



Ethical IT Decision-Making: Critical Questions to Ask

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According to a 2002 study by the National Institute of Standards and Technology software errors cost American businesses \$59.5 billion a year.¹ Half of U.S. software projects fail, and more than 80% exceed both deadlines and budgets. In the current economy, companies can't afford such mistakes. Surprisingly, ethical approaches to IT projects, usually the last criteria to be considered, can make all the difference.

At the beginning of IT Projects, critical questions typically go unasked, especially questions relating to the ultimate effects of the technology to be installed. Will a new system, for example, streamline work for all users, or just some of them? These ethical (not technical) questions must be asked if IT projects are to succeed. They are ethical not technical questions because they strike at the heart of the people to be served, as opposed to merely increasing features and bells and whistles. They demand that end users truly be SERVED, not just placated.

When these questions are forgotten, or ignored, the likelihood of a project's ultimate success dramatically falls. While it is generally agreed in business that IT project outcomes can be significantly improved by good project management, most project methods do not include analysis of the impact of activities on relevant stakeholders. For this reason, stakeholder impact analysis is completely overlooked in most projects.

In order to succeed at a basic level, IT must align with business needs and be timely and affordable. To excel, it must have a directly positive effect on stakeholders. Also, it's well documented that the costs of design flaws increase exponentially as projects progress. Yet by assessing the impact of activities, unforeseen risks and problems can be identified and mitigated as early as possible. Such a procedure reduces project risks, allowing limited resources to be deployed where they are most needed, saving time and money in the long run.

Why Ethics?

Viewed through the proper lens, IT planning can be seen as an ethical problem, in which resources are limited, agreements require thoughtful attention, and consequential damage can be extremely dangerous. Thus many IT project failures can be avoided through informed, comprehensive ethical planning methodologies. This makes application of ethics more practical than traditional "non-ethical" approaches, leading ultimately to

¹ See

<http://www.computerworld.com/softwaretopics/software/story/0,10801,72390,00.html>

decisions benefiting all parties, and resulting in high levels of customer satisfaction, employee retention and profits.

A thoroughgoing analysis will evaluate project impact on a broad range of stakeholders. During the nineties, however, the primary stakeholder in the corporation became the stockholders, a.k.a. “shareholders.” This limited view has led some corporate executives to disregard stakeholders such as employees, vendors and even customers. In extreme cases, such as Enron and WorldCom, basic accounting principles have been ignored in order to boost shareholder value, at the expense of other stakeholders and, ironically, the shareholders themselves. One glance at the falling values of unethical companies makes it clear that this approach benefits no one.

Alternatively, an ethical approach embraces many groups of people, without whom the business couldn’t exist. A broader list of stakeholders includes customers, employees, vendors, local community, supply chain, partners, to name only the best known. Ignoring this list can be costly.

Early stakeholder identification and analysis is a form of risk management. Although new approaches to auditing IT projects utilize stakeholder analysis to identify, evaluate and mitigate risks, this step often comes too late in the game. In software development, for example, the first step is getting project management practices in place, running feasibility analysis in relation to stakeholders, and building a requirements definition; step two is an extensive impact analysis performed for each relevant stakeholder.

Even though techniques are available to bring software project management to a level of reliability where expectations and specifications can be consistently met (e.g., the Capability Maturity Model [CMM] from the Software Engineering Institute at Carnegie Mellon), most software projects today take place at the ad-hoc level. Once organizations achieve higher levels of the CMM, the Next Big Change needed for widespread improvement of project outcomes will be to apply rigorous stakeholder impact analysis.

Stakeholder impact analysis can be facilitated by a tool known as a “Software Development Impact Statement (SoDIS),” developed by information ethicists Don Gotterbarn and Simon Rogerson. SoDIS uses the work breakdown structure of a project, identified stakeholders and a set of questions to identify unforeseen project risks.

Project impact analysis should in fact be done several times during a large IT project, and at least twice for smaller projects. The first thorough audit should begin once the initial project plan is in place, the last just before rollout. Built-in intermediate audits on large projects have been shown to identify risks before they threaten outcomes.

How computer systems “subsume” decisions, and make them continuously active “Subsumption ethics” is the process by which decisions become incorporated into the operation of information technology (IT) systems, then subsequently forgotten. IT systems by nature repeat operations over and over. Should those operations produce unethical impacts, the system will continue to execute them again and again. Unlike a

human operator, no point exists in the cycle where the machine will pause to ask, “SHOULD I be doing this?”

Subsumption in general is the process of building larger components from smaller ones. In this sense, a cell subsumes DNA function, American common law subsumes judicial decisions, and a hairdryer subsumes an electric motor. But subsumption in computers is a bit different as there is so much more subsumption going on than in simple machines.

In computer systems, small components are developed and tested. Once they are up and working reliably, they are subsumed into larger systems. The larger systems, in turn, are subsumed into still larger systems. Once components, subsystems and applications are operating, the subsumed process becomes invisible and unavailable to the user, what computer ethicist James Moor calls the “Invisibility Factor.”ⁱ

From binary storage to the structure of databases to the content of Web pages, IT components are “subsumed” into larger and larger systems. Each component is forgotten as it is subsumed, and requires no further attention unless it fails. It is frequently assumed that systems are extremely malleable -- people tend to think that changes to software should be easy because programming is just a set of instructions-- the principle of subsumption makes it clear that changing base components is instead like moving a building’s foundation, requiring basic (and often monumental) changes to entire systems. The Y2K problem, for example, was the result of subsumed date processing. There are thousands of layers of subsumption in a typical computer system.

Habit in general is a subsumption process. The Greek word *ethos*, from which we derive “ethics,” can be translated as “habit” and Aristotle himself called habits the result of accumulated decisions. Therefore, *ethos* and subsumption are closely related, permitting even Aristotle’s ethics to be easily applied to IT.

Ethical Impacts of Design Decisions

Because small design decisions lead to small elements within a system, and because these small elements become subsumed into larger system components, design decisions often have ethical components, whether or not the designer is explicitly aware of them. For example, did you know that the tab order of a data entry screen on a “Therac 25” radiotherapy machine proved to be the cause of injury and death among patients in the late 1980s? Thus seemingly small design decisions can dictate the ethical impact of resulting systems, especially as the full system swings into operation and flawlessly executes deadly programming code.

Such “subsumed objects,” because of the “Invisibility Factor,” can often not be identified retroactively, and moreover grow in complexity over time. As the Therac 25 case demonstrates, this can sometimes result not merely in inefficiency, annoyance, productivity impediments or thwarted profits—but physical injury and death. Consider for a moment that automobile engines, nuclear power plants, the stock market and airplanes all rely on software.

The Questions to Ask

So what critical questions must be asked if ethical decision-making is to drive a major IT project? Let's start by assuming that the basic project management questions have been asked. If not, be sure to ask at least the following:

- Has a project development methodology been selected? If so, what is it?
- Have project scope and deliverables been defined? Can we write them down? Do we have verifiable milestones and standards of completion?
- Are the project team, the project manager and all project vendors fully qualified? Are communications channels clear? How do we know?
- Have project financial, schedule, quality and risk controls been established? Are monitoring processes in place?
- Do we have a change management system? Does everyone understand it?

Next, frame ethical impact analysis questions according to the following SoDIS process*:

- For each stakeholder, might the project, tasks or deliverables...
- Fail to meet the stakeholders' needs?
- Cause loss of information or productivity?
- Compromise security or privacy?
- Create safety risks?
- Compromise integrity or cause a conflict of interest?
- Require unnecessary expenditure or be unfeasible?
- Require deception?

IT projects are difficult at best. If project management techniques are combined with stakeholder impact analysis, and dynamics of subsumption ethics are understood from the start, all the players in a project have a chance of being genuinely served. But if not, IT projects will continue to fail dramatically, stakeholders will continue to be dissatisfied, and opportunities will continue to be missed.

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*For more information on SoDIS, visit <http://www.ITQual.com/docs/SoDIS-Process.pdf>.

¹ See James H. Moor "What Is Computer Ethics" in Johnson & Nissenbaum, Computers, Ethics and Social Values (Upper Saddle River, New Jersey: Prentice Hall, 1995), p. 13.