and variables. Your guidelines continues to be employed to characterize 8 ubiquitous research computer software tasks (4 talked about in this paper) hinting that experience concerning the distance between expresses with the artwork and practice with regards to ubiquitous research study.*

*Keywords- context; context awareness; ubiquitous; ubiquitous computing; Key value model*

## I. INTRODUCTION

Context is any information which is characterizes an entity such as location of a user, name of a user, weight of a user. So information which is characterizing an entity is a context. This definition used activity is a key to context awareness. Context-awareness is used in ubiquitous computing systems to records user activities, manage audit trail of user action to understand user may want in the feature.

Context-awareness computing has ability to changes in applications according to the environment. In context-awareness needs to consider location, activity, identity, time which is explain the characteristics of entity. In context-awareness the context types are depends on computer system. Ubiquitous computing is creating an environment that is change according to requirement of an application. Ubiquitous computing technology disappears and transparent the user. Ubiquitous computing system is context-aware

to have the user information, such as identity, location, time, activity and system also become adaptable, flexible and proactive. Ubiquitous computing system is very effective, it track and record the user’s intent.

To exemplify the utilize, we have utilized these kinds of record to be able to define 8 diverse ubiquitous computing computer software assignments [1][2][3][4]. The outcomes on this program are reported with [9]. Not long ago, we have amended your record analysis such as following 5 assignments [6][8][5][7], exactly what do allow us many suggestions on what to utilize it for any much larger inhabitants involving computer software assignments, experience in regards to the long distance between state of the art along with practice about everywhere calculating analysis, along with identify exactly what ubiquitous computing characteristics has become much more explored in existing ubiquitous computing assignments. That last level is important to see or watch brand new probable analysis developments about computer software anatomist ways to be reproduced with ubiquitous computing computer software assignments.

Besides this introduction, this document includes several principal portions. In segment 2 key value model, features, along with variables on the ubiquity usually are displayed. In Part 3, many of us suggest a technique for define apps taking into consideration their particular ubiquitous computing adherence stage. In segment several many of us found a number of effects acquired using the characterization technique. Ultimately, in segment 5 many of us found the leading efforts of this document along with potential viewpoints of this research project.

**II. KEY VALUE MODEL**

The type of key-value frames would be the most simple information framework regarding modeling contextual data. Most of these signify the best information framework regarding context modeling. They are frequently used in several service frameworks, exactly where key-value frames are employed to go into detail your capabilities of an service. Assistance finding is subsequently applied using related algorithms which use most of these key-value frames.

By now Schilit ET ing. [35] Utilized key-value frames to product your context by giving on-line associated with context data (e. h. position information) with a program just as one natural environment variable. The key-value modeling method is usually utilized in dispersed service frameworks. Such frameworks, your products and services by itself are usually explained using a list of easy capabilities in a very key-value method, and the used service finding treatment works an exact related algorithm in most of these capabilities. Especially, key-value frames tend to be an easy task to handle, yet lack capabilities regarding structuring regarding enabling useful context retrieval algorithms.

Based on a survey, we concluded that the most important for context modeling for ubiquitous computing environments with respect to the requirements. The representatives of this category met the requirements best.

In the key value model, information is in key value structure format. In the user management system, the key is same but value is change according To the user. User management system is a system which is managed the user information. User have attributes such as availability, usability, integrity, confidentiality, context sensitivity etc is the key in the key value model. And the v1, v2, v3, v4, v5 is the value in the key value model which is changed according to the user. This information is preprocessed and store into the database.

<b>Key</b>	<b>Factor value</b>
Availability(A)	V1
Usability(US)	V2
Integrity(IN)	V3
Confidentiality(CO)	V4
Context sensitivity(CS)	V5

TABLE 1 KEY VALUE MODEL ON THE BASIC OF UBIQUITOUS CHARACTERISTICS

In the above table that show the person information in the user management system. This table describes a person information entity such as availability, integrity, usability, confidentiality and also defines the value of these entities such as v1, v2, v3, v4, v5, v6 etc. The value of entities changed according to the user.

**For example**, in the physical environment, the key is humidity, air, pressure, sound, weather etc. the value of these key is change according to the physical environment.

### A. KEY VALUE MODEL FOR USER MANAGEMENT

The architecture defines the key value model for user management. In the ubiquitous computing system various characteristics such as usability, availability, integrity, confidentiality etc define in the ubiquitous system. These characteristics value change according to the physical environment. After that Information is processed and stored into the database.

#### 1. Ubiquitous characteristics on context aware system in key value model

There are various ubiquitous characteristics define in the key value model in the context aware system. These characteristics define given below:

Usability:

Usability define that information is used according to the user. It is an ability to retrieve or stored at information into the database. When the new user add in the user management system. Information is easily retrieved or stored into the database.

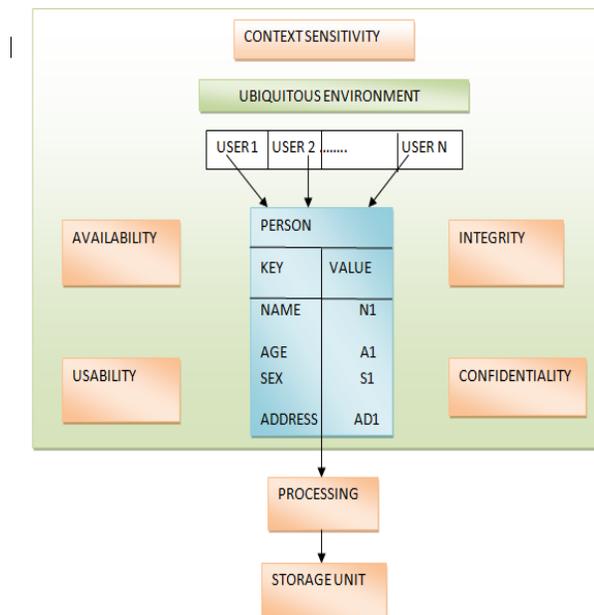


FIGURE 1: KEY VALUE MODEL IN UBIQUITOUS ENVIRONMENT

Availability:

User information is directly retrieved or mapped through database to the given available key value than generate a key value model.

**Integrity:**

User information is dividing into parts such as key or value in the key value model. Its means that information is divided into parts.

**Confidentiality:**

Confidentiality define that information is capture or adapt a user behavior according to the user requirement in the ubiquitous key value model.

**Context sensitivity:**

Capacity to accumulate information from your environment in which it's being utilized.

This investigation from the 15 determined paperwork from the second organized evaluate ended up being comprised within a few actions: (1) Determining this existence from the ubiquitous computing qualities; (2) Determining this variables of each attribute, along with; (3) Grouping related variables within variables group. These kinds of groupings had been developed as a result of these determined variables along with their own relationship

For example, for your “Context sensitivity” attribute, the components “User part management” and “To handle the owner's mobility” might be arranged upon “Context Details Management” factor class, because of the secondary partnership.

TABLE 1.1. UBIQUITOUS COMPUTING CHARACTERISTICS AND FACTORS.

Ubiquitous characteristics	Identified factors value
Availability	10
Usability	5
Integrity	10
confidentiality	4
Context sensitivity	5

**III. CHARACTERIZE UBIQUITOUS COMPUTING SOFTWARE PROJECTS BASED ON CHECKLIST**

Reports decided on with the systematic critiques (section 2).it turned out realized that all-pervasive calculating typically comes up within its totality when its twenty qualities could be carried out within software projects. As a result, in a first investigation along with based on your standpoint, to get deemed entirely all-pervasive, some sort of software project ought to contemplate different components of each all-pervasive calculating attribute. However, you can have all-pervasive calculating software projects using various numbers of adherences towards all-pervasive calculating qualities. It's rather a consequence in the request website along with project’s demands, as an example. It is also crucial to point out that will people various numbers of adherence could characterize the particular lack of a number of all-pervasive calculating attribute inside the software project. By doing this, you possibly can have got software project using various numbers of ubiquity.

It is important to suggest that this specific cardstock won't will establish regardless of whether some sort of software project is usually more all-pervasive calculating in comparison with various other. The objective only observing how a various all-pervasive calculating qualities are taken within software projects, promoting a number of comprehending how they are able to affect the software program project setting up along with growth.

It turned out intended some sort of list to help characterize software projects based on the all-pervasive calculating adherence degree. That characterization comprises three methods: (1) to evaluate the particular existence of each characteristic’s well-designed along with restrictive components; (2) to help negotiate the software program project adherence degree of just about every attribute while using presence/absence associated with its well-designed along with restrictive components, along with; (3) to get some sort of graph with the all-pervasive calculating qualities (using the particular values measured within phase 2) which represents the software program project adherence degree. To support the particular characterization methods, most of us created some sort of spreadsheet-based variety to help calculate the particular adherence degree for each all-pervasive calculating attribute.

Desk two displays the fragment with the style allowing it designers to get these info:

- Ubiquitous calculating feature: displays your ubiquity attributes introduced with section two;
- Adherence Stage: displays your fraction associated with adherence based on the Status column. Observe that with this original pitch just about every aspect gets the very same pounds. The particular adherence degree is usually worked out since the typical with the joined factors.

The particular calculus is usually due to your manifestation:

**Adherence level = ( $\Sigma$  joined factors by 100)/Number associated with factors exactly**

Where:

- Went to factors include the factors as their reputation worth is usually 1 for any certain feature;
- Amount of factors could be the total number associated with discovered factors for any certain feature.
- Component group: displays your factors teams discovered from the 2nd step-by-step review introduced with section two;
- Component: displays you're sensible along with restricted factors discovered from the 2nd step-by-step review introduced with section two;
- Status: aspect presence (1) or perhaps absence (0). The application engineer delivers this data.

TABLE 2: THE LIST TO HELP DEFINE UBIQUITOUS COMPUTING SOFTWARE PROGRAM INITIATIVES

Ubiquitous Computing Characteristic	Adherence Level	Factor group	Factor	Status
CS	%	Mobility	User section management	1 or 0
			To deal with the user's mobility	1 or 0
			Factorn	1 or 0
		Service management	.....	.....
		Factor Group n	.....	.....
US	%	.....	.....	1 or 0
IN	%	.....	.....	1 or 0

For the above table2, if we want to calculate the adherence level of project 1 in terms of “context sensitivity” in percentage. If the five factors attended in project 1.Then described given below:

$$\text{Context sensitivity} = 5/10 * 100$$

Here joined factors are 5 and number associated with factors exactly is 10 in context sensitivity.

Context sensitivity (adherence level in %) =50

For the reason that user complete the Standing column, the Adherence Levels column could be worked out for every single ubiquitous calculating quality. Like a remaining stage, the considered proportion beliefs utilized to attract a new chart that represents the adherence higher level of the software program undertaking according to the view of ubiquity.

**IV. APPLYING THE CHECKLIST**

With this section, the effects connected with making use of the particular record within the small sample connected with 8 ubiquitous computing computer software tasks (state-of-the-practice) are usually talked about. With table 3, it truly is summarized the effects about the 1st 8 computer software projects introduced inside 9. Session 5 identifies the additional 4 computer software tasks of which modify people past facts.

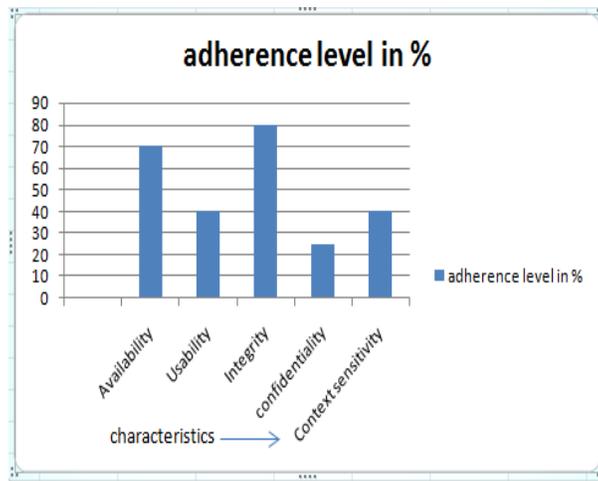
Table 3 described the various ubiquitous characteristics and the percentage of the attended factors of each projects. This described given below:

Ubiquitous computing Characteristic	% of the Attended Factors per projects			
	SP1	SP2	SP3	SP4
Availability	50	30	20	20
Usability	40	60	20	80
Integrity	70	40	80	60
confidentiality	25	50	75	25
Context sensitivity	20	40	80	60

TABLE 3. SUMMARY OF RESULTS 9.

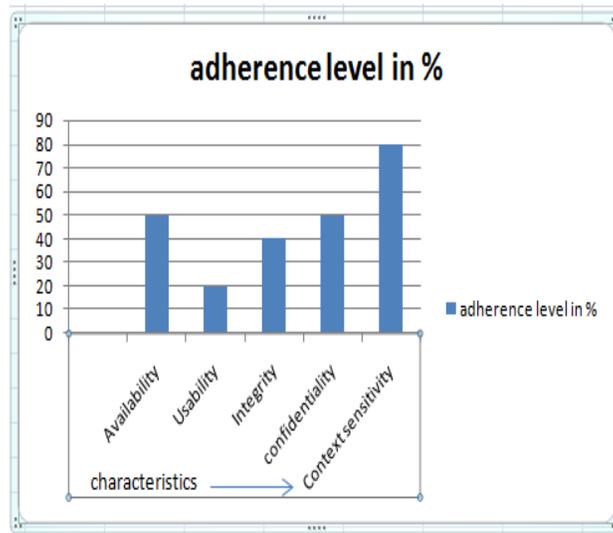
**V. OUTLINE OF EXTRA COMPUTER SOFTWARE PROJECTS**

**Computer software project [5][6]**This development of research and also conversation technological know-how possess marketed the learning paradigms from standard learning to e-learning and then in order to m-learning now it really is changing in order to u-learning. U- Learning also called everywhere studying will depend on everywhere research. That aspires to develop the everywhere studying natural environment, to ensure that any person can find out with wherever each time. Using the active meanings and also features, your authors possess proposed their very own u-learning meaning and also features.



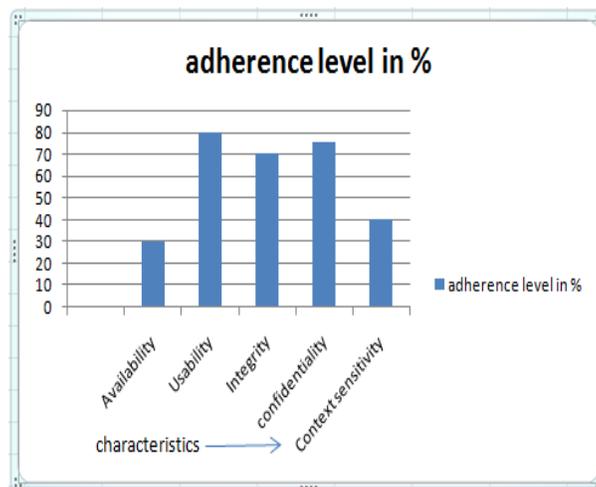
**Computer software project [6][8].**

This particular report possesses shown ubiquitous computing quality and suggested some sort of record pertaining to characterizing computer software jobs relating to ubiquity. This creators of these studies does some sort of methodical examine to know ubiquitous computing, its main quality and its particular aspects. Many people determined 10 quality (with 123 well-designed and forty-five hard to follow factors) and organized them in a record to be able to define ubiquitous computer software jobs. 8 ubiquitous computer software jobs ended up employed to assess the check list and do not require could be known while 100% ubiquitous.



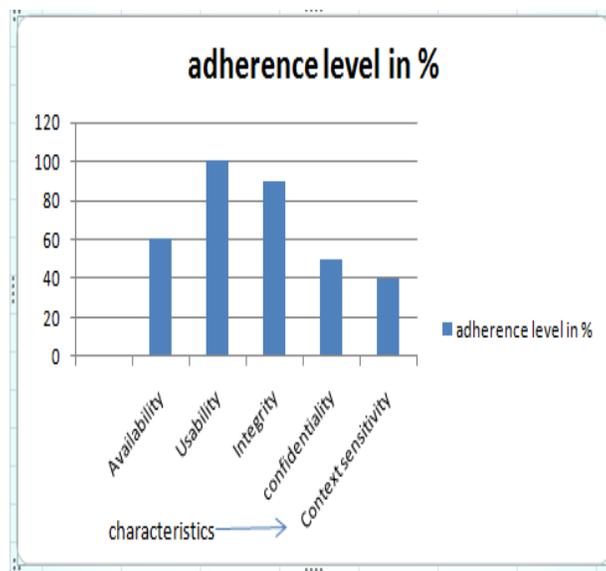
**Computer software project [7][5].**

With this document, your experts explained your technologies useful for implementation regarding all-pervasive calculating applications using clever detection technologies as well as an overview regarding some applications they have produced. Based on the ordeals on the growth of these programs, they stated layout methods useful for structuring as well as applying such applications. They will produce a pair of frameworks dependant on Jini as well as World-wide-web Solutions to compliment your growth regarding all-pervasive calculating applications that utilize clever detection technologies.



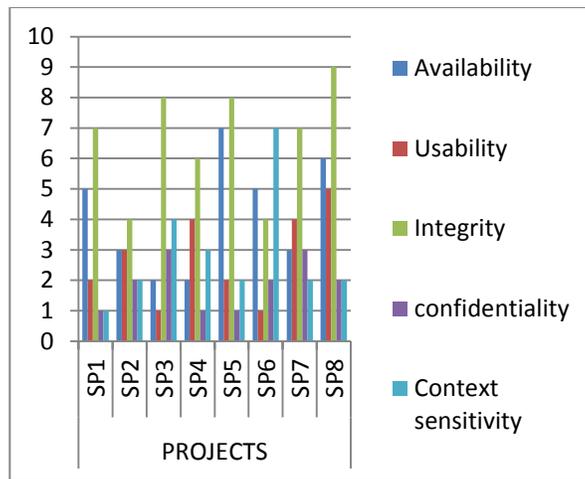
### Computer software project [8][7]

In this document, the authors talked about the difficulties inside computer system technique research asked with the appearing industry involving pervasive processing. That they primary reviewed it is connection using its predecessors, which have been, sent out methods as well as mobile computing. Then they discovered four brand new research thrusts: effective utilization of sensible areas, localized scalability masking unequal health and fitness as well as invisibility. In addition, they gave case involving many hypothetical pervasive processing scenarios to name the key functionality absent through present day technique.



## VI. ATTENDANT FACTORS OF SOFTWARE PROJECTS

In this section, with the help of the ubiquitous characteristics, we have find out the no. of attended factors in various ubiquitous projects.



### VII. Software project to calculate adherence level and ubiquity

In this session, we design a window form application to calculate the adherence level of each characteristic and also calculate the ubiquity of software project. It is based on attended factor and identified factor. In this application, we insert a identified factor as well as attended factor than after that when we click on the calculate button that show the adherence level of each characteristics in a percentage and also represent in the graphical format and after that again when we click on the calculate button than we show the ubiquity of software project in a graphical format. In this case also define the comparison of project that show that how much project is ubiquitous.

In figure 2 explain the adherence level as well as ubiquity of software project given below:

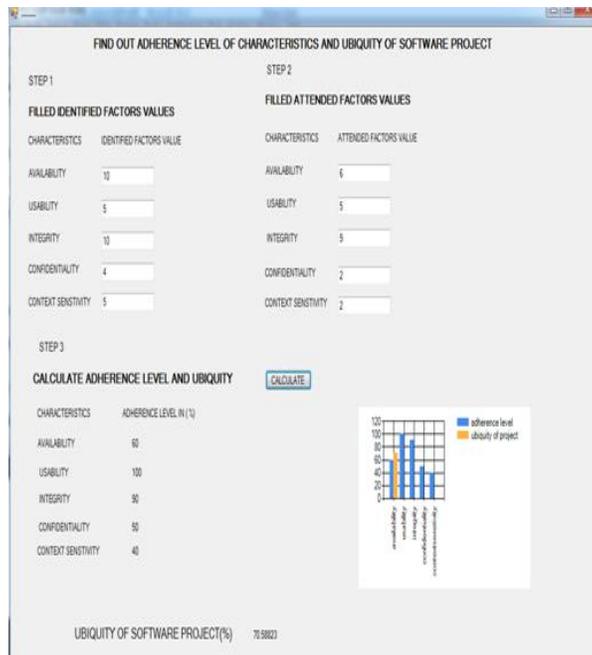


FIGURE 2: AN APPLICATION THAT SHOW THE UBIQUITY AND ADHERENCE LEVEL

## VIII. UBIQUITY OF SOFTWARE PROJECTS

In this section, we find out the ubiquity of different projects.

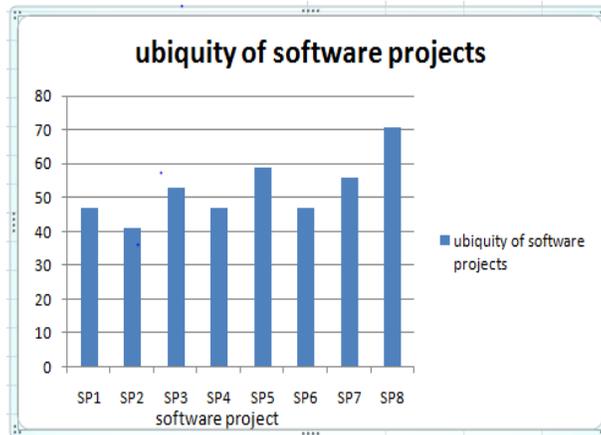
$$\text{Project ubiquity} = \frac{\sum \text{attendent factors of ubiquitous characteristics}}{\sum \text{factors of characteristics}} * 100$$

For example, we calculate the ubiquity of software project 2 then:

$$\text{Software project 2} = (3+3+4+2+2) / (10+5+10+4+5) * 100$$

$$\text{Software project 2} = 14/34 * 100$$

$$\text{I.e. software project 2} = 41.17$$



## IX. CONCLUSION & FUTURE WORK

In this paper, we have presented a key value model in the ubiquitous computing environment that defined the identified factor as well as attended factor. Based on these, we find out the adherence level as well as ubiquity of software project. We also developed an application which calculate the ubiquity of software project as well as adherence level of each characteristic at a time. In the future work, we develop an application which calculate the adherence level of each characteristics and ubiquity of multiple software project at a time.

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