

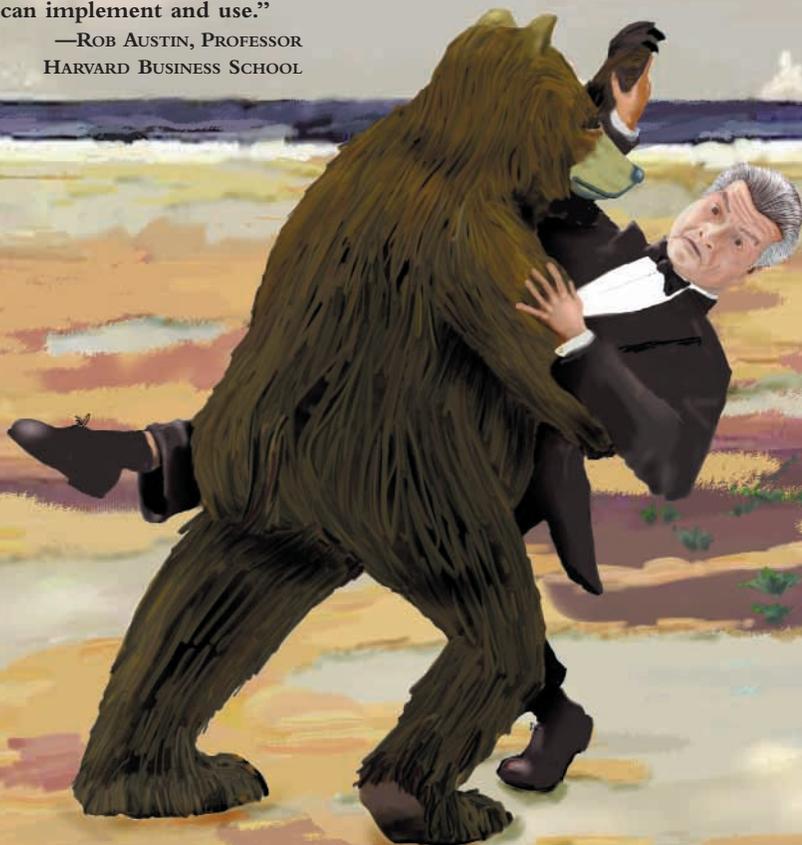
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Waltzing *with* Bears

MANAGING RISK ON SOFTWARE PROJECTS

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—THE EDITORS

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PROLOGUE

THE ETHICS OF BELIEF

London, April 11, 1876: The scene is Grosvenor Square, just before 10 p.m. Around us, on the sidewalks of the square, Victorian gentlemen, many in top hats and evening clothes, are making their way toward the ornate entrance of the Grosvenor Hotel. We follow them in and are guided toward the upstairs parlor, where the monthly meeting of London's elite Metaphysical Society is to take place.

The Society's members include Alfred Tennyson, William Gladstone, Thomas Huxley, Cardinal Manning, Arthur James Balfour . . . in short, the cream of London intelligentsia. The subject this evening is, as always, philosophy. Before the proceedings begin, the participants are talking in small groups, picking up threads of the last meeting's discussion. As we wander among these clusters, we hear such terms as ontology, tautology, and epistemology. Some of the discussions are heated.

There is a certain tension in the room this evening, due to the selection of the meeting's featured speaker. He is the Society's newest member, William Kingdon Clifford. Clifford is a professor of logic and mathematics at London's University College. He is considered an iconoclast, possibly an atheist, and is known to be a fiery debater. With his selection, he has become the youngest person ever accepted into the Society.

By convention, each new member must prepare a paper and read it to the membership at his first meeting. Only the title of

Clifford's paper, "The Ethics of Belief," has been made public, not the paper's contents. It promises to be a stunner.

Indeed, before Clifford has even finished reading, half the room has stomped out in angry protest. The Society's Secretary has publicly resigned; it would have been his job to arrange a private printing of the paper, and this he has refused to do. The remaining members are on their feet, either cheering Clifford on or trying to shout him down. The temperature in the room has shot up markedly and the entire scene is, well, a bit *un-British*.

What was it about "The Ethics of Belief" that got the members so hot? In the essay, Clifford asserts that what you choose to believe ought not to be exempt from the ethical judgment of others. Your belief may open you to a charge of unethical behavior, depending on whether, in Clifford's words, you have "a right to believe" the thing that you believe.¹

He offers as an example the owner of an emigrant ship that is about to set sail with a full complement of passengers. The owner is bothered by worries that the ship is old and in poor condition and wasn't built very well in the first place. There is a real question in his mind about whether it can safely make another passage. With a bit of effort, though, the shipowner overcomes his doubts and persuades himself that no great harm will come from just one more passage. The ship, after all, has weathered more than a few storms in its day and always managed to limp home to port. Why not one more time?

The ship puts to sea and is lost with all hands.

"What shall we say of the owner?" Clifford asks, and gives his own answer:

Surely this, that he was verily guilty of the death of those men. It is admitted that he did sincerely believe in the soundness of his ship; but the sincerity of his conviction can in no wise help him, because he had no right to believe on such evidence as was before him. He had acquired his belief not by honestly earning it in patient investigation, but by stifling his doubts. And although in the end he may have felt so sure about it that he could not think otherwise, yet inasmuch as he had knowingly and willingly worked himself into that frame of mind, he must be held responsible for it.

¹See Appendix A for Part 1 of "The Ethics of Belief."

Clifford then goes back over the same story and alters it slightly. Suppose, he tells us, that the ship had managed after all to complete the voyage with no loss of life. Would the owner have been less guilty?

Not one jot. When an action is once done, it is right or wrong forever; no accidental failure of its good or evil fruits can possibly alter that. The man would not have been innocent, he would only have been not found out. The question of right or wrong has to do with the origin of his belief, not the matter of it; not what it was, but how he got it; not whether it turned out to be true or false, but whether he had a right to believe on such evidence as was before him.

Prior to Clifford, there was a presumption that your beliefs could never be considered in an ethical light. You could believe any damn thing you pleased. You could even believe impossible things, as the White Queen did in *Through the Looking Glass*. When Alice protests that one simply cannot believe impossible things, the Queen responds,

“I daresay you haven’t had much practice. . . . When I was your age, I always did it for half-an-hour a day. Why, sometimes I’ve believed as many as six impossible things before breakfast.”

There is probably no job on earth for which an ability to believe six impossible things before breakfast is more of a requirement than software project management. We are routinely expected to work ourselves into a state of believing in a deadline, a budget, or a performance factor that time subsequently may prove to be impossible.

We do this in a process that’s not so terribly different from when the shipowner talked himself into believing in his ship. You have almost certainly been through this process yourself one or more times. There may have been others, egging you on. Your boss, for example, asks you to consider taking on a project that has to be done by Christmas, with only three people available to work on it. You express doubts that there is enough time to get the software built.

“That’s why I picked *you* to manage the job,” your boss tells you, confidently.

The fix is in: You’ll get the job, the challenge, and the prestige . . . but you’ll have to believe in the schedule. That’s the price you pay. You swallow hard and say you’ll do it. Later, you bolster your belief. Sure, why not Christmas? Other projects have accomplished as much in as little time, haven’t they? Before long, you may find yourself actually feeling confident. Time may prove otherwise, but for the moment, you are practically sure you can get the job done.

At that moment, though, William Kingdon Clifford’s question should be coming back to haunt you. Yes, that’s what you believed, *but did you have any right to believe it?* Did you have a right to believe in that schedule, based on the evidence that was before you?

The business of believing only what you have a right to believe is called *risk management*. This essential discipline applies Clifford’s ethics of belief to any effort that is complicated by elements of uncertainty. It will guide you through that effort (a software project, for example) in a way that eliminates the fabric of little lies and self-deceptions that have so hampered your work in the past. It will become your alternative to believing “six impossible things before breakfast.”

1

RUNNING TOWARD RISK

Running away from risk is a no-win proposition. Sometimes, you come across a project that looks positively risk-free. In the past, you may have looked at such an endeavor as a slam dunk and thanked your lucky stars to be given an easy project for a change. We've had the same reaction. What dummies we were. Projects with no real risks are losers. They are almost always devoid of benefit; that's why they weren't done years ago. Save yourself some time and energy and apply it to something worthwhile:

If a project has no risks, don't do it.

Risks and benefits always go hand in hand. The reason that a project is full of risk is that it leads you into uncharted waters. It stretches your capability, which means that if you pull it off successfully, it's going to drive your competition batty. The ultimate coup is to stretch your own capability to a point beyond the competition's ability to respond. This is what gives you competitive advantage and helps you build a distinct brand in the market.

Flight from Opportunity

Companies that run away from risk and focus on what they know they can do well are ceding the field to their adversaries. The 1990's gave us some charming examples of this. There were, broadly speaking, two major things going on in the nineties:

1. Companies were moving applications and databases from the old mainframe-and-terminal mode to client/server mode.
2. Companies were transforming themselves to interact directly with their customers and suppliers in new and previously unimagined ways: via the Internet and through integrated supply chains, auction mechanisms, and disintermediated transactions.

Unfortunately, there were lots of companies that dedicated themselves substantially to the first of these and ignored the second. Once you've done one client/server conversion, the rest are easy and mechanical. You could do them in your sleep. In fact, if you spent most of the nineties doing client/server conversions, you *were* asleep. You missed the action.

A case in point is Merrill Lynch. It looked long and hard at the so-called trend of on-line trading . . . and decided to ignore it. It crossed its fingers in the hope that the era of the full-service brokerage (with fat fees and brokers who could keep you endlessly on hold) would come back, that direct trading would be only a passing fad. What a forlorn hope. Today, the full-service brokerage is as much a thing of the past as the full-service gas station. And today, Merrill Lynch offers its customers on-line trading at a reduced fee. But it took the company nearly a decade to catch on. Merrill Lynch was the latest of the Late Adopters.

The Early Adopters were Fidelity, Schwab, and E-Trade. E-Trade and its look-alikes were new companies, created to exploit the change. So, if on-line trading had turned out to be only a passing fad, E-Trade would have gone belly-up with no loss beyond the capital the company had raised explicitly to put at risk. Fidelity and Schwab, on the other hand, were well-established companies with a lot to lose. In this sense, they were not so different from Merrill Lynch. But Fidelity and Schwab were willing to take the risks.

The IT people at Fidelity and Schwab had to be aware of the risks of the new venture. Here is our two-minute brainstorm list of the risks that would have been easily apparent to Fidelity and Schwab when they began to take on Web trading in the early nineties:

- Building the system is completely beyond our capability; we'll have to learn protocols, languages, and approaches like HTML, Java, PERL, CGI, server-side logic, verification, secure Web pages, and many new technologies that we can't even name today.
- Supporting the system is completely beyond our present capability; we'll have to set up user help desks, audit trails, monitoring software, tutorials for use of the system—things that we've never done before.
- The security risks of on-line trading are truly daunting; we will be attacked by hackers and crackers, by organized crime, and by our own customers and employees.
- We may not be able to acquire the experience and talent we need to do any of this.
- We may find that the business we do via the Web is just what we would have done with the same customers at higher fees if we hadn't built the Web trading system.
- We may find that people try on-line trading and then go back to telephone trading, leaving us with a busted investment.
- We may ease our existing customers into this new mode and then lose them to competitors that cater to these newly savvy traders.

Undoubtedly, Merrill Lynch was aware of the same risks. But Fidelity and Schwab decided to run directly toward those risks, while Merrill Lynch chose to run away from them. The result was that Fidelity and Schwab grew aggressively in the nineties while Merrill Lynch struggled to stay even.

What's Different About Today?

We are in the midst of a sea change that will probably cause turmoil for the rest of our lives. The world is suddenly much more tightly connected. There is an ever broader-band web of digital connection that touches all of us: Individuals are more connected

to each other, to their companies, and to the service providers that they depend upon; companies are more connected to their clients and employees, to their markets, to their vendors, and to the government agencies that affect their work. And all of this is still evolving.

In this period of turmoil, a willingness to run risks is utterly essential. It matters a hell of a lot more than efficiency. Efficiency will make you, at best, an attractive takeover candidate—probably for a less-efficient competitor that has stolen a march on you through greater risk-taking.

Charette's Risk Escalator

Author and risk management expert Bob Charette has proposed a useful new way to think about risk-taking in today's environment. He asks you to imagine your company and its competitors as a set of down escalators. You are obliged to climb up your escalator, which is moving against you. And your competitors are doing the same thing on theirs. The faster the stairs move, the faster everyone has to climb to stay even. If you pause, even for a moment, you begin to fall behind. And, of course, if you pause for too long, you will drop off the bottom, no longer able to compete.

New competitors in Charette's perverse escalator world get to enter their escalators halfway up. Falling behind, then, guarantees that new competition will enter above you.

At the top of each escalator is a lever that will allow you to control the speed of not just your escalator, but of everyone else's as well. If you're the first to reach the lever, that shows that you're a better climber than your competitors. So, you can speed up all the stairs so that you can stay even but your competitors cannot.

It's the risks that you take that speed up the stairs for everyone else. Not taking them just assures that your world will come to be shaped and dominated by someone else. This is an era in which risk-taking is rewarded, leaving companies that run away from risk as plunder to be divided up by the others.

Ignoring Risk

Companies that seem to understand the necessity of risk-taking are sometimes prone to the following strange behavior: They try to emphasize positive thinking by ignoring the possible unfortunate consequences of the risk they're taking. This is an extreme variant of the can-do attitude. After all, risk awareness involves at least a bit of *can't-do* thinking, they reason, so it can't be good. In order to stay positive, they steadfastly refuse to consider much of the downside. If there are things that could go wrong, that would make your project a total fiasco, for example, they would just have you not think about those things at all.

Now, nobody is so stupid as to ignore *all* risk. When people do this dumb thing, ignoring risk, they do it selectively. The way it typically works is, they take elaborate care to list and analyze and monitor all the minor risks (the ones they can hope to counteract through managerial action) and only ignore the really ugly ones.

TDM: As a member of the Airlie Council, a Department of Defense (DoD) advisory group overseeing government software acquisition practices, I sometimes sit in on risk management briefings. I was particularly interested to see how one project that I'd been following from afar would deal with what I viewed as a truly daunting risk. Because it was building software to replace a Y2K non-compliant system, late delivery would be a real disaster. And I had heard that the code to be delivered was nearly six times larger than anything the contractor had ever been able to build in the time allocated for the project. The daunting risk was that the project would be late and leave the organization with no workable alternatives.

When the project manager produced a list of his key risks, I was surprised to find that not one of them had to do with schedule. In fact, the major risk in his estimate was "PC performance," the fear that the current configuration would not have enough horsepower. "But hey, don't worry about that one," he told us. "We have a plan for that, a beefed-up configuration." I quickly came to understand that if he didn't have a plan for how to counteract a risk, then he ignored it.

This is hardly a formula for sensible risk management. If you're going to run toward risk instead of away from it, you need to keep both eyes open and firmly focused on what's ahead.

Now What?

Our intention in this initial chapter is to make a case for risk-taking in general (the strategy of running toward risk, rather than away from it). We also wanted to dangle just enough of our philosophy of risk management in front of you to raise a few issues. Following are some of the questions that might be on your mind at this point, questions we'll address in the chapters and parts ahead:

- What exactly is a risk and what does it mean to manage it? (Chapter 2)
- What are the consequences of unmanaged risk? (Chapter 3)
- Why bother to invest in a different approach? (Chapter 4)
- What problems do I incur by doing risk management? (Part II)
- How do I go about it? (Part III)
- How do I achieve a balance of risk and opportunity? (Part IV)
- How do I know whether or not I have succeeded? (Part V)

THE ULTIMATE RISK MITIGATION STRATEGY

Indulge us for a moment, here, for a brief thought experiment. This is going to be good. Imagine you find yourself working at a client site in Chicago. It's a Wednesday afternoon. You learn there's a very important meeting scheduled for noon on Friday, in San Francisco. The politics of the situation dictate that you *must* be there, and the complex personalities of some of the people involved suggest that it would be a disaster to be late. You just simply have to be there on time.

You hop onto the Web and discover that American Airlines has an 8:40 A.M. departure from O'Hare with space available, and planned arrival time in SFO at 11:21 A.M. Let's see, hand baggage only, probably no line for cabs at that hour, and the traffic on 101 North is likely to be . . . not too terrible. If you catch a break here and there on flight departures, no gate holds, no backup over San Francisco, no noontime traffic snarl, you're probably going to be at the San Francisco office with five to ten minutes to spare.

But now hold on, a plan that depends on "catching a break here and there" is hardly risk-free. If you don't catch all of those breaks, you'll be late. No good. So, now you go into risk-mitigation mode. How should you alter your plan to protect yourself from the evident risks?

This is a no-brainer. We don't have to be mind readers to guess that your very first impulse is to consider *starting earlier*. That crack-of-dawn flight leaving at 6 A.M. would be a chore to

make, but it would give you a few hours of slack on the other end. Or, how about leaving the night before and putting up at a hotel near the office?

Your “project” in this case is getting to San Francisco. The more important it is that you finish that project on time, the more inclined you are to start it early. That’s probably obvious to everyone . . . aside from IT people, that is.

The Joke’s On Us

We could make a little joke about how we IT people approach risk containment compared to everyone else. That joke would go something like this:

An IT manager and a normal person are both working in Chicago on a Wednesday afternoon when they learn that they have to be in San Francisco for a noon meeting on Friday and that it’s imperative to be on time. The normal person—let’s call her Diane—takes a Thursday evening flight and checks herself into that pleasant little hotel just down the block from the San Francisco office. She has a leisurely dinner at Hunam and wanders over to Union Street to take in a film. The next morning, she has a relaxed breakfast and works on her laptop until eleven. She checks out at 11:30 and strolls into the office ten minutes early.

Meanwhile, the IT manager, Jack, has booked himself on the 8:40, Friday morning. He catches a cab midtown at 7:05 and runs into a traffic jam on the Eisenhower. He complains angrily to the cabdriver all the way out to O’Hare. The stupid driver just can’t be made to understand that it is essential that Jack make this flight. When he checks in at United, he tells the check-in clerk rather forcefully that the flight must take off and land on time, no excuses. He tells her that he will be “very, very disappointed” with any lateness. When a gate hold is announced, Jack jumps up and objects loudly. When a revised departure time is announced, he digs deep into his bag of managerial tools and delivers the ultimate pronouncement: “If you people don’t get me into San Francisco in time for my noon meeting, HEADS WILL ROLL!”

For a project with a critical delivery date, starting early is real risk-mitigation. It's probably the only effective way to contain the risk of lateness for most projects. Yes, we know, it's already too late to start your project early; it started when it started, and now you're in the soup. And you're not reading this book to learn how you might have avoided getting in the soup in the first place. You want to work your way out of it. That's all true. But the early-start option is valuable to you anyway, as you'll see below.

Gutsy and Gutless Management

First, we need to take on a bit of organizational folklore that will otherwise get in the way—the notion that initiating a project without slack is the sign of really gutsy management. On the contrary, it is a sign of cowardice.

To see this, we need to consider the circumstances surrounding a typical project kickoff decision. They might go something like this:

The economy is currently in a downspin, but it should turn around within the next two quarters. Starting now to build our new product version would give us a head start on the competition when the market comes to life again—so we should get started forthwith on the project. Only, what if the market doesn't turn when we expect it to? Maybe we'd better wait to see what actually happens. If demand picks up early next year, we can start the project then. And if it's sleepy until summer, we'll be able to coast along without project expense until then.

This is gutless management at its worst.

The gutsy manager, on the other hand, is willing to take on a bit of risk to emerge with an enhanced position if risk-taking pays off. Starting projects early enough always takes guts. It always requires someone to make a case that the market has not yet already made. It involves putting down chips on something that is not a perfectly sure bet.

It's ironic that so many projects find themselves running the risk of late delivery because managers have walked away from that other, much more important risk—making an early start.

Why the Early Start Option Is Important Even If You Can't Do It

Projects that finish late are almost always projects that started far too late. And projects that start too late are a sign of missing vision and courage at the top of the managerial ladder. When you're under the gun and being chided for not finishing soon enough, you need to be quick to note that the project was not started early enough. This is a mantra that most organizations would do well to adopt.

TDM: Early in 1996, one of my clients was the manager of a large embedded-system software project. Her job was to produce the control software for a new line of products that marketing was extremely eager to launch. The major stakeholder was a marketing manager named Hans, who had proposed the project and gotten it funded. Hans was angry when my client's team came up with a 4Q97 schedule. He had been hoping for March 31, 1997. He denounced her estimate at a public meeting as not aggressive enough, and he followed up (unfortunately for him) with the statement: "I can prove to you that beyond March, every month that this product is not ready to ship will cost this company one-hundred-ten-thousand dollars in lost profit."

I queried him on his assertion. "Hans, would that same figure apply to delivery before March thirty-first, as well? If we delivered by the end of February, for example, would that give us an additional hundred-ten-thousand dollars of profit, beyond the revenue stream that you have projected?"

"Yes," he said. "Definitely."

"And an end-of-January delivery?" I pressed on. "Would that make us yet another one-hundred-ten-thousand-dollar profit?"

"Yes," he said.

"If we could put the product in your hands today"—that was February 1996, when the project had just been funded—"would you be collecting that additional hundred-ten-thousand dollars per month for the rest of the year?"

"Yes," he said, a bit less sure of himself now.

“Well then, Hans, you obviously started this project much too late. If you’d kicked it off eighteen months ago, we could be shipping now, and all those months of hundred-ten-thousand-dollars’ extra profit . . .” I let him figure out the implications.

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“Even the most perfect construction process can’t remove uncertainty from a complex systems development project. Where there is uncertainty, there is risk. Where there is risk, there needs to be a conscious and thoughtful effort to manage it. Instead of asking, ‘How did they go about building their software?’ we can gain a lot more insight into what happened at DIA by asking, ‘How did they go about managing their risks?’

—from Chapter 3

About the Authors



Tom DeMarco and Timothy Lister are long-time colleagues as principals of the Atlantic Systems Guild (www.systemsguild.com). Other Dorset House collaborations of theirs include *Peopleware*, *Productive Teams*, and *Software State-of-the-Art*.

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—from Chapter 1

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