Interpreting Codes of Ethics in Global Software Engineering

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Abstract

Today software engineering is a global activity. Frequently groups of people from all over the world collaborate on the development of one system or work is outsourced. Western companies send development work to Asia and increasingly to Eastern Europe. The differences between cultures and the problems these differences create, are plentiful. Many professional organizations guide their members towards good, ethical behaviour by codes of ethics. In this paper we investigate the culture-relative interpretations of these codes of ethics and the guidance they provide for global teams and collaboration. We analyse the codes of ethics of the ACM (US), CSI (India), IPSJ (Japan), HKCS (Hong Kong) and EI (Ireland). We study the word of the codes to examine whether they explicitly address ethical dilemmas caused by global interactions. To further investigate the ethical guidance provided by the codes we apply them to three case questions that one could raise in a global software engineering setting. Our work differs from that of others in that it examines the practical applicability of codes of ethics instead of their contents and that we do not limit the work to examine different culture-relative interpretations of just a single problem. During our analysis we did not find imperatives that directly hinder global interaction, but unfortunately we were also unable to find any that sufficiently address (i.e., support) this topic. Only one of the studied codes asks to consider cultural differences. While answering the case questions using the imperatives from the aforementioned codes, the influences of the cultural perspectives needed to interpret the words becomes clear. For example, we learn that the concept of privacy is explained very differently in the US and Japan. So even when codes of ethics seem to agree in words, ethical attitude and hence the interpretation of these codes is strongly influenced by one’s cultural perspective. We conclude that all studied codes would benefit from more explicit guidelines for those professionals that work in global software engineering. Future work could examine how this may best be achieved within each culture.

1 Introduction

Despite the globalization of the software engineering profession, many computing professional organizations are active in a limited number of countries. Most
of these computing professional organizations have their own code of ethics (CoE) or code of conduct (CoC) and these codes are thus national in scope [1]. The codes aim to guide professionals in maintaining high standards in their work, are well as their education. According to a 1996 study referenced\(^1\) in [2] as much as 78% of IS professionals use these codes in their ethical decisions. At the same time, ethical reactions and attitudes are influenced by culture and national origin [3, 4]. As a result of this and the national scope of the codes, ethical decision making is a complex endeavour in the current global IS practise [1]. We expect that the codes have not kept up with the globalization of the profession. In this paper we explore the possible difficulties computing professionals may encounter during their ethical decision making. We do so by analysing the codes of ethics of five professional organizations and applying these codes to three case studies. We characterize our study by the following two research questions.

1. Do the studied codes specify culture-relative imperatives that could hinder global software engineering?

2. Do the studied codes provide adequate ethical guidance for IT professionals in global interactions?

## 2 Related Work

To our current knowledge there exist no studies that take a practical approach to identify problems for global software engineers in computing professional codes of ethics similar to ours. Earlier work does compare codes [5], even in international settings [2, 1] and will be discussed more extensively in the final paper than is presently done below. Work that combines codes of ethics with cultural influences can be found for example in [6], which studies the views of western European accountants on actions prescribed by codes of conduct based on their country of origin and culture.

Case studies exist which review the ethical stance of different cultures on specific issues, for example, intellectual property rights [??], but these studies do either not include codes of ethics of computing professional organizations or do not have the goal to criticize these. Specific in another way are the case studies in [7], which focus only on the ACM code and how it may be interpreted.

### 2.1 Comparing Codes

Oz’s 1993 paper reviews four codes of US computing professional organizations finding flaws, moral dilemmas, and points for improvement [5]. We differ from [5] in that we do not limit our study to US codes.

In their study comparing 27 international CoE Joyce et al. found only 8 themes that were common to more than 50% of the CoE [2]. […] Compared the work by Joyce et al. our work aims to identify problems encountered during ethical decision making in an international context, while their work mainly focusses on the content of the codes.

\(^1\)To the reviewer: we have not yet been able to access the original publication due to limited subscriptions of our library, Pierce and Henry, Computer ethics: The role of personal, informal, and formal code Journal of Business Ethics 15 (1996), pp 425-437.
The third closely related work is that of Wheeler in 2003 [1]. She compares the codes of the ACM, the British Computer Society (BCS) and the Australian Computer Society (ACS) to find differences and similarities. Our work differs from [1] in that we put more emphasis on how codes are used in a global setting and that we selected the codes for our study based on cultural differences.

2.2 A Global Code

There are also voices that suggest to unite everyone by one global code of ethics [8, 1]. Davison on the contrary does not believe it is possible to establish a global code due to differences between nations and cultures [9]. His concerns are supported by the difficulties IFIP experienced in the 90s when it attempted to establish a consensus document to serve as a base for the development of codes by member bodies [2].

We consider the views of Brey [10] and Wong [11] more balanced. They both acknowledge that a universal ethic would be ideal, but respect that in practise this can only be implemented as an extension of the local moral systems [10] and that we should avoid ethical imperialism (i.e., force ‘our’ system onto another culture) [11].

3 Selection of CoE

In our study we compare five CoE, those of: the Association for Computing Machinery (ACM) [12], Computer Society of India (CSI) [13], Hong Kong Computer Society (HKCS) [14], Information Processing Society of Japan (IPSJ) [15], and Engineers Ireland (EI) [16]. Only five codes were selected to limit the study to a manageable size. The codes are chosen based on the role of their organization’s home country in the GSE arena, as well as variation in culture. We believe that the cultures of the selected codes vary enough to give us meaningful insight during our case studies. In this Section of the final paper we will include a short rationale for the selection of these organizations.

4 Static Code Analysis

In this Section we provide our answer to the first research question we posed in the Introduction: Do the studied codes specify culture-relative imperatives that could hinder global software engineering? To do so we made a casual comparison of the content of the five codes. Our assumption is that if an imperative is culture-relative it will not appear in all codes. We will discuss the differences that caught our attention and other issues we noted while studying the codes. Note that this does not capture culture-relative interpretations of imperatives, e.g., the difference between respecting privacy in the US and respecting privacy in Japan. It is to capture these problems that we include the case studies in Section 5.

Comparing five CoE we find that only one of them asks to consider cultural differences. A number is culturally bound, and we expect all will be interpreted differently even when imperatives match. Yet, we found no imperatives that directly (by formulation) impede inter-cultural collaboration. We suggest that
the codes give too little consideration to the complexity of ethical decisions in a global software engineering setting.

5 Employing the Codes

In this Section we will apply the five selected CoE to three case studies. In this way we hope to decide whether the studied codes provide adequate ethical guidance for IT professionals in global interactions. Below we formulate our case studies as three questions that one might ask him-/herself in a global software engineering (GSE) project.

1. Developing a medical system for deployment in several countries across the globe, should I be aware of all legal requirements?

2. How do I design my system so that it respects the expected level of privacy?

3. May I say ‘yes’ to an assignment I receive from a German customer when I am uncertain that I can complete it?

6 Concluding remarks

Our primary recommendation for computing professional organizations is to revise their CoE to reflect the advance of GSE.

References


