

## IT-ENABLED BUSINESS CHANGE: AN APPROACH TO UNDERSTANDING AND MANAGING RISK<sup>1</sup>

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### *Executive Summary*

*IT projects aimed at enabling business change have become larger and more critical in recent years. But despite improved technical functionality and reliability, there are persistent project overruns, delays, and downright failures. A recent study estimated that 30% to 70% of such projects do not live up to expectations.<sup>2</sup> This finding echoes early research on IT project implementation.<sup>3</sup> With major IT-enabled business changes, such as occur in ERP, CRM, and SCM projects, major delays and overruns can result in firms missing their revenue and profit targets. Over the years the stakes have grown but enterprises still have problems managing IT-enabled projects. Why? What can managers do about it? That's the subject of this paper.*

*I believe the problem stems from senior and project management failing to take three steps: (1) assessing the risks of the change up front (the most serious are the changes needed in the business, not the changes in the technology), (2) mitigating the causes of highest risk at the front end and as the project progresses, and (3) adjusting the method of project management to minimize the remaining risks. This assess-mitigate-adjust approach aims to minimize the risks over a project's lifecycle and thereby increase the chances of success.*

## WHY IT-ENABLED PROJECTS FAIL

Big projects can fail for many reasons – technical and business. Not infrequently, the technology itself is to blame: vendor packages don't scale up, custom software projects expand due to scope creep, or the new system bogs down from the complexity of integrating diverse products, legacy systems, and new data. While it is not easy to anticipate technical risk, at least it is containable. With the right expertise, technical analy-

sis and corrections can fix projects before they impact the business.<sup>4</sup>

But to achieve business results from technology, business change is necessary. Many things can go wrong, and these business changes are not so easily righted. Recent research, case studies, and anecdotal evidence from executives point to the growing importance of achieving business changes in concert with technical changes.<sup>5</sup>

<sup>1</sup> Jack Rocart was the Senior Editor accepting this paper.

<sup>2</sup> See McAfee, Andrew, "When Too Much IT Knowledge Is a Dangerous Thing," MIT Sloan Management Review, Winter 2003, pp 83-89.

<sup>3</sup> My research of 18 software application projects, conducted in the distant history of the computer era showed that only three were fully successful in delivering expected business results. See Gibson, C.F. and Singer, C.J., "New Risks for MIS Managers." Computerworld, April 19, 1982.

<sup>4</sup> An early and still relevant way to view technical risk assessment and project adaptation to risk by F.W. McFarlan is Chapter 10 in Applegate, L.M., Austin, R.D. and McFarlan, F.W., *Corporate Information Strategy and Management: Text and Cases*, sixth edition, Boston, MA, McGraw-Hill Irwin, 2003. For adaptations to IT project management that have evolved to improve technical delivery and also to ensure better organizational acceptance and implementation, see Fichman, R.G. and Moses, S.A., "An Incremental Process for Software Implementation", *Sloan School of Management Review*, Winter 1997, pp 39-52, and MacCormack, A., "How Internet Companies Build Software," *Sloan School of Management Review*, Winter 2001, pp. 75-84.

<sup>5</sup> For recent academic research, see Brown, Carol V. and Vessey, Iris,

Ultimately, business change means a change in the work behavior of people. Failure in business change results from not having a new work environment and not updating the skills and attitudes of employees to take advantage of that new environment. Thus, business-based project failures come from such things as not having new workflow processes, not adapting the structure of the organization to the new ways of working, not revising incentives and rewards to emphasize new goals, and keeping the old cultural practices in place even when they impede the new ways of working.

The risk of getting the wrong work behavior can be anticipated. The conditions leading to the necessary new work environment can be created through risk mitigation. Projects can be adjusted while in progress to make the changes come together for a successful end.

Nothing seems more obvious than anticipating business-based risks and focusing on managing the needed business changes in IT-based projects. Yet nothing has been more difficult, more misunderstood, and more neglected in practice.

### **How Bad Can It Get?**

Following are three examples of just how seriously an enterprise can be affected by the absence of risk assessment and business change.

*At a unionized electric utility.* Sometimes, nothing can change people's behavior. In one unionized electric utility, senior management saw an opportunity to automate the dispatching of field repair and service personnel. Management believed the dispatchers and repair people would experience little change. Indeed, the efficiency of going to a client-server desktop and a centrally accessible database log would make their jobs easier and position the company for long-term gains in efficiency and cost savings. But the union said "No way." The result was a prolonged arbitration, with academic expert witnesses testifying on both sides.

The company's representative argued that the change would be minimal in terms of mental difficulty and would benefit the staff by bringing them into the computer age. The union's representative argued that the

computer was an instrument of subversive management control that would stress the employees.

The company lost. In retrospect, company management seriously underestimated the chasm in values and perspectives between management and the union. That chasm concretely manifested itself in the work rules in the contract. The contract conflict resulted in deferring the change for many years.

*At First National City Bank.* At other times, change is possible, but management is out-of-touch with employees' resistance. At First National City Bank, the predecessor to Citibank, a major reorganization of demand-deposit accounting operations was undertaken. A published case study illustrates the timeless, basic clash that occurs when top-down-driven change meets workforce resistance – through what has come to be called "process reengineering."<sup>6</sup>

Employees were used to the customer-oriented banking culture. New managers from outside the company and the industry designed in meticulous detail new paper flow processes to replace the functional silos. They assumed the workforce would love the crisp new factory environment. Cutover was top-down and big bang. At cutover, the disgruntled and fearful workforce resisted with indifference and even acts of sabotage. The result was a blowup. The bank was unable to meet the daily exchange of paper at the Federal Reserve; books were out of balance for weeks. The aggressive, efficiency-oriented new managers were seen by their subordinates as ruthless and insensitive.

*At Cybex.* Increasingly, failure of large projects affects business performance and the careers of senior executives. In 1998, Cybex was a successful \$125 million exercise equipment manufacturer. Management decided to implement an ERP system to rationalize diverse operational systems, focus the business for future growth, and deal with Y2K.<sup>7</sup> After spending \$7 million – double the original estimate – and extending implementation to two years – six times the planned four months – operational problems began to affect sales and profits. The stock price declined to less than a fourth of its 1998 value and the CEO who had championed the project was dismissed.

Many of Cybex's ERP problems were technical. But on reflection the managers involved highlighted their severe underestimation of the business change the new system required. They realized they had too many

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<sup>6</sup> "Managing the Next Wave of Enterprise Systems: Leveraging Lessons from ERP," Vol 2 No.1, March 2003, pp. 65-77. For case studies, see Seeger, J.A., Lorsch, J.W., and Gibson, C.F., "First National City Bank Operating Group," cases (A), (A-1), (B), (B-1), Harvard Business School Case Services, 1974 and 1975, and Zuboff, S., "The Expense Tracking System at Tiger Creek," Harvard Business School Case Study 485-057.

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<sup>6</sup> Seeger, J.A., Lorsch, J.W., and Gibson, C.F. "First National City Bank Operating Group," cases (A), (A-1), (B), (B-1), Harvard Business School Case Services, 1974 and 1975.

<sup>7</sup> See the case study "Cybex: ERP, e-Business, and the CEO" by F. Paublant and C. Gibson, MIT Sloan School of Management, December 2000.

diverse initiatives and too much change in sales, distribution, and manufacturing to be absorbed all at once.

These three examples suggest that the outcomes from not anticipating and managing business change can be dire. The business risks may arise from employee resistance, inexperienced leadership, or the nature of the project. What is needed is a management approach to anticipating and mitigating the risks in all situations. This approach needs to be flexible enough to address for all the issues that can arise. After looking at one company's success in managing business change, I present such a management approach.

## SUCCESSFUL BUSINESS CHANGE: DOW CORNING'S ERP IMPLEMENTATION

In 1995, Dow Corning was a company in serious trouble.<sup>8</sup> Over fifty years of profitability, it had experienced mostly double digit growth for its owners, Dow Chemical and Corning Inc. But in 1995, this \$2.2 billion company began experiencing increasing global competition for its broad silicone-based product line. Also pressing was the infamous breast implant situation: Thousands of recipients of the product were lining up for jury trials, in many cases encouraged and led by lawyers and doctors eager to plead their case.

With increasing pressure on earnings and in the highly publicized breast implant crisis atmosphere, the Dow Corning Board of Directors named Dick Hazleton, a career company veteran, as CEO. Hazleton recognized that the breast implant situation would demand the full attention of some of his senior management team. But he also realized the importance of maintaining the short-term and long-term health of Dow Corning's underlying business. He thus led his operating committee of sixteen executives through a strategic review. Their time frame was the coming decade.

The operating committee decided to leave the business strategy intact; it had evolved and had served the company well. Instead, the focus of change would be the business processes and use of IT as a significant enabler of change. This role was new for IT. To that point, Dow Corning had experienced limited success with large, change-critical IT projects.

<sup>8</sup> See the case series, Ross, J.W., "Dow Corning Corporation: Business Processes and Information Technology," MIT Sloan Center for Information Systems Research, Working Paper #298, April 1997, and Ross, J.W., "Dow Corning Corporation: Transforming the Organization," MIT Sloan CISR, Working Paper #305, June 1999.

## Assessing the Risks of Not Changing

Hazleton and the operating committee assessed the company's risk of failing to implement IT-enabled operational change as very high. The IT organization had recently failed to build a global order-entry system, for one thing, because the analysts could not gain consensus on the system's requirements among the autonomous regional business units. Furthermore, Dow Corning had never experienced major change. Organizational decision-making was consensus-oriented. While employees supported management in the current crisis situation and were generally loyal, management knew the company culture was characterized by strong adherence to existing practices and expectations of long job tenure.<sup>9</sup>

The case for transformational change had to be made. Management thus made two key decisions. The first decision (which I call Phase 0 because it laid the foundation) was to put Charlie Lacefield in charge of both IT and the operational change program. Lacefield, a member of the operating committee, had thirty years' experience in manufacturing and engineering at Dow Corning. He would report to the Office of the CEO and would have direct access to CEO Hazleton.

The second decision, made on Lacefield's recommendation, was to acquire and implement SAP's R3 ERP. Hazleton and the operating committee committed to implement the ERP modules, with minimal modifications, and to support the associated operational changes.

## Implementing Project Pride

Lacefield called the change program "Project Pride." It unfolded in four distinct phases over three years of implementation, 1996-1999. Each phase reflected different business change risks and different types of project management.

In Phase One, Lacefield was most concerned about understanding the SAP R3 system, with a constant eye on how to ensure that employees would accept the changes down the line. He decided not to use consultants to any extent, but rather use in-house talent to both build the capability and build the commitment to the systems and the needed changes. He asked his col-

<sup>9</sup> As the breast implant problem provoked public criticism of the company, including a TV roasting by Connie Chung and determination by the head of the Federal Drug Administration that the product be taken off the market, employees voluntarily took out a 6-page ad in the headquarters town newspaper, with over 5,000 signatures under the words: "To: Dow Corning Executive Management. Your employees are behind you 100%." There later proved to be no relationship between the implants and any illness; see Angell, Marcia (M.D.), *Science On Trial: The Clash of Medical Evidence and the Law in the Breast Implant Case*, W.W. Norton, New York, 1996.

leagues for, and received, 40 of the best, most respected middle managers from operations around the world. He made them the full-time implementation team. Few had any direct IT experience, but they worked closely with Lacefield's IT function. Employing a typical Dow Corning project management approach, which is consensus-oriented and has flexible milestones, the team began to learn SAP and design work-process changes to match SAP – so that the product did not need to be modified.

Phase Two of Project Pride began during the first year, as Lacefield reacted to the limitations he saw in the consensus-learning project style. While creative learning was certainly occurring, and the team of 40 was becoming deeply committed to understanding SAP, little progress was being made on redesigning processes. Employees in the field, aware of the executive pronouncements that big change was coming, were beginning to question the lack of firm milestones and signs of progress.

Lacefield therefore took two important actions. First, he changed the project manager from one relatively comfortable with technology to a highly respected, strong, result-oriented plant manager who had previously worked for him in manufacturing. Second, he tightened project planning to become more rigid: Deadlines were set and expected to be met for a pilot implementation.

At the same time, he left the Project Pride implementation team in charge of how they would use their resources to meet the deadlines. This project approach continued through the successful, though stressful, completion of the pilot implementation. The pilot was a full cutover to SAP for virtually all operations of a recently acquired autonomous business in Europe. The success of the pilot soon resonated throughout the Dow Corning culture as a symbol of top management's determination and the capabilities of the Project Pride team.

With the pilot done, the project was in Phase Three. Lacefield recognized that project management needed to change again to enable the worldwide implementation of SAP. The broad, global scope and urgency of the project contributed to high risk, but at the same time, the corporate climate had changed and employees were now more receptive to the change.

Lacefield modified project management by strengthening the authoritative nature of his own and his lieutenants' leadership, while still permitting flexibility at the ground level. In the crucial period from 1997 into 1998, he led a relentless and unprecedented change effort at Dow Corning. He traveled extensively to

spread the word and rally the project teams implementing SAP. He personally negotiated with and pressed his executive colleagues and old personal friends to adhere to their commitment to make changes. A key change came in 1998 when Hazleton agreed to make project implementation one of the significant performance goals for the senior levels of line management. This commitment was a strong statement of support for Project Pride.

At this point, the final fourth phase was underway. Although several pockets of resistance still existed, they were generally employees trying to maintain good customer relations while meeting their operational goals – a positive form of resistance. Lacefield and the teams sped up the pace and tightened and made rigid deadlines for site-specific sub-projects. Senior management stressed the new goals. Implementation time for sites went from 18 months after the pilot to 4 months in late 1998.

In 1999, Lacefield essentially completed installation of SAP. Dow Corning became the largest successful single-database installation of SAP R3 at that time, providing global integration for the company.

## A MANAGEMENT APPROACH TO MANAGING RISK

Dow Corning illustrates successful business change management. The managers were intuitively mindful that the key to success was changing employee and manager work behavior. To use my terms, in each phase, they implicitly or explicitly

- 1) Conducted change risk assessments,
- 2) Made mitigation decisions to reduce risk, and
- 3) Adjusted the method of project management to cope with remaining risks.

These three steps constitute a general approach to understanding and managing risk.

### **Step One: Assess the Risk**

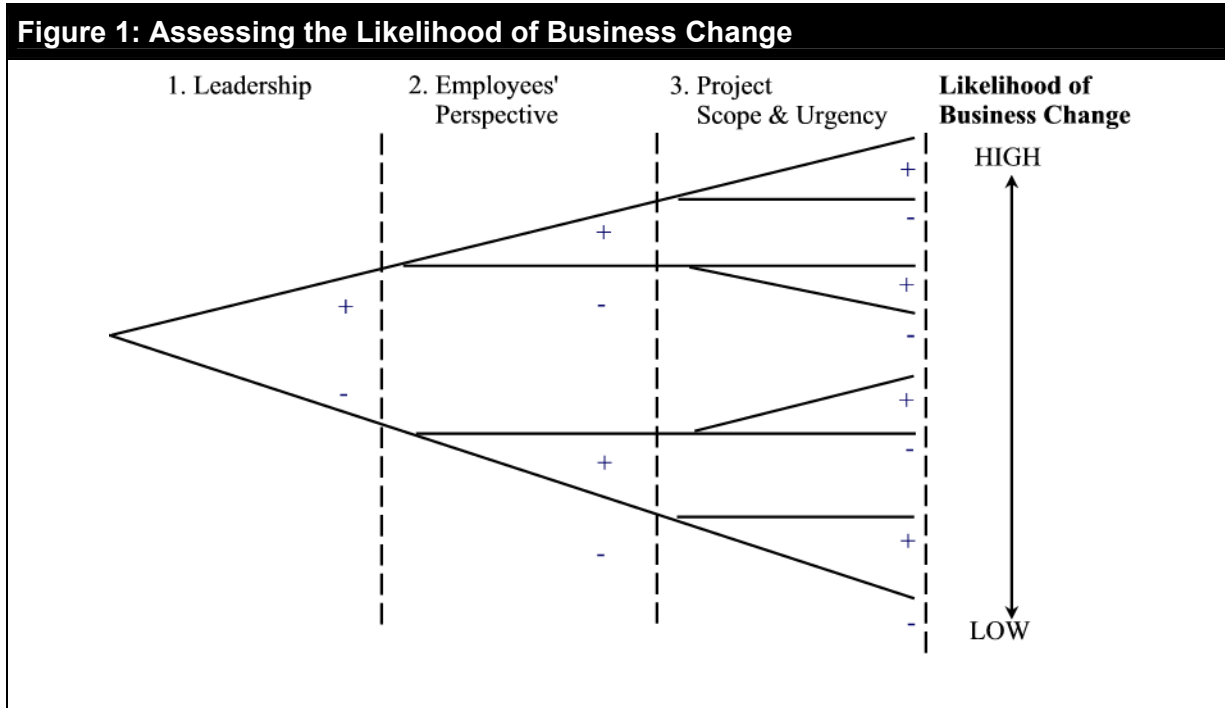
At the conception of a large IT-based project, senior managers (those responsible for the operations to be changed and for the technology and project changes) need to assess the risk that the project will fail for lack of business change. Likewise, at key phases during the life of the project, the senior managers and project leaders need to revisit and re-assess the risks.

Up front, the business case should explicitly present the overall assessment of the risks of changing. As

suggested earlier, there are two kinds of risk, *IT-technical* risk and *business-change* risk.

Technical risk is reasonably well handled in practice by modular development, by outsourcing the building of the systems, or by purchasing packages. But success in the technical part of a project only results in the system meeting its test specifications.

The decision tree in Figure 1 shows the eight paths that result from such a binary assessment.<sup>11</sup> The result is a continuum on the right, with greatest likelihood of business-change success (hence, lowest risk) at the top because all three factors are positive, and lowest likelihood of business-change success (hence, highest risk) at the bottom because all three factors are nega-



Overall business change risk must be assessed well in advance of danger signals. Based on research, cases, and my experience in both academia and management consulting, I have found that three factors determine business change risk (and offer avenues to mitigate that risk).<sup>10</sup>

- 1) *Leadership* of the change
- 2) Employees' perspective on the change
- 3) *Scope and urgency* of the change

To assess each factor on its ability to lessen or increase a business-change risk, use a binary approach – positive or negative. Positive means the factor increases the likelihood of success (reduces the risk); negative means it reduces the likelihood of success (increases the risk).

<sup>10</sup> These three factors are similar to those derived independently by Christensen: resources (leadership), processes (scope and urgency), and values (employees' perspectives). See Christensen, C.M. and Overdorf, M., "Meeting the Challenge of Disruptive Change," *Harvard Business Review*, March-April, 2000, pp 67-76.

tive.

The factor that has the greatest impact on success (and risk) should be placed on the left in the decision tree because its assessment immediately drives the success (and hence, risk) above or below the median, regardless of the effects of the other two factors. Figure 1 shows leadership as the driver of success (and risk), employee perspective as second, and scope and urgency as third in importance.

Here is the approach for determining these positive/negative assessments:

#### *Assessing a Project's Leadership*

*Leadership* refers to the manager or managers responsible for the change. This person may be a project manager but, in most situations, line managers should also be viewed as key leaders because their subordinates are expected to change the work they are doing.

<sup>11</sup> I owe the idea of combining contingent factors to lead to alternative choices of action and the "decision tree" form to Victor Vroom. See Vroom, V.H. and Yetton, P.W., *Leadership and Decision-Making*, Pittsburgh, University of Pittsburgh, 1973.

While a project may be known by its IT flavor, such as ERP, CRM, or a Web-centered project, the technical leaders – the IT project manager, the systems integrator, or consultants – are poor choices for leading the overall change because they do not manage the business and the changes that must occur in that business.

To assess the positive or negative characteristic of the leadership, ask the following six questions:

- 1) Are the leaders *committed* to the business case for this project?
- 2) Do the leaders *understand* the extent of change in work behavior required for this project to succeed?
- 3) Are the leaders *formally motivated* to pull off the change? For example, is the achievement of the project's business goals (increased productivity, effectiveness, or major transformation) built into and consistent with their performance goals?
- 4) Do the leaders at the proper organizational level and position have the *formal power* to exercise influence over the needed changes in work behavior of the affected people?
- 5) Do the leaders have *experience* with a project of this scope, urgency, and impact on people?
- 6) Do the leaders have *informal power* with respect to the people? Are they respected in the culture, articulate in making a case for change, credible, and influential?<sup>12</sup>

When the answers to these questions are mixed positives and negatives, as they are likely to be, weight each question according to the situation. In some cases, the lack of formal power may itself make the binary assessment negative. In other cases and cultures, formal power may not be that important.

### *Assessing Employees' Perspective*

Assessing how employees will perceive and accept changes in their work is at the heart of change management. A formal questionnaire can be used, but there is no substitute for hard-headed discussions among leaders and managers, if they have long ex-

perience with the people and the organizational culture.

Two broad questions can guide the discussion and yield a binary positive or negative assessment of employees' perspectives. The first asks how they might react. The second asks, "Why?"

- 1) With respect to the needed change, in the necessary time, how will the affected people react?

#### *a. Embrace it with enthusiasm?*

Not all change meets resistance. If the timing and organizational context are right, people can and will take to the change. This is particularly true when the reward system enables people to see the new information or processing as conducive to a promotion, increased pay, or prestige. However, those performing the assessment should beware of the trap that managers and IT advocates often fall into: projecting their positive views of the change onto the people being assessed. This trap was a major part of the problem in the examples of the electric utility and First National City Bank.

#### *b. Follow orders?*

In some cultures, it may be sufficient to announce a major change and employees will fall in line with support. Such an expectation should be made carefully, though, because it means employees have the same perspective as the top managers who have embraced the change. By definition, major change means doing things differently, and employees who will follow orders to change roles need to abandon their old work behaviors. If this is what they truly will do, then a positive answer to this subquestion means the employee perspective factor is positive.

#### *c. Follow others?*

Generally, if employees tend to follow others, this means the employees' perspective factor can be positive at the outset. But be careful if those "others" are *informal* leaders in the culture – those who sway opinion at the water cooler and in the pub. They could be the first to turn negative. That is what happened at First National City Bank. Influential people among the old guard were the first to be-

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<sup>12</sup> I like the description of the difference between Paul Revere and William Dawes, the two horsemen sent out from near Boston to warn the countryside that the "Red Coats were out" on April 17, 1775. Revere roused hundreds who took to arms, while Dawes, traveling a different route but through towns not substantially different, scarcely raised anyone. The difference was Revere's reputation and the respect of the colonials for his belief and support for the patriot cause. This difference is described in Gladwell, M., *The Tipping Point: How Little Things Make a Big Difference*, Little Brown & Co., 2000.

come negative toward the change. At Dow Corning, there was a cultural proclivity to follow others, but not at first. Had the change gone poorly, the informal leaders could have withdrawn their support.

d. *Wait and see?*

Indifference is the insidious enemy of change. Yet it is a perfectly rational response from employees when they experience conflicting signals about what is wanted, or when they are unsure their leaders are doing the right thing. At Dow Corning, employees tended to follow incentives and directions to meet current performance goals, using current processes supported by established work behavior. Thus, mere pronouncements of an unprecedented transformation from the top, or even top management commitment to the transformation, was not sufficient. A negative answer on this subquestion suggests that more effort is needed to understand employees' views. In fact, a negative answer to this factor should tip the overall assessment to negative because success is unlikely without employee support.

e. *Resist?*

Overt resistance and passive resistance to change in work can be hard to anticipate, and even harder to understand. In my experience, as often as not, "resistance" may actually be the people adhering to other work objectives, such as meeting quarterly sales or production targets. Sometimes, resistance is institutionalized, as in the union resistance in the electric utility example. If this is the case, the employees' perspective factor is negative.

f. *Sabotage?*

Deliberate destruction of a new system and new work requirements is rare. Yet, as seen in the First National City Bank example, the outlet for pent-up frustration and sense of powerlessness can be sabotage. Anticipation of sabotage clearly puts the employee-perspective factor as the primary driver of success (risk), to the extreme left in the guiding diagram (Figure 1). Positive assessments of both the other two factors, leadership or scope and

urgency, cannot reduce the risk (increase the likelihood of success) into the safety range above the median on the right of the diagram.

2) Why are employees likely to react this way?

In discussing employees' perspectives, managers should draw on their personal experience with the organization's culture. In some companies, talking about such "soft" issues is frowned upon. But at Dow Corning, such considerations were a normal part of Project Pride execution. In general, discussions of people issues just make explicit what good managers know intuitively: Understand the outcome of a change on how the targeted audience will react to it.<sup>13</sup>

Large organizations dealing with extensive change projects have different subcultures and thus different assessments for different groups. Manufacturing in Milan may enthusiastically embrace a change for efficiency from a new ERP system while sales in Schenectady resist. Moreover, as illustrated in phases three and four of Project Pride at Dow Corning, these differences can lead to different assessments of risk over time. Management can spur such discussions by forcing a binary positive-negative assessment for this employee perspective factor, as well as for the other two factors.

### *Assessing a Project's Scope and Urgency*

To assess scope and urgency, ask three questions:

1) Is the scope of the project wide?

Usually, a wide scope is negative; it increases risk and thereby reduces the likelihood of success. Scope includes the number of people affected, the degree of change required, and the number of separate organizational functions or units involved. At Dow Corning, as in most ERP situations, the scope had to encompass the entire company – no one could be left out. By definition, that meant it was high risk.

2) Is the change scope deep and severe?

<sup>13</sup> For an approach to managing people that attempts to combine organizational goals with an understanding of people, see Gibson, C.F., *Managing Organizational Behavior: Text and Cases*, Homewood, IL, Richard D. Irwin, 1980.

Process change can be minor or major, affecting much of the work and calling for significant work-behavior change. At Dow Corning, the ERP system was modified little, and in many locations, the new processes meant creating new jobs and eliminating old ones. The scope was both deep and severe.

In general, it is vital to assess the precise nature of the width, depth, and severity of work changes. This initial risk assessment is meant to guide that assessment discussion. An excellent tool for a full scope analysis is the “Matrix of Change” by Brynjolfsson et al.<sup>14</sup> The result can be turned into a single binary assessment for this question.

3) Is there urgency? What is its effect?

The need to move quickly is clearly a risk factor. Lack of time to plan effectively can hurt. However, speed for reasons of survival does not necessarily carry a higher risk that the change will fail. Urgency can help or hurt a project’s success. It all depends on the circumstance. At Dow Corning, urgency was a positive factor. The breast implant crisis and the deteriorating competitive situation got everyone’s attention. The urgency spurred action. For many companies, Y2K in the late 1990s made many IT-enabled change projects urgent, in a positive way. Similarly, environmentally mandated changes, such as privacy legislation and Sarbanes-Oxley accountability, may serve to make urgency positive as well.

To see the importance of this Step One, Assess the Risk, consider what might have happened if each of the three “How bad can it get?” examples had performed this step. Thoughtful assessment would have raised the flag of high change risk at the beginning of each project, and at several points along the way as well.

At the electric utility, the employees’ perspective was the primary driver and it was negative. At First National City Bank, new leadership was inexperienced in dealing with the back-office culture, their formal power was of little help in gaining the allegiance of the workforce, and the wide scope and urgency of the project increased risk. In short, all three factors were negative, leading to the highest risk possible. At Cybex, top management undertook a change that none

had experienced before. Under pressure from urgency, they did not reflect on the consequences of multiple simultaneous changes in sales, manufacturing, and channels of distribution. The leadership and scope and urgency factors led to high risk.

The process of assessing business-change risk should be considered an agenda item and checklist for discussion – formally institutionalized or undertaken informally by senior managers. At a leading retail financial investment company, assessing change risk using the decision tree in Figure 1 is a formal requirement for all line managers presenting a business case for an IT-enabled project.<sup>15</sup> There and elsewhere, high-risk outcomes on Figure 1 should lead to mitigation actions prior to implementation.

### Step Two: Mitigate the Risks

“Mitigation” means thoughtful management action based on anticipation of high change risk.

At Dow Corning, CEO Hazleton’s and top management’s implicit high-risk assessment of the upcoming operational transformation led to two mitigating actions. First, they selected a package so that the focus would be on business change, not technology. Second, in phase two, Lacefield mitigated risk by assigning an experienced project manager.

Had the managers in the electric utility case plumbed the antipathy and union strength more carefully, they might have implemented a mitigation strategy of carefully renegotiating the union contract. Had the ambitious new managers at First National City Bank stepped back to understand the workforce perspective – perhaps by including a few tenured middle managers in their deliberations – they might have mitigated the employee resistance risk. And had an experienced line manager been placed in charge of Cybex’s implementation, and had they reduced the project scope, they might have made the project manageable. In all three cases, mitigation would have reworked the decision tree in Figure 1 by changing one or more of the negative factors to positive.

Mitigation is difficult for several reasons, though. In many large projects, change risk is considered *after* commitments have been made and the technical work is well underway. In these cases, management understandably does not want to upset the schedule, break its commitments, lose credibility, and increase costs by slowing down the project to mitigate change risk. Even worse, many IT projects are considered the re-

<sup>14</sup> Brynjolfsson, E., Renshaw, A.A., and Van Alstyne, M. “The Matrix of Change,” *Sloan Management Review*, Winter 1997, pp 37–54, reprint 3823.

<sup>15</sup> This was reported by Bob Destefano, CIO of Vanguard, in a presentation at the MIT Sloan School in a seminar on IT Management in 2001.



sponsibility of *only* the IT department or outside consultants. Business units think they play no role in increasing or decreasing the risks. Finally, mitigation actions are rare because it can be devilishly hard to change a focused management mindset.<sup>16</sup> But senior managers must make difficult mitigation decisions as IT-enabled changes grow in impact.

*Celanese Corporation.* Mitigation for major projects is a strategic matter for top management. An ongoing example is Celanese Corporation. Top management understood the high risk of key people resisting a major company-wide financial and operational consolidation. Therefore, CIO Karl Wachs worked closely with the CEO for eleven months selling the project to the division presidents (the key people to be affected) before the technical work became visible.<sup>17</sup>

Celanese executives realized they were doing much more than implementing an IT system. In fact, they perceived the organization heading toward a new culture and new way of working. Often, tangible work changes in using a new system are the tip of the iceberg for a new way of operating. Faster financial reporting and more uniform processes at Celanese may lead to the benefits of tighter central control and intervention over previously autonomous divisions.

In cases of major change, such as at Celanese, the mitigation steps taken at the front end are just the beginning of building a new organization and culture. The change work actually needs to last for years, not months. So top management needs foresight, focus, and endurance.

This concept of strategic change was also well understood from the outset at Dow Corning. The mitigation and project styles evolved toward a way of managing that was a cultural change: from “Do your job and join in consensus-seeking” to “We are now in a tougher world and we’ve got to get tougher to survive.”

Taking change risk seriously can result in stopping or delaying a project while mitigation steps are taken, as happened at Celanese. Proceeding after mitigation still requires managing other change risks. Success may mean adapting a different project management approach that better matches the degree of change.

<sup>16</sup> A prominent university pushed through an ERP implementation managed by the administrative side, with the result that users throughout academic departments, with no direct affiliation to the administrative hierarchy, largely ignored the new system. On the difficulty of killing projects, and the psychological deterrents thereof, see Royer, Isabelle, “Why Bad Projects Are So Hard to Kill,” *Harvard Business Review*, February 2003, pp 48-57.

<sup>17</sup> Berinato, S. “A Day in the Life of Celanese’s Big ERP Rollup”, *CIO Magazine*, Jan 15, 2003.

### Step Three: Adjust the Project Management Approach

If managing IT-enabled change is important, it ought to affect the approach taken to project management. Change should sometimes be managed in a tough way and sometimes flexibly. In fact, the chosen approach should be *contingent* on the nature of the change risk – that is, the three factors in Figure 1 – and be as close as possible to the company’s accepted way of working. Some academic research has focused on a participative or improvisational approach to project management.<sup>18</sup> But little research has recognized that taking a top-down, authoritative approach can fit some circumstances.

Following are eight project management approaches that match change risk. Note that the approaches are a function of the risk path, not the level of risk. Each recommended approach matches one path, not the amount of risk. Magnitude is not the issue here; positive or negative support for the change is.

*Four approaches for the least risky projects.* Change projects can be characterized on two dimensions: the *project budget and deadlines* (rigid or adjustable) and the nature of the *management style* (authoritative or participative).

The resulting four project methods are illustrated in Figure 2. They are *Big Bang*, the most extreme and efficient (when it can work); *Top-down Coordination*, with authoritative management but adjustable planning; *Guided Evolution*, a rigorous set of timetable expectations with employee participation; and *Improvisation*, the least controlled and potentially most creative method.

**Figure 2: Four Approaches to Project Management**

		<i>Management Style</i>	
		<b>Authoritative</b>	<b>Participative</b>
<i>Project Budget and Deadlines</i>	<b>Fixed</b>	Big Bang	Guided Evolution
	<b>Adjustable</b>	Top-Down Coordination	Improvisation

<sup>18</sup> A clear case for a user-centered approach is in Orlikowski, W.J. and Hofman, J.D., “An Improvisational Model for Change Management: The Case of Groupware Technologies,” *Sloan Management Review*, Winter 1997, pp 11-21.

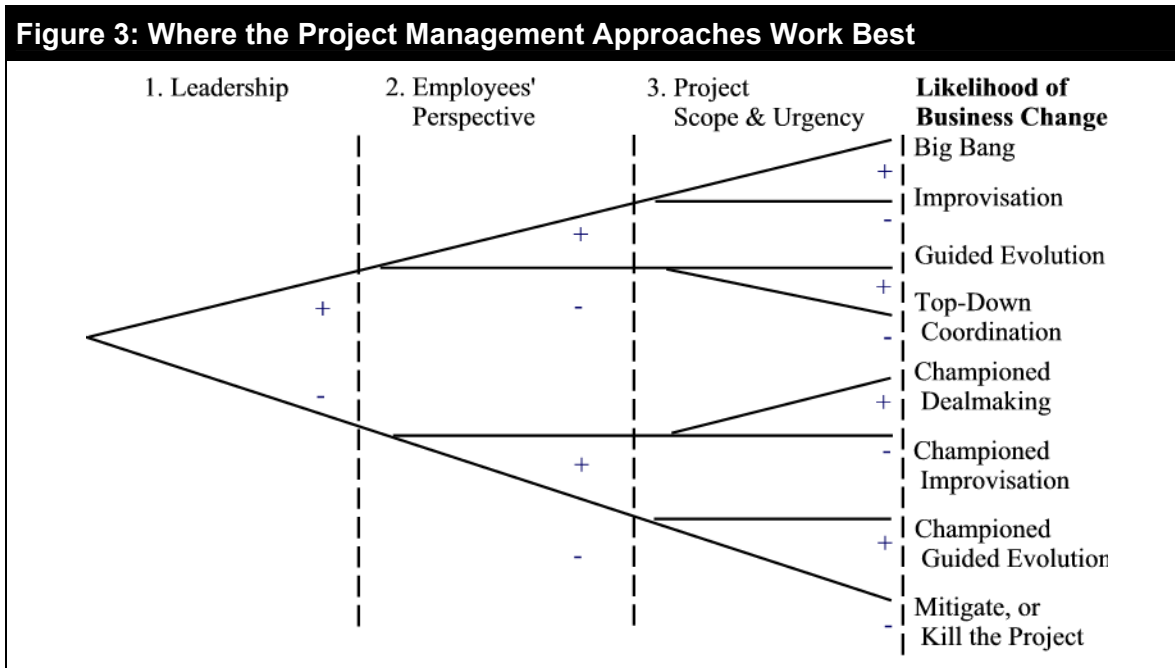


Figure 3 illustrates that these four project approaches correspond to the four lower-risk (highest likelihood of success) outcomes – that is, the four in the upper half of the risk assessment decision tree. In short, these four provide the *default* or recommended first-cut choices for managers to consider.

- *Big Bang* is the lowest risk approach; it has the highest likelihood of success. It is the recommended default when all three project factors are positive.
- *Improvisation*, the ultimate in bottom-up creativity, is recommended where leadership and employees' perspective are positive but scope and urgency are negative. The rationale is that a committed workforce can effectively learn and adapt to difficult project tasks.
- *Guided Evolution* works best when employees' perspective is negative but the other two factors are positive. The rationale is that a rigid overall plan and respected leadership can overcome that negativity. By encouraging and motivating employees, progress can be made.
- *Top-down Coordination* works when leadership is positive but employees' perspective and scope and urgency are both negative. This approach presents the greatest leadership challenge because it requires a full-time commitment of a highly experienced and respected lead.

*Four approaches for the most risky projects.* None of these four least-risky approaches is best when the main factor – leadership, in this case – is negative. When mitigation, for whatever reason, does not change the leadership to positive, then a *champion* in the user organization is needed for each of the four most risky project types to succeed. Such a champion must appreciate the organization's goals for the project and be willing to bet his or her job on the project, without having higher management's support or guidance.

By definition, projects lacking positive leadership are not the realm of responsible senior management. But such projects do occur, and a number of illustrations show that champions can pull them off, for example, by making informal, ad-hoc "deals."<sup>19</sup> As risky as this approach can be to careers, benign subversion may be the only way to get some changes started when the climate at the top is negative. While a champion can manage effectively in three of the four cases when leadership is absent, the fourth case, where all three

<sup>19</sup> An example is the implementation of handheld computers years ago at Frito Lay, where the IT executive made a deal with a friend and champion in sales to introduce a pilot that was dimly understood or supported at the time by senior management. See the case study, "Frito-Lay, Inc.: A Strategic Transition (B)," Harvard Business School, 9-187-123, Rev. 2/24/93. The idea of "deals" as a project approach out of view of senior management leadership is described in Weill, P. and Broadbent, M., *Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology*, Harvard Business School Press, Boston, Massachusetts, 1998.

risk factors are negative, should lead to killing the project unless mitigation can reverse all three.

*Dow Corning's experiences.* Dow Corning illustrates successful choices and changes of project approaches:

In Phase Zero, CEO Hazleton and top management sensed a high risk for all three factors. So they were situated in the bottom, most risky, path in Figure 3. Their mitigation step of naming Lacefield as project leader turned the negative leading factor (leadership) to positive and thereby reduced overall risk.

In Phase One, Lacefield focused on the SAP project, rather than the entire project, to get up to speed on the technical nature of SAP and to plan specific process changes independent of any particular site. At that focused level, he believed the SAP project leadership risk factor was positive, the employees' perspective of the 40 managers on Project Pride was positive, and the scope and urgency in gaining control of SAP was negative. Using Figure 3 as a guide, that assessment of positive-positive-negative suggests he should take the Improvisation approach, which, in fact, was what he chose.

In Phase Two, Lacefield changed the project management approach. The local project did benefit from the Improvisation. The team learned SAP. But management and employees outside the project began to express a negative expectation for the project, which changed the risk assessment of the local project to negative.

At this point, the project leader under Lacefield was not experienced in implementation (negative leadership), the broader employees' perspective was negative, and the scope and urgency were still negative. This high-risk assessment called for either killing the project or taking a mitigation step, which Lacefield took. He replaced the project manager. While he still focused on a rigid timetable, he allowed the new project manager to operate in a participative manner with the team and the pilot managers. In short, he shifted to the Guided Evolution approach. This change served Dow Corning well through the completion of the Pilot.

In Phase Three, Lacefield began to see light at the end of the tunnel, but he also recognized the wide variation in risk profiles among the various sites. The approach appropriate for a site depended on its risk profile.

Overall, Lacefield adopted the Top-down Coordination approach, supplementing his authoritative style with personal traveling and convincing (to address the negative employee perspective) and allowing flexibil-

ity in some projects (to counter their negative scope and urgency).

In phase four, the employees' perspective tripped to positive, and scope and urgency also became positive at most of the sites. With the risk factors all positive, Project Pride was driven home with a Big Bank approach.

As this sequence at Dow Corning illustrates, the project management approach should be adapted to the current situation and may vary over time or differ at different organizational levels or sites. It depends on the most recent risk assessment. Thus, the recommended approaches in Figure 3 are *only loosely coupled* to the risk profile. A particular organization with a high-risk project may have good enough leadership and skill to take the Improvisation approach without a champion. Another might be able to swing a Big Bang instead of Top-down Coordinated when leadership is positive but the other two factors are negative. Such adaptations may result from a particular project method being well known and well done in the culture – as was the case of Improvisation at Dow Corning. The approach does not align with the default recommendation in Figure 3, but it works. In such cases, managers should consider changing the risk conditions to fit the successful management method in their culture, working from right to left in Figure 3.<sup>20</sup> The decision tree is meant to promote dialog. The conclusions can differ by the setting.

## SUMMING UP

Successfully changing the way a business works is increasingly important and strategic to successfully implementing IT-enabled projects. Business results come from positive changes in work behavior, which in turn come from anticipating risks and managing the conditions that will cause failure as part of the project. That is how business value is reaped from IT projects.

<sup>20</sup> I once did a risk assessment with a division president who, over drinks and dinner, informed me that my recommendation for "Championed Guided Evolution" was unacceptable. While thinking of some way to salvage my recommendation, he asked, "What is this 'Top-down' something or other on your chart?" I explained that was an authoritative management style with adjustable deadlines. He nodded and said, "That's the way we do things here, authoritatively. What do I need to make that work?" Looking from right to left, tying his preferred project method to an end point, my answer was that he needed a project where the scope and urgency were negative, and where people don't want it, and... He interrupted to say, "We've got those..." Then I concluded that he needed to have leadership that knows what it is doing. Our dialog became productive when we talked about how to mitigate the negative leadership factor in his case. We concluded that he could pull together a team of experienced field supervisors to implement the system, and use the Top-Down approach expected in the organization. It worked for them.

To better assure success, senior and project managers should follow a three-step approach of assessing business-change risk, mitigating the risks uncovered in the assessment, and then adjusting the project management approach to reduce remaining risks. By periodically assessing the three factors that present the greatest change risk – leadership, employees' perspective, and project scope and urgency – management stays current with the project's likelihood of success. When high risk appears, mitigation steps are called for. Such steps are often difficult to take. They almost always require the best of senior management judgment. As the project progresses, the situation changes and the project management approach may need to be changed to fit the current culture and changed risk assessment.

As the Dow Corning analysis illustrates, different project conditions and changing risk factors call for continuing assessment and project management adjustment. The proposed decision tree and project management approaches are meant as guides to stimulate thought, dialog, and action up front and along a project's life cycle. They are not to be seen as mechanical steps. Thoughtful managers may deviate from the guidelines – but should do so only for good reason. By using the appropriate approach, management can increase its batting average in successfully implementing large, important, IT-driven change, and achieve higher business-value payoff.

## ABOUT THE AUTHOR

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Dr. Gibson is Senior Lecturer, MIT Sloan School of Management, and an independent consultant in information technology systems strategy and management. His work in these fields has spanned over thirty years in academia and consulting.

He teaches, consults, and conducts research on IT management issues with particular emphasis on the implementation of technology-related business, organizational and behavioral change, and also IT governance and IT and business strategy alignment.

Dr. Gibson's appointment at the MIT Sloan School involves teaching at the undergraduate, MBA and executive levels, serving as director of the "IT and Digital Transformation" track in the MBA program, and conducting research and managing sponsor relationships in the Center for Information Systems Research.

Until 1996 Dr. Gibson was a senior vice president at CSC Index, a management consulting firm in reengi-

neering and information systems management, where he had been since 1978. Prior to that he was an associate professor at the Harvard Business School, where he taught in MBA and executive programs and conducted research on organizational and behavioral change in relation to the implementation of information systems.

Dr. Gibson's publications include the books, *The Information Imperative* (with Barbara Jackson), 1987, and *Managing Organizational Behavior*, 1980, and over twenty articles, including, "Managing the Four Stages of EDP Growth", (with Richard Nolan), *Harvard Business Review*, 1974, which set a pattern for subsequent research and management practice in the field of IT management.

He holds a PhD in organizational behavior from the Sloan School, MIT, an MBA from the Harvard Business School, and a BE from Yale.

Dr. Gibson and his wife Joanne have three grown children and two grandchildren and live in Concord, Massachusetts. He enjoys hiking, birding, golf, sculling, and reading. He is a member of the Advisory Board of ICEX, Inc. and of the Advisory Council of the Massachusetts Audubon Society.