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IT Failure and Professional Ethics: The One.Tel Case

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Abstract

Information technology practitioners are required to make calls of judgement in both a technical and a professional capacity. Professional codes of conduct and codes of ethics are intended to provide guidance in making such calls of judgement. This paper looks at the Australian Computer Society code of ethics in the light of the information technology strategies employed by the Australian telecommunications company One.Tel Limited. The failure of the company can be seen at least partly as an information systems failure, in particular the failure of its billing system, and we examine where IT practice at One.Tel might have deviated from the ACS code of ethics and discuss issues concerning this deviance.

Keywords: professional ethics, IT failure

1. Introduction

We previously examined (Avison and Wilson, 2002) the information technology strategies employed by the Australian telecommunications company One.Tel Limited and assessed the extent to which a failure of those strategies may have contributed to, or precipitated, the downfall of the business. However, this case also raises issues of the professional behaviour and ethics of information technology personnel and management at One.Tel Limited.

The One.Tel company was founded in 1995, and ceased trading in 2001. During its relatively brief existence, One.Tel occupied a position in the second rank of Australian telecommunication companies. The notoriety that it gained probably exceeded its position in the market place. The company had a number of high profile directors, and was always known for promoting itself very effectively. One.Tel was declared insolvent in June 2001 and has since been liquidated. Much has been written in the press about the reasons for One.Tel's rapid descent into insolvency. Most of the material has focused upon the apparent failings of the company's high profile joint managing directors, Jodee Rich and Bradley Keeling (and the involvement of the sons of the media tycoons Rupert Murdoch and Kerry Packer). As Barry (2002) and others have made clear, there can be little doubt that a number of management decisions were made which now appear seriously misguided. However, IT problems, especially those associated with the billing system, were a part cause of the demise of the company.

In this paper we re-examine the One.Tel case from the perspective of possible deviances in following the codes of ethics recommended by the relevant computer society, the Australian Computer Society (ACS). Several papers have been published applying codes of ethics to realistic case studies or scenarios (Burmeister, 2000; Krie and Cronan, 2000; Anderson, Johnson, Gotterbarn and Perrolle, 1993; Dejoie, Fowler and Paradice, 1991). Whilst useful as examples, the guidance provided by professional societies and in papers using realistic case studies or scenarios cannot replicate the real pressures of making ethical decisions in the work place. This paper raises ethical dilemmas in a real life situation, that of One.Tel Limited. In

the next three sections, we will give an overview of IT codes of ethics, provide a brief history of One.Tel, and then relate aspects of the One.Tel IT failure to the possible lack of adherence to the ACS professional codes. The third section will follow the style of Burmeister (2000), but will discuss the implications of real life situations rather than hypothetical ones.

2. IT Codes of Ethics

Professions such as law, medicine and engineering typically publish codes of conduct that members of the profession are expected to uphold and follow. In some cases the professional body enforces these codes. Perhaps the most well known is the medical profession's Hippocratic Oath – doctors face being barred from practice if they transgress this professional code.

All the major IT professional bodies publish codes of ethics, for example, the Association of Computer Machinery (ACM, 1999), the Australian Computer Society (ACS, 2000) and the British Computer Society (BCS, 2001). In all cases, compliance with the IT professional codes is voluntary, as IT practitioners are normally not required to be a member of a professional society in order to practice (the professional bodies are collaborating to discuss certification of software professionals but there is as yet no agreement to a industry-wide approach). The IT codes are merely "intended to serve as a basis for ethical decision making in the conduct of professional work" (ACM, 1999). Thus, unless transgression of codes of ethics coincides with lawbreaking, there would seem to be no real penalties.

As we are discussing One.Tel, an Australian company, in this paper we will refer here to the ACS code of ethics. This begins with a statement of purpose:

"An essential characteristic of a profession is the need for its members to abide by a Code of Ethics. The Society requires its members to subscribe to a set of values and ideals which uphold and advance the honour, dignity and effectiveness of the profession of information technology." (ACS, 2000)

Barroso Asenjo (1997) identified four underlying principles in IT professional codes: privacy, accuracy, property and accessibility. The codes of the ACM, ACS and BCS all reflect similar values (Burmeister, 2000) and are summarised in Table 1. Burmeister (2000) comments that "At first glance they appear quite different, but they address very similar issues confronting IT professionals throughout the world". All three emphasise the need to consider the implications of professional work – "the effect of the Code of Ethics is to create for every professional member not just the right, but the duty, to regard the implications of their work as part and parcel of their application of IT" (Clarke, 1990).

Langford (1995) identifies three ways in which professional codes are useful as they:

- Assist professionals in identifying and resolving ethical issues before problems actually arise in practice;
- Lend support and justification to the actions of professionals faced with ethical issues that are covered by the code;
- Assist the professional body in resolving breaches of the code by member professionals.

Table 1: Underlying Principles of IT Professional Codes
(adapted from Burmeister, 2000, p110)

ACM	ACS	BCS
General moral imperatives	Priorities	The public interest
More specific professional responsibilities	Competence	Duty to employers and clients
Organisational leadership imperatives	Honesty	Duty to the profession
Compliance with the code	Social implications	Professional competence and integrity
	Professional development	
	Computing profession	
http://www.acm.org/constitution/code.html	http://203.112.115.72/acs/events_admin/static/national/gen_policies.htm	http://www1.bcs.org/portal/showsection.asp?sectionid=235

Despite their importance and potential usefulness, professional codes are not necessarily easy to apply in practice (Martin and Schinzinger, 1995; de Ferranti, 2003). For this reason, the professional societies also publish codes of conduct, which aim to interpret and elaborate the codes of ethics as "It is understood that some words and phrases in a code of ethics are subject to varying interpretations, and that any ethical principle may conflict with other ethical principles in specific situations." (ACM, 1999). Recent articles have commented on how these codes are accepted (Weckert and McDonald, 2003) and how they are applied (de Ferranti, 2003).

We suggest that in the case of One.Tel, professional codes might have made the success of the company and the IT systems more likely (or, at least, lessened the chance of failure of its basic systems, such as the billing system). We do not suggest that staff at One.Tel were or were not members of the ACS nor that the ACS code of ethics was applied at One.Tel. Our aim is to discuss the implications of the application of professional codes of ethics in real life situations rather than hypothetical ones, showing that they do apply but that political realities can prejudice strict adherence to them.

3. The One.Tel Case

3.1 One.Tel Limited

A complete history of One.Tel Limited is available in Barry (2002). An analysis of the IT failure and the contribution of the failure of the billing system to the eventual collapse of One.Tel itself is available in Avison and Wilson, 2002.

One.Tel used to pride itself upon its enlightened management techniques. The company operated a flat non-bureaucratic organisational structure, and was organised into small functional teams. Each team was regularly measured against a set of key performance indicators, and bonuses were paid on achieving them. The directors worked in hands-on mode, and there was almost no middle management (One.Tel Annual Report, 2000). This organisational approach served two main purposes. It was a major differentiator compared to the competing telecommunications companies, and it was also designed to maximise staff productivity at minimum cost. All offices were open-plan and brightly painted to provide a cheerful motivational atmosphere. One.Tel tried very hard to build a "can-do" mentality, where teams were encouraged to work outrageously hard to achieve desired results. There is evidence that in the early years this approach met with considerable success. Within the IT group for example, a number of quite sophisticated systems for such a young company were developed in an unusually short time frame.

3.2 Information Technology at One.Tel

Information systems development at One.Tel exemplified the "Initial" level of maturity described by the Carnegie Mellon University's Capability Maturity Model. The characteristics of this level are "chaotic, ad hoc, heroic; unorganised, uncoordinated; high variance, unpredictable, crisis management" (Paulk, Curtis and Chrissis, 1993). This lengthy description fits well the approach to systems development that operated within One.Tel. The senior IT management style depended on cajoling, which may sometimes have been seen as bullying to produce results. More significantly, the IT management was entirely non-technical and non-participatory. The teams of young and highly-paid technicians thrived in this unconstrained environment. Systems were delivered in quick time for billing, call centre, dealer management, and debt collection, among many others. Only two significant systems were outsourced: the financial system and a data warehouse used to generate key performance indicators.

In this paper we emphasise the billing system as exemplar of the One.Tel approach to information systems. The One.Tel billing system was one of the first systems to be developed when the new company commenced trading in 1995. The billing system was designed and developed entirely in-house by a team of young and enthusiastic programmers and it was a classic representation of the One.Tel approach to building systems.

In the euphoric atmosphere that prevailed within One.Tel in the early years, the systems developers acquired a high reputation and status. Every time some critical new functionality was required, the development team produced a champion who would work night and day to produce a result. However, specifications, documentation and standards suffered in this atmosphere. This lack of discipline was understandable and not unusual at this stage in the growth of the firm and its IT systems, but it was to become very problematical, particularly in the case of the billing system. Companies depend on the unfailing timeliness and accuracy of this system for their cash flow, and One.Tel was no exception. In the long term, some serious flaws in the billing system at One.Tel revealed themselves (Avison and Wilson, 2002; Barry, 2002):

- Long-term dependence upon an inadequate design.;
- Lack of checks and balances.;
- Lack of prioritisation and forward planning.

The failure of billing was only one indicator of failure generally. One senior accountant suggested that 'The place was a joke. There were no structures, no accounting systems, no

processes and no controls' (Barry, 2002, p185). David Barnes, the group financial controller, finally resigned stating he was not prepared to do what his bosses were asking, and that he considered it completely unethical (Barry, 2002, p255). Thus business ethics generally were not strong, though in this paper we report on that of the IT staff in the context of the ACS code of ethics.

The bonuses that applied to the IT development staff were linked to code delivered by an agreed date. The normal case was for a developer to work flat out to write and test his own code and release direct into production, all by the due date. At this point he could get the task signed off and apply for his bonus. However this practice is fraught with risk. There is a significant incentive to deliver code by a particular date no matter how shoddily written, with no documentation, and with the most cursory testing.

By mid-2000 the billing system was crashing continually. But it was the six weeks when One.Tel was unable to send out any bills at all because of the new Goods and Services Tax (GST) that was particularly disastrous. GST was introduced in July 2000, but this caused run times to expand by around 50%. The billing system depended upon one cycle being processed every three days. If the cycle processing time exceeded three days, bills were inevitably produced late. After GST, it was taking 6-7 days to complete a bill cycle. Further, large numbers of bills were calculated incorrectly and needed to be reprinted.

While a rectification team was trying to improve throughput, two further complications were added to the system. Firstly, the data replication team launched their solution, which further increased the load on the struggling system. Secondly, the NextGen mobile team finally completed their input to the billing system, three months behind schedule. This introduced yet more loading and another round of incorrect bills, which needed re-calculation.

At this point, late in the year 2000, the company realised that it had a crisis on its hands and maintenance and improvement of the billing system became the absolute priority. However, the system never recovered from the GST problems in July 2000 and from that time onwards the production of bills was always from three to six weeks behind schedule.

4. Applying Codes of Ethics: The One.Tel Case

Burmeister (2000) applied the ACS code of ethics to nine realistic cases that had been previously used by Anderson *et al* (1993). Each of the case studies were presented indented and in italics, followed by the application of the ACS code of ethics. We adopt the same style here, presenting aspects of a real life situation from One.Tel indented and in italics, followed by the application of selected parts of the ACS code of ethics that do not appear to have been adhered to in this case. The case study details have been taken from and are further discussed in One.Tel Annual Report (1999, 2000), Avison and Wilson (2002) and Barry (2002). This enables a discussion in relation to actions and decisions taken at One.Tel.

4.1 ACS Code: Priorities

In 1999 when One.Tel received its massive injection of funding and started on the road from junior local telecommunications company to a full-service international operation, the senior IT management within One.Tel apparently failed to recognise the weaknesses within the billing system in sufficient time to take any effective corrective action or was unable to communicate this to management effectively. It is true that a great deal of remedial work took place in the last nine months of the system's life, but this was merely 'band-aiding' and attempts to improve throughput.

The first principle "I must place the interests of the community above those of personal or sectional interests" and in particular principle 1.1 "I must endeavour to preserve continuity of information technology services and information flow in my care" have possibly been violated. At the time when funds were plentiful, and substantial change and growth was in prospect, the IT management needed to develop a long-term plan with One.Tel's management. However, no such planning took place, the leadership presumably believing that the freewheeling management-by-crisis approach could continue to deliver systems to serve the company. The changes that occurred in the telecommunications environment were to have a significant impact upon the billing system. The IT management apparently failed to recognise the inability of the billing system to cope with substantial increases in volume and complexity. As noted by Elliott and Gluyas (2001) "One.Tel ... failed to reinvest in the advanced customer management systems needed for a mass consumer market". It does seem that 'information technology services and information flow' did not keep up with requirements of the company, and this could be interpreted as a failure of IT professionals to follow the ACS code 1.1.

4.2 ACS Code: Competence 1

In the euphoric atmosphere that prevailed within One.Tel in the early years, the systems developers acquired a reputation and a status that perhaps exceeded their abilities. Every time some critical new functionality was required, the development team produced a champion who would work night and day to produce a result. However, the senior management did not have the experience to know that these results were being achieved without specifications, documentation, or standards.

The second principle "I must work competently and diligently for my clients and employers" and in particular principles 2.1 "I must endeavour to provide products and services which match the operational and financial needs of my clients and employers", 2.2 "I must give value for money in the services and products I supply", and 2.3 "I must make myself aware of relevant standards, and act accordingly" have possibly been violated. This lack of discipline seems highly irresponsible, particularly in the case of the billing system. The company depended upon the unfailing timeliness and accuracy of this system for its cash flow. The fact that this was not achieved was one cause of the downfall of the business. Hard work (diligence) was apparent and commendable (though at least in part a consequence of an inappropriate reward system), but these problems may well suggest that the IT professionals were not competent to do the job asked of them, that is, there was a failure to comply with the ACS codes 2.1, 2.2 and 2.3.

4.3 ACS Code: Competence 2

As we have seen, the system failed to provide the most basic financial integrity checks. It was impossible to reconcile the value of bills produced in a billing run, either backwards to the calls loaded from the carriers, or forwards to the value finally posted to the General Ledger. There were no checks at each stage of value loaded, value billed, or value posted and there was only the most basic visual checking on bills.

The second principle "I must work competently and diligently for my clients and employers" and in particular principles 2.4 "I must respect and protect my clients' and employers' proprietary interests" and 2.6 "I must advise my clients and employers when I believe a proposed project is not in their best interest" have possibly been violated. Again, the IT management failed on a number of occasions to plan ahead and to allocate proper priority to

major enhancements required to the billing system or they were not allowed to do so. As we have seen, two conspicuous examples of this were the implementation of the Goods and Services Tax (GST) and the introduction of the NextGen mobile service, both in 2000. The ACS requirement 2.6 that 'I must advise my clients and employers when I believe a proposed project is not in their best interest' surely implies that amendments to the billing system should have been seen as inappropriate and a new design and development project started that was more appropriate to the new needs. The interests of the company (2.4) were not well served by the IT staff.

4.4 ACS Code: Honesty

The original system was designed and developed by inexperienced programmers under conditions of great stress and urgency. The resulting system should have been viewed by management as only a short-term solution. However, the basic system remained in production, relatively unchanged, until the termination of business in 2001. The system lacked flexibility, and was supported by inadequately designed infrastructure. It became impossible to accommodate, within the database, the complex sales plans which were an important part of One.Tel's marketing strategy.

The third principle "I must be honest in my representations of skills, knowledge, services and products" and in particular principles 3.1 "I must not knowingly mislead a client or potential client as to the suitability of a product or service", 3.2 "I must not misrepresent my skills or knowledge", 3.3 "I must give opinions which are as far as possible unbiased and objective", 3.5 "I must qualify professional opinions which I know are based on limited knowledge or experience" have possibly been violated. The system became increasingly dependent upon hard-coding to provide functionality. Consequently the individual programs became exceedingly complex, and the system increasingly difficult to maintain. The billing system was seen as non-glamorous and technically non-challenging and was starved of resources. Again, there seems to have been a discrepancy between the ACS code and what occurred at One.Tel. The product was not suitable (3.1, 3.3) and should have been stated as such either by being honest about the system or honest about a lack of knowledge to understand its inappropriateness (3.2, 3.5).

4.5 ACS Code: Social Implications

Perhaps the most damning effect of the failure of the billing system was that it brought the company into serious disrepute. For many customers, the bill is the only regular contact that they have with their telecommunications supplier, and frequently it is all the contact they need or want. If the bills do not appear, or are suspected to be inaccurate, then there will be a general loss of confidence in the business. The media then fuelled this loss of confidence with many derisory articles about One.Tel and its problems.

The fourth principle "I must place the interests of the community above those of personal or sectional interests" and in particular principle 4.4 "I must endeavour to understand, and give due regard to, the perceptions of those affected by my work" have possibly been violated. Again, this is at least partly as a result of poor IT solutions that had negative impact far beyond those in the company to its customers, shareholders and the public at large. Thus, 'the perception of those affected by my work' deteriorated and code 4.4 was not followed.

5. Conclusion

As mentioned earlier, previous studies applying codes of ethics have relied upon realistic case studies or scenarios. Whilst illustrative of the general principles, and some of the issues of,

applying codes of ethics, such cases are often too simplistic and present relatively 'neat' situations that map directly to particular sections or paragraphs of the referenced code of ethics. Our aim is to discuss the implications of the application of professional codes of ethics in real life situations rather than hypothetical ones, showing that they do apply but that political realities can prejudice strict adherence to them.

In describing the billing system at One.Tel with respect to aspects of the ACS codes of ethics in Section 4, it could be argued that there is sufficient evidence to suggest a flagrant disregard of the ACS codes. IT practitioners and management at One.Tel were aware of many of the problems documented here, but the 'can-do' philosophy of the company meant that warnings were routinely ignored in the belief that the freewheeling management-by-crisis approach could continue to deliver systems to serve the company. Further, even if IT management had pressed the issue, top management may well have suggested that such negative comments (and those people making them) had no place in One.Tel. Thus, simply to blame IT staff, IT management or their business managers and directors, would be naïve. Real situations, like that at One.Tel, are very complex and fuzzy. IT staff were frequently too busy either working on the latest rush project or applying for a position elsewhere to concern themselves with codes of ethics (even if they were members of the ACS and aware of their existence). Would reference to a code of ethics have made any difference either to the problems becoming apparent at One.Tel or the individual's job prospects elsewhere? The answer is surely 'no'. There was a disregard at One.Tel to such codes and, in truth, there is a general disregard to them in the wider business world. Unless such codes have some 'teeth' (as, for example, in the medical profession) future 'One.Tel billing systems' are likely to re-occur frequently.

Ethical problems of the nature presented here will remain a potential issue for the IT industry as compliance is problematic when membership of a professional body is not a requirement of practice. "In the case of IT professionals, except in breaches of the law, self-regulation is all there is" (Burmeister, 2000, p108). Voluntary self-regulation is only possible when practitioners are aware of and understand the code, how it might be applied and they think it worth applying. It is also only possible if top management supported such adherence by IT professionals. As we have shown, the culture at One.Tel was not supportive of such a tradition.

How can this be changed? Kreie and Cronan (2000) suggest that companies can influence the behaviour of their employees. Companies should perhaps establish their own code of ethics, based on relevant professional codes, and should conduct ethics training so that employees are aware of what is expected of them and what support mechanisms are available to them (procedures to follow, people to talk to etc.). "Having employees evaluate and discuss ethical scenarios would help employees understand the complexity of certain ethical dilemmas and help employees learn company guidelines for ethical behavior" (Kreie and Cronan, 2000).

The history of One.Tel might provide a useful real case study for discussion in such enlightened organisations. Conventional case studies tend to simplify, but the One.Tel case shows real complexity. It is perhaps easy to judge the IT staff at One.Tel negatively, but the present authors would also have had difficulty following the ACS codes in such an atmosphere.

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