THE SOCIAL FACTOR AS AN INDISPENSABLE ISSUE IN THE WEB DEVELOPMENT PROCESS

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ABSTRACT
Internet and World Wide Web appearance in people’s life has lead to a significant change in their habits, leading to a new situation that must be faced up by the software community. Now, previous acting forms in software assurance are not yet viable leading to a development of applications that has not been accompanied by the needed mechanism to guarantee the systems quality. This lack of guarantee is made present, mainly, in two facts which need to be incorporated to the whole web development cycle to achieve a satisfactory system for the final community: the lack of participation and presence of the community who receives the final software in the development process and the credibility of the system data, that has been in doubt several times, because do not validate the accuracy or reliable from the sources, such from the organization as from the Web.

KEYWORDS
Knowledge Management, Software Quality, Social Factors, Data Credibility.

1. INTRODUCTION

“The world runs on Internet time” is a sentence from Andy Grove, founder of Intel Corporation, where Internet time refers to business and life present in the network and global communications. At this time new enterprises and products arise and expand in an incredible way and disappear in less than a year.

It is necessary to recognize that Internet and World Wide Web appearance in people’s life has lead to a significant change in their habits. So, activities that before required a people movement till a concrete location where could be done that activity, now, can be done through any computer connected to Internet.

With regard to software systems, as Harrison says (Harrison, 2001), they move from having a disposal of a period of two or three years to develop the system, to have only a disposal of six months to make it active and others six to get out a better version of the same system. With these new circumstances it is necessary that the software community face up to the new situation. Initially, they must use time periods in months and not in years as before, and also they have to forget the quality assurance as a priority before the system distribution, because it is difficult to explain the delay of a product release when it seems to be finished.

So that, it is observed that inside software assurance the previous acting forms are not yet viable. Now, it will be necessary that software quality were associated to the process course, leaving out the test and inspection step, because it takes a significant time in the software creation. In this way, we will go without
the sentence “The extra time you employ today will be saved in a future”, because due to this extra time is possible that the product will not go on in a future.

In the other hand, the aspects of the configuration management play an important role, because the update in the sever of the new versions must be perfect documented, recognizing the errors that have been solved in the last version.

It is proved that Internet time provides considerable changes to the software quality, but it is not proved if the development systems oriented to Internet has a rate of fails bigger than the systems development by traditional methods.

In the last years we have assisted to a continuous development of applications and systems oriented to the web that result each time more complex to people. However, it is necessary to highlight that the development of applications has not been accompanied by the needed mechanism to guarantee the systems quality, and that will affect so to the enterprises so to the people. This lack of guarantee is made present, mainly, in two facts: the lack of participation and presence of the community who receives the final software in the development process and the credibility of the system data, that has been in doubt several times, because do not validate the accuracy or reliable from the sources, such from the organization as from the Web.

This paper tries to show the need to incorporate these two issues to the whole web development cycle to achieve a satisfactory system for the final community and could work with integrate, relevant and reliable data for the system.

2. WEB DATA CREDIBILITY

One of the existing problems in the web for several users is the lack of credibility or reliability of the contents that are present in the Web. Trying to solve it there are some tendencies were is the user himself who express data credibility through the selections he made when he visits a web site. This solution must be combined with the user impartiality and objectivity in order to data credibility were not tendentious.

The fact that electronic newspapers were between the more visited place in the web point out that the user, in spite of counting on with another web sites, such as portals where it is offered current information, prefers the news media because they establish a link with the printed editions of the newspapers, which have guaranteed, previously, the data credibility. In this sense, the credibility also is present in the mark of the media, and, in this way, the portals tend to reproduce agencies news or from other media with enough prestige.

But in the technology area the problem is still higher, because the massive attacks from computer virus, worms and other mutants are the most harmful to the net use, because, as Dr. Ribagorda express in the newspaper “El Pais” from May, 14th of 2000 "The affected technologies by them, computer science and telecommunications has become in the basis of actual societies, which depends extremely on them ". Thus, is obvious it is needed now "guarantees about the information and their technologies are reliable". This will involve not only an exhaustive application of the current security techniques and the development of a new ones, but also will be necessary a high social awareness labour to see the risks from the use of these technologies.

Inside the World Wide Web there are a huge amount of data in the crowd of existing web. Such availability create the problem of data credibility and reliability, because there is not a centralized control of data in accordance with the liberties present in the net. So that, it is necessary to establish any mechanism to guarantee, at least in a tolerance levels, the credibility of the available data through the Web.

Credibility is one of the most important characteristic in any system, but even reaches a bigger importance inside the Web when there is a continuous increase in people’s access looking for information, because it is necessary to guarantee the reliability, credibility and update of the acceded information.

It is necessary to consider the situation created through the e-commerce, where the relation between the customer and the seller, normally, is done between people who have never meet before. Thus, it is essential to guarantee the credibility in both sides of the commercial transaction, in order to make it in a confidence atmosphere, such by the seller as by the consumer, and it will redound to a better valuation and opinion of the new business philosophy.

To evaluate the data credibility there are a waste range of criteria, provided by Prasad et al. (Prasad et al., 1999) that are explained next briefly:
• Accuracy: Indicate if the information is up to date, comprehensive, detailed and has no errors. There are no content controllers in the web to verify the information that someone can include in the web, so it is necessary to verify the content through books or authentic sources.

• Objectivity: Sometimes the information present in the Web is oriented by the means of the person who include it, and this can influence in other people who access that information. To avoid it, the objective information, without personal appreciations, will have more credibility than others.

• Coverage: It allows to know the audience whom is directed the information. It is preferable that coverage will be as bigger as possible for a higher credibility and were not directed to a particular group.

• Authority: It affects the author’s information credibility, because it is not the same that the information were provided by a prestige organization or person than other people in a personal way.

• Currency: Generally, it is considered that the information more up to date is the information with bigger credibility in a set of information over the same subject.

• Search Engines: The credibility of the searches in a particular search engine, do not guarantee the data credibility, even in those search engines where these data are associated to a value about its credibility.

• Data Presentation: To consider the data credibility it also depends how is the information present in the web site. Thus, order and clarity information will not produce any confusions in people and its organization will give them a bigger credibility.

• Uniqueness: Analyse if the source has different formats, in order to guarantee that inside all formats the content is the same and there are not any differences or are as less as possible.

• Reviews: There are several reviews about the credibility of the existing information which gives a bigger credibility to the available data.

Through these criteria, is possible to propose some methods to assess the credibility of the different sources:

• Last Update Method: It establishes that among different web with information about a particular subject, the web which present the most updated information will be more credible, specially in the dynamic web which change frequently.

• Majority Basis Method: Some webs have a count in order to know how many access has a particular web site. In this method as bigger were the number of access as better is the credibility of the data in the web site.

• Polling Method: Now, to know the data credibility the users can give commentaries about the content of the web site. From this commentaries others users can access them in a way to know the opinion off the community and also can contact with the users that had made the commentaries if they want to check any opinion.

• Query-driven Method: This method works with an agent, it could be software or a person, that receives a query and orient the user till the information set that could be useful for him. The user does not receive the whole information, he just receive summaries or an orientation about the set of information.

One of the factors that allows to denote the credibility that people give an information is the extension. In this way, in education references with an extension .edu has more credibility than others more general with an extension .com. The purpose of this data credibility is to reach the goal where the information accessed by people through the Web was the most relevant as possible.

3. INFLUENCE OF HUMAN AND SOCIAL FACTORS IN SOFTWARE PROCESS

The accuracy in the available data credibility is oriented to the consecution of a process where the final software reaches the bigger quality degree. It has probed, also, that this quality degree will depend on the
person who analyse that quality. Thus, it is necessary to incorporate to the software quality process a factor that has been always present, but so few times has been considered, such as the human or social factor.

Nowadays, the productive sectors are not focus in the cost and time reduction. They have gone to develop the competence, between corporations of the same sector, through the quality present in the products and services. Between these productive sectors, the one corresponding software is also participant of this competence and it has established like basis tools for the software maintenance and development such the quality assurance as the quality management.

One of the biggest problematic that software quality assurance activities cause can be reflected in the customers dissatisfied in relation to the works that have been made. The principal reasons that customers express are various and enough important to be obviated by the software developers. Thus, as Ginac expressed (Ginac, 2000), it will be necessary that the customer´s opinion, in relation to quality assurance activities, were known and considered, to guarantee a final result.

One of the first problems to deal with is the concept that customers have about quality, which, generally, is defined in terms of properties than a product or an organization has. Normally, the software developer looks for the quality assurance through the employ of standards or different goals from the suggested by the customer.

For this reason, the organizations are in the need to ask the customer about his quality concept, discovering that each customer has a different definition. This find has provided to the software developers the idea of an non-existent common quality definition for everybody. Thus, they have to ask each customer for his own definition of software quality to satisfy it in the development of the products.

The quality expression by the customers is made through a set of quality attributes where they express their requirements. To know this set will be necessary that the software developer invite the different customers to fill some questionnaires to discover this set of quality attributes, later to an analysis looking for common factors.

Once the set of quality attributes is obtained, it will be necessary to establish some metrics to evaluate if the product and its development has been made according to the quality attributes defined by the consumer. For example, the AENOR norm assume that the quality of a product is influenced by the steps of the product development process.

The execution of these metrics will establish a diagnosis about the quality that have to be considered, by the organization, in the elaboration of the quality assurance plan. Together with the metrics, it will be also necessary to carry out the product evaluation, through test and proofs, in order to get, with the bigger reliability as possible, la effectiveness in relation to the product. This evaluation will affect such as the set of quality attributes as of the employed metrics.

With all that, they will obtain a quality assurance plan based in the customer´s point of view, that will influence, mainly, in a significant increase in the acception rate by the customers, because the final product and its development will be done in conform with the quality requirements that the customer had said and not in conform with the requirements that the software developer can do.

Taking as a reference this quality assurance plan is going to be obtained that the customer´s perspective were be considered in the development and preparation of the final product. This will enclose the need to incorporate new procedures to the product development or the need to redefine any of the existing procedures in order to the customer´s perspective were reflected. This way, the satisfaction degree of the customer will be increased as was expressed by Alonso (Alonso, 2001), (Alonso, 2002).

It is necessary to highlight the need of the society to participate in the development process. Until now, the society has known how to adapt and how to evolve to the different, and sometimes unexpected, situations that the new technologies have been arising supporting the idea where the society has the primacy in the difficult and dynamic relation between the new technologies and the society.

4. SOCIAL FACTORS

The incorporation of the social factors to the development process is made through a correct knowledge management, in a sense to allow incorporate the characteristics and circumstances of the final community with the better precision as possible. In this section, it is described the human and social environment through some finished investigations and the techniques applied.
4.1 Communication and Learning

If knowledge is not as simple as it is supposed, neither is the process to communicate it to others. However, there is a big number of research, (Bhatt, 2001), (Davenport and Prusak, 1998), that suggests that it is not only a question to get the correct knowledge to the correct people, because these people have to capture and learn it. So that, it is suggested to employ a model of communication more realistic and useful, where the context knowledge were used by the communicator to design a communication where the person who receives that communication can interpret it and achieve the desired effects.

There is a lot of research, (Wiig, 1999), that is relevant to this view to show that a simple presentation of information does not necessarily result in learning. In spite of, yet exist large organizations who relieve that making more information available to their employees, more widely will solve knowledge management problems.

In the other hand, as a contraposition, is the example of IBM that makes a management training in a simulated stage. With this technique, it is required that each individual makes real elections such as they do if they were in that situation. In this stages, it is presupposed that when an individual makes an error or is in front an unexpected situation, he will be motivated to read or to look for the reason or the answer to it.

In the use of these simulators, even if the individual is alone with the computer, learning is been influenced by the social context because this social context, expressed through the stage, gives him the motivation and the interest, as well as a guidance to find the correct answer.

Besides these interactions provided by the stage in order people to get the knowledge, in a more active way, there are other considerations that can be applied to the knowledge management systems. For example, a bigger representation of the input forms to the system or a musical animation associated to knowledge, will make easier the caption of knowledge.

4.2 Social Context

In the definition of knowledge management it is not clearly specified who are the correct people whom you have to give the information. In this sense, there are studies, (Erickson and Kellogg, 2000), (Prusak, 2001), about the human behaviour inside an organization with respect his work. It is necessary to stand out that knowledge work is not a lonely task, because affect to a lot of people. Besides, in all cases, it is necessary to establish a communication between any structured net and a community of persons, where you can analyse the social practices and the relations which are operatives inside a particular context. In this way, to obtain an efficient productivity from a person who adds to corporate policies, it is necessary to know his social relations.

Thus, talking about knowledge management as something that includes a simple information distribution to a person or set of people is not enough. It is necessary to focus in his social context, where his relations, awareness, common ground, incentives and motivation make up that context. In the same way, we have to see the knowledge, not in an isolated form, just like a set of present facts in databases or documents who comes to the human mind and have to incorporate to the human intelligence.

4.3 Tools for Knowledge Creation and Communication

An area that has not been enough investigated is the creation of new knowledge area. This lack of attention may be, as expressed by Joyanes (Joyanes, 2001), because Western culture presents a long tradition to treat the creativity as something magic. However, nowadays, there are enough references to allow to describe the creativity, the problems solving or the design. This creativity can be expressed such as individual form or in groups, because there are several tools, like technologies or methodologies, to help this support. The better tools or techniques, according with Thomas et al. (Thomas et al., 2001) are:

4.3.1 Bohm Dialogue

In a Bohm dialogue a group of people work together to create new knowledge. This process is different from the typical business meeting in several points: First, questions are posed in a continuous way to prove the answers suitability, because the human instinct is to take the first solution and to apply it instead of explore
another options. Second, it is not a dialogue competitive, because the people answers do not be rejected or imposed, they evaluate all the options. At last, the pace is different than other typical meeting where is possible to cut the speaker before he finish. In the Bohm dialogue a person talk and the others listen him. Once he have finished, the other persons ponder about the talk before someone talks.

4.3.2 Use of Metaphor

Another creative process of knowledge is the use of metaphors for improving the performance in design tasks and problem solving. This use is done through a list of words disposed in a strategic form to evoke in the mind of a person who has to solve a problem how to do it.

4.3.3 Strategy Mapping

Another tool has focused on the develop of a set of strategies oriented to encourage the creativity and the knowledge creation. This process is based in the existence of strategies for problem solving in particular domains, although most of the people, in a particular domain, develop a set of strategies to use more or less within a community. In this process the strategies of a particular domain were grouped in order to the people who work on the domain do not have only their own strategies, also they could have the strategies that other people use in the domain and through them could increase the creativity.

4.3.4 Telling Stories

It is another form to contribute to the creativity in individuals or groups and they also provide a form to present and communicate the knowledge. The problem is to find the correct stories to each situation. Inside these stories you have to add, not only the internal content of them, also you have to include the social context. It is necessary to highlight the different situations to tell the same story, because the audience or the narrator can be different, so that social factors will affect to the person depending on when is told and whom is directed to.

5. CONCLUSION

The easy view that people has about knowledge management is wrong, because the knowledge management is not only an information management, it is, in its own, a social management and has to consider both human and social factors. The develop of the knowledge management from a new social perspective, in which there has been observed and analysed the social and human factors of the final community, who receives the knowledge, will allow an increase of the evolution possibilities of the society.

One of the most relevant aspect of a system is the knowledge community: a place where people discover, use and manipulate the knowledge and can find and interact with other people who are working in the same area. A fundamental characteristic of a knowledge community is that they include the conversation and other forms of narrative, in addition with casual discussions between people who have meet before, that have similar professional interests and understand the context where they had made theirs comments. This notion of an environment for knowledge management like a friendly place is an interesting test to the system designers and to organizations.

Also, it is necessary to consider the customer point of view, with his own characteristics, inside the quality assurance at the time to make a plan for an organization. This point of view is going to allow that the final product and its development has been made conform to the specifications that the customer specify and was not considered, till now, by the software developers in order to achieve a bigger fidelity to the business.

So that, it is possible to conclude in the need that the designers has to make a web development, where the social mechanisms that are needed were incorporated to help in the development of systems more social and where has been established enough mechanisms to guarantee the credibility of the system sources, independent of the source, to offer organizations a bigger control and freedom in the creation, share and reuse of the knowledge that is a critic factor to survive in the actual century.
REFERENCES


