

Analyze and Solve the Ethics Problem in the Process of Software Engineering

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Abstract. The fast engineering of information technology not only has brought huge benefit to the humanity, but also has brought many negative effects. As an important component of the information technology, software has the ambiguity performance similarly, both may bring the convenience and many puzzles to people. Therefore, according to software engineering ethics production rule, discuss and establish ethics principle which the software exploiter should follow, has positive and profound significance as regard to the coordinated network society ethics order and the advancement of harmonious society construction. In this paper, first it tells about analysis about current situation, the mentality, main content and method of the study. And then tell the ethics problem of software engineering and analyze the factors. In the end it shows the countermeasure to solve the problem.

Keywords: software engineering, ethics problem, solution

1. Introduction

Software engineering is the process to construct software system or the software segment of the system according to customs require. Engineering staff and the customs all have their own right and obligation, their relationship is not only on economic but also on ethics. Ethics values have a deep effect on software engineering. The principle of fair is the ethics principle that human beings all the time pursue and uphold, it well reflects rational of human society. In the process of software engineering, we must insist on the guide thought of people first, complete profession ethics standard of software engineering, enhancing thinking and morals education, perfect the system of management. The information technology and spread medium's fast engineering change people's inherent life style and society existing style, the social morals life of information times will surely reflect in the changing and developing of social existing style. Therefore, how to exactly hold the interest pattern and develop trends in the information times society, establish correct values, have quite important meanings to maintaining social's optimum move and promoting its health engineering. Combine the basic require of information times society morals life and the morals problems which general exist, according to the generated law of software developer ethics, discuss and establish the ethics principles which software developer should obey, have significant meaning to information times and even to the society ethics order of network times and the establishment of individual morals standard.

2. Literature review

Nowadays, there are many different kinds of papers or books which discuss ethics in the process of software developing, most of which are entirely study of information ethics and network ethics. According to the study situation at present, most of which focus on the entirety and macroscopic research of network ethics, pay attention to the study of ordinary characteristic of network ethics, but quite few people pay attention to the levels and elements of network form. There are short of discuss in these fields, including software engineering field, which is studied by the numbers by few people, cannot valid resolve problems of

dim consciousness on ethics, the short of ethics regulation, bad ethics behavior and so on a series of problems, actually the books and papers have not deep discuss the ethics in the process of software engineering. Software engineering originates from the western developed countries, so these countries pay more and early attention to the social phenomenon. Our country officially insert network from 1994, up to now there are only 18 years, because of this, the study of this aspect is not that much, the ones really have some meaning is even less, related research result appears to be a balance situation of translating and original producing. Take all of these into account, this paper bases on the ethics problems in the process of software engineering, aims to widen the view of network ethics, and deepen the cognition of network ethics.

3. Ethics problem and factor analyze in software engineering

The ethics problem caused by software engineering, relate to many different filed, such as design and programming of computer software, the sale and service of product, installation and operation of software, personal application and creation and so on. And the ethics problem focus on intellectual property problem of software, product quality problem of software engineering, individual privacy problem, the responsibility problem which software product to the customer and society, and the free right and morals duty problem of software application users.

Study the main source of ethics problem, the effects of its own characteristic of the software engineering's main body is the most important factor.

Human beings is the guide of society, all the social activities is centre on human beings. Software developer, as the main part of the ethics problems of software engineering, his age, experience, character, professional habit and so on can all have an effect on the performance of ethics. According to the data provided by IDC 《China suit software market forecast and analyze of 2006-2010》, we can know that in 2006, the scale of China software market has reached 3,379,000,000, and in 2007, it reached 3,900,000,000, and in 2010, it reached 6,200,000,000. There are quite a lot chances in such a huge market scale. Under such background, IT companies need more and more people to do the software engineering.

But what is the real situation? As the report which study Chinese software developer shown in CSDN.net in 2004-2007, 90% of the software developer is in the age of 20 to 30, and 90% of which is male. The people who are engaged in this field changed quickly due to the low payment they get. Among all area, Beijing, shanghai and Guangzhou are better. In Beijing and shanghai, most programmers can get a salary about 3000 to 5000, but in Guangzhou, 43% of the programmers can only get 1000-3000. People who get 5000 are quite few.

At the same time, the report shown that 35.9% of the companies have not reached 50 people, 17% have a scale of 50-99, 25.4% have a scale of 100-499, and 21.8% have a scale of more than 500. The company's nature is focus on private, has a proportion of 47.9%, state-run enterprise has a proportion of 27.7%, individual proprietorship has a proportion of 13.5% and joint venture has a proportion of 11%. Some companies are still in their first stage, both the management rules and the welfare rules are not perfect, some bad companies even cannot ensure the basic work treatment to their staff.

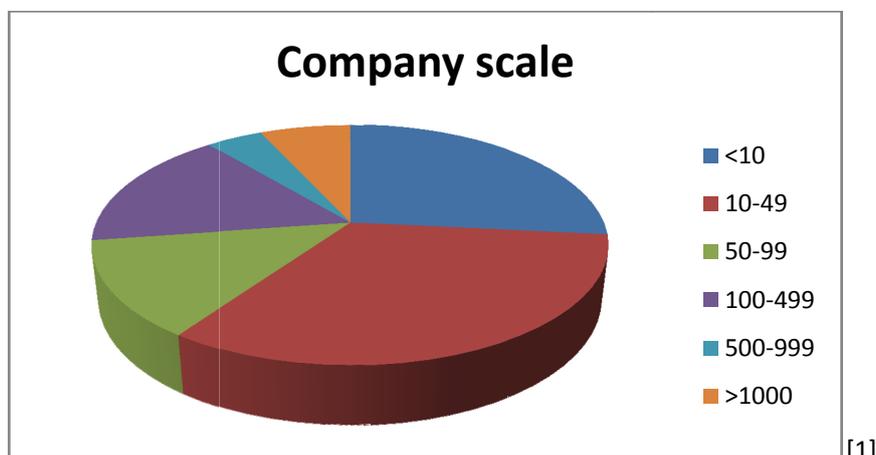


Fig.1: Company scale

In addition, most software companies have not paid enough attention to enhancing of the programmers and also have not prepared relative resource. About 77.64% of all companies have not prepared special cost for training.

Due to all different kinds of reason, less than 22% of the programmers can often take part in different kinds of technique lectures, and 30.58% not willing to go to listen to it. The channels for the developers to realize the information are focus on manufacturer technical support sites and the third party information sites. MSDN, IBM Developer Works and Sun are the most common manufacturer technical support sites for software developer to visit. BEA dev2dev and SDN are the first choices for the relative filed developer. [2] But most of the developers tend to obtain native content, not to read English content.

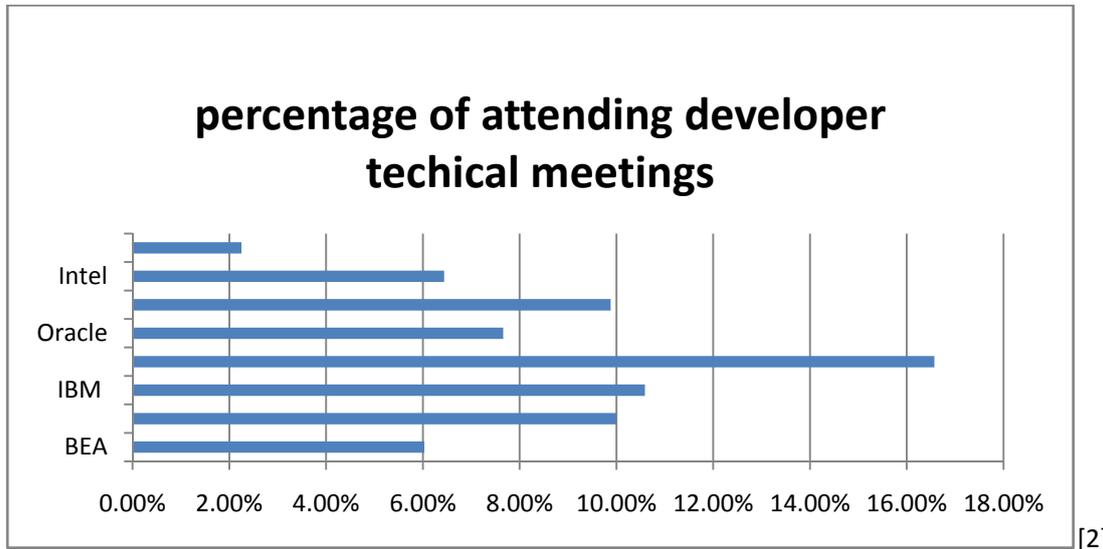


Fig.2 Whether to attend developer technical meetings

Some behavior characteristic about software developer: (1) Straightforward, lack of elasticity when dealing with things. (2) Not good at making contact with people, not good at communicating but have a good capability of writing. (3) Have their own character, have high intelligence quotient, have their own opinion, not easy to be persuaded or to be led. (4) Tend to be bigoted, once the concept form, it will be hard to change. (5) Have strong desire to do better and enterprise, hope have do the best, which cause some people to have grandiose aims but puny abilities. All these behaviors characteristic are likely to be present in the process of software engineering, to cause some software may have potential ethics hidden danger. The report above also shows some characteristic: Software engineering industry is still in the primary stage, the scale is small, the ability of creation is weak, market share is small, scale is small, the ability of anti-risk is also weak, the education degree of developer is relatively low, under this situation, the software products may be unstable and may be optional.

4. Solution of the ethics problem in the process of software engineering

4.1. Establish the guide thought of 'people first'

“Human being is the main body of the society, human being itself is a entirety, and the entirety is consist of many kinds of factors and parts. Only giving service to this entirety means people first; Only the integrated development of people can present that people are the basic and purpose.”[4] Science and technology is the enterprise that reflects the concept of people first, it must services people, must consist with the increase requirement of material and spirit. Therefore, “people first”, realize people’s freely integrated development, is the starting point and purpose of human society practice activity’s important link

4.2. Complete profession ethics rules in the process of software engineering

Complete profession ethics rules in the process of software engineering is one of the most important solutions to solve the ethics problems at present, all developed countries pay highly attention to this. For

example, American ACM had assigned a special committee whose task is to formulate a series of behaviors rules for computer ethics, and anew the ACM Code in 1992. The assignment of relative rules in China is late, such as “Computer software provide rules”, “network information service management measure”, “software product autonomy convention” and so on. All these rules are basis and guaranty for computer professional, and strictly obey these law and rules is the basic require for software developers.

4.3. Enhance morals education, improve morals quality

The morals character of the software developer has a deep impress on moral level of the network society, and the situation of moral order. Also because of this, increasing the moral accomplishment of the software developer is treated as the chief in moral education. The process of self accomplishment in software engineering and practice is just the process of self modeling and self promoting. [5] At the same time, we must pay attention to social ethics education which means the most basic common life regulation and pay attention to the education of traditional virtue. In the process of building software engineering morals, traditional ethics culture shows great superiority, especially the confucianst ethics culture, provide huge reference for us to deal with moral relationship in the process of software engineering.

4.4. Strengthen industry management, perfect law and rules

Training is quite an important thing that can lead to the improvement of the quality of software product. As shown above, at present, the industry now is lack of person with ability. This is a serious thing but hasn't received enough attention yet. We must give more support to software enterprise and enhance the supervision and administration, increase the payment standard and relative training. The government should also encourage union between companies, make full use of the existing resource, build software alliance, increase the scale of company, in order to enhance the technological content of the product, expansion the application scope and improve the market competitiveness. Also, to the enterprise which has certain kind of proficiency, the government should give some privilege policy. Another key point is to protect intellectual property. In the market nowadays, the phenomenon of copying pirate is quite serious, and this question hasn't received attention for a long time. As we know, software is product that quite easy to imitate, the software that sells good is often be imitated by others. This may lead to lost in economy. As evaluate by certain association, the rate of private is 90% in China, the software industry is facing a strong external environmental problem, and restrict the sustainable development of our software industry. So, create a healthy environment is a urgent thing, just in a fair environment can our software industry develop better and better.

5. Conclusion

Under the background of building harmonious society, discussing and establishing the ethics principles which software developer should followed is quite important to coordinate network social ethics order and advance the build of harmonious society. Software engineering is the process of creating software system or the software segment of the system according to users' require. Software developer and users all have their own rate and duty, they not only have a relationship on economic but also have an relationship on ethics. Therefore, insisting on fair and justice, honesty and keep faith, people first and so on can ensure the stable ethics order in the process of software engineering. Aim at the intellectual property problem, product quality problem, individual privacy problem, social duty problem of software, perfect profession morals standard of software engineering, enhance thinking and morals education, perfect management system is quite important. Human beings is an entirety which will last long and long, only holding on the spirit of common, entirety, freedom and sustainable development can our software engineering technology run in the right way and direction.

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