MIS QUARTERLY EXECUTIVE

PROJECT RETROSPECTIVES: EVALUATING PROJECT SUCCESS, FAILURE, AND EVERYTHING IN BETWEEN [1]

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Executive Summary

The fact that the majority of IT projects fail on at least one measure of success, and that billions of dollars in project waste is reported each year, suggests that there is a critical need for improving the way we manage these projects. The sobering truth is that the secret to more successful project management has been right in front of us the whole time – learning from the past.

A retrospective (a.k.a. a postmortem) is a formal method for evaluating project performance, extracting lessons learned, and making recommendations for the future. A comprehensive retrospective considers three process-based measures of project success: whether it came in on schedule (time), whether it came in on budget (cost), and whether the requirements were met (product). It also considers three outcome-based measures of success: whether the resulting product or service was actually used (use), whether the project helped prepare the organization for the future (learning), and whether the project improved efficiency or effectiveness of the client organization (value).

This article presents several retrospectives of IT projects to illustrate the importance of evaluating project success from these multiple dimensions, as well as from different stakeholder perspectives. Doing so can lead to some valuable lessons in the form of "failed successes" (process success + outcome failure), and "successful failures" (process failure + outcome success).[2]

FAILURE TO LEARN

> *"Life can only be understood backwards, but it must be lived forwards." (Kierkegaard)*

Project managers are caught in a paradox. On the one hand, they are working too hard to pause and reflect on effective project management practices. On the other hand, such reflection and corresponding learning are key to better project management. According to the widely-quoted *Chaos Chronicles*,[3] only 34% of IT projects undertaken by Fortune 500 companies are completed successfully. In other words, almost two-thirds of the 13,522 IT projects surveyed suffered from one or more of the following:

- total failure
- cost overruns
- time overruns, or
- a rollout with fewer features or functions than promised.

The good news is that this 2003 result is a 100+% improvement over the 16% rate reported in 1994, and outright failures have declined from 31% to 15%

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[3] *Chaos Chronicles*, Version 3.0 The Standish Group International, West Yarmouth, MA, 2003.
Standish Group definitions:

- Successful = The project is completed on time and on budget, with all the features and functions as originally specified.
- Challenged = The project is completed and operational, but over budget, over the time estimate, and/or with fewer features and functions than initially specified.
- Failed = The project is cancelled before completion.

(challenged projects account for the remaining 51%). However, the fact that two out of three projects fail on at least one criterion suggests that there is a critical need to improve what is arguably the most important IT competency area: project management.[4]

Failure to learn from mistakes has consistently been a major obstacle to improving IT project management. As Boddie wrote in 1987:

> *"We talk about software engineering but reject one of the most basic engineering practices: identifying and learning from our mistakes. Errors made while building one system appear in the next one. What we need to remember is the attention given to failures in the more established branches of engineering. In software projects, as in bridge building, a successful effort can do little more than affirm that the tools and methods used were appropriate for the task. By the same token, failed projects need more than explanation or rationalization if they are to teach any lessons."*[5]

RETROSPECTIVES

A retrospective is a formal method for evaluating project performance, extracting lessons learned, and making recommendations for the future. The word "retrospective" means *looking back on, contemplating, or directed to the past*. In the IT industry, retrospectives go by many names. One popular term is *postmortem*, from the Latin for "after death." In addition to the obvious negative connotations attached to this label, IT projects don't, or at least aren't supposed to, end with death. Rather, they should bring something to life. As an alternative, the Latin term *postpartum*, meaning "after birth," is sometimes used, again with its own set of negative associations. Various branches of the military use their own terms: After Action Review or Post Engagement Redress (Army), Navy Lessons Learned or Hot Wash Up, and C-GULL (Coast Guard Uniform Lessons Learned). While each term has its following, the terms *retrospective* and *post-implementation review* seem to be the most descriptive, without implying success or failure.

Another argument for using the term *retrospective* is that it is not limited to the post-implementation phase of a project. In fact, retrospectives conducted following critical milestones in a project's life cycle can either confirm that the project is on track or suggest mid-course adjustments before it's too late. In some cases, an interim retrospective may conclude that a project should be terminated, avoiding the dreaded "runaway" label.[6]

Why Retrospectives Are Important

Retrospectives offer a variety of potential benefits, including the following:

- Organizational learning – Get the collective story out (synergistic learning) and ensure that individual stakeholders hear the whole story, not just their personal experience.
- Continuous improvement – Facilitate improvements in processes, procedures, and culture.
- Better estimating and scheduling – Capture *actual* data on size, effort, and time to use in calibrating future estimation models and practices.
- Team building – Acknowledge and repair relationship issues as appropriate.
- Improved recognition and reflection – Pause and reflect on accomplishments before proceeding to "solve the next problem."

Why Retrospectives Aren't Done

Regardless of what you call them, and despite their obvious potential benefits, most organizations rarely conduct formal retrospectives, outside of the military.[7] The most obvious reason is the natural human desire to put the past to rest and go on to something new. Indeed, the IT profession seems to subscribe to the philosophy of the famous writer Oscar Wilde, who once stated, "The past is of no importance. The present is of no importance. It is with the future that we have to deal."

[4] As defined by the Project Management Institute (PMI), a project is a temporary endeavor undertaken to create a unique product, service, or result. As such, projects represent the central unit of work in the field of information technology.

[5] J. Boddie, "The Project Postmortem," *Computerworld*, 21:49, December 7, 1987, pp. 77-82. Engineer Henry Petroski states in *To Engineer is Human: The Role of Failure in Successful Design*, (New York: St. Martin's Press, 1985): "I believe that the concept of failure is central to understanding engineering, for engineering design has as its first and foremost objective the obviation of failure. Thus the colossal disasters that do occur are ultimately failures of design, but the lessons learned from those disasters can do more to advance engineering knowledge than all the successful machines and structures in the world."

[6] The following reference provides an excellent discussion on the consequences of runaway projects and recommendations for recovering before it's too late: C.L. Iacovou and A.S. Dexter, "Turning Around Runaway Information Technology Projects," *California Management Review*, 46:4, Summer 2004, pp. 68-88.

[7] As reported by J. Boddie (cited earlier); also reported by T. K. Abdel-Hamid and S. E. Madnick in "The Elusive Silver Lining: How We Fail to Learn from Software Development Failures," *Sloan Management Review*, 32:1, Fall 1990, pp. 39-48; and based on years of personal experience.

Enterprises are also reluctant to allocate additional time and money to a project after the system is completed. This reluctance is particularly profound if the project is seen as a failure: management will only approve the retrospective if its benefits are quantified beforehand.

Finally, most retrospectives are poorly done, which doesn't help overcome either the social or the financial obstacles. As a project manager in one large consulting firm lamented, "Our post-implementation reviews tend to be witch hunts, where the innocent get punished and the guilty get promoted!" In other cases, retrospectives are seen as merely "checklist items." Enterprises conduct them but do not apply the lessons learned. In these cases, it is certainly difficult to see the value.

To address these perceived shortcomings, many large IT services firms have developed proprietary methodologies for conducting retrospectives. The retrospective process has also recently received attention in the Project Management Institute's (PMI) Body of Knowledge[8] and the Software Engineering Institute's (SEI) Capability Maturity Model.[9]

THE RESEARCH STUDY: A META-RETROSPECTIVE

Since the summer of 1999, the University of Virginia has delivered a Master of Science in the Management of Information Technology (MS MIT) degree program in an executive format to working professionals. Over this time, 357 working professionals have participated; each has had an average of twelve years of experience and direct involvement with at least one major IT project. All 357 participants received instruction in how to conduct effective retrospectives (see Appendix A) and were given a framework for assessing each of the following:

- Project context and description
- Project timeline
- Lessons learned – an evaluation of what went right and what went wrong during the course of the project, including recommendations for the future.
- Evaluation of success/failure

In partial fulfillment of program requirements, the participants have worked in teams and conducted retrospectives of recently completed IT projects. Thus far, 72 retrospectives have been conducted in 57 different organizations. These projects have ranged from relatively small (several hundred thousand dollars) internally built application development projects to very large (over $100 million) mission-critical applications involving multiple external providers.

When viewed individually, each retrospective tells a unique story and provides a rich understanding of the project management practices used within a specific context during a specific timeframe. However, when viewed as a whole, these 72 projects provide an incredible opportunity to understand project management practices at a more macro level and generate findings that can be generalized across a wide spectrum of applications and organizations.

For example, this "meta-retrospective" yielded some very interesting findings on success criteria and stakeholder perspectives for the 72 projects studied. The next section describes both, along with selected case studies that support key findings and recommendations.

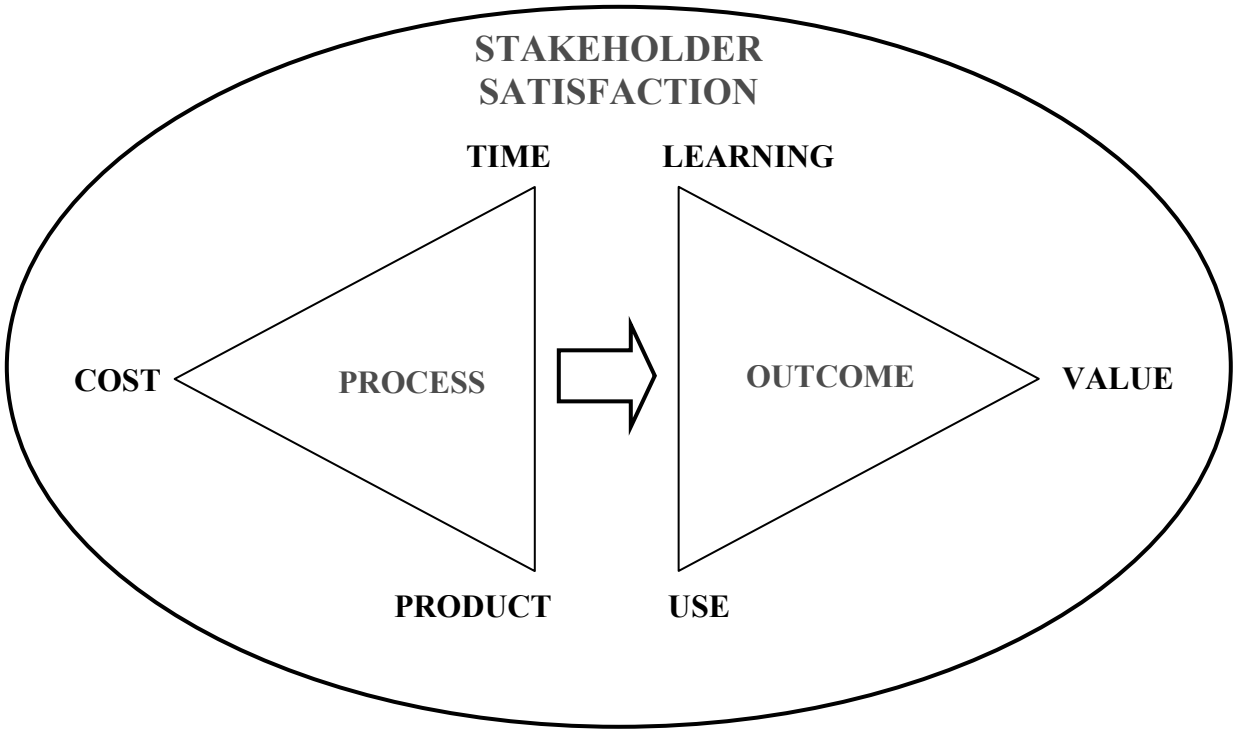
EVALUATING PROJECT SUCCESS

While identifying mistakes and recommendations for improvement seem to be straightforward when conducting a retrospective, in most cases, evaluating project success proves to be quite challenging. Contrary to the methodology employed by the Standish Group, which considers any project that is one day late, or one dollar over budget, or one requirement short of specifications to be unsuccessful, our experience suggests that determining success tends to be much more subjective and is wrought with much ambiguity and political overtones.

To begin with, success is in the eye of the beholder. The typical IT project may be subject to review by a host of stakeholder groups, including the project sponsor, system users, project team, maintenance and support personnel, internal and external auditors, and top management. At any point in time, a project may receive an entirely different opinion on success, and it's very unlikely to be a binary one.

[8] Project Management Institute – Information Systems Specific Interest Group: http://www.pmi-issig.org.
[9] Software Engineering Institute: http://www.sei.cmu.edu/cmmi.

Figure 1: Project Success Criteria



Based on both our experience as well as a detailed review of the literature,[10] evaluating project success should include both process and outcome criteria, as illustrated in Figure 1.

The three process-related criteria include:

1. Time – The project came in on schedule.
2. Cost – The project came in on budget.
3. Product – The project produced a product of acceptable quality and met other product-related specifications, including requirements, usability, ease of use, modifiability, and maintainability.

The three outcome-related criteria include:

4. Use – The project's resulting product/service is being used by its target constituencies.
5. Learning – The project increased stakeholder knowledge and helped prepare the organization for future challenges.
6. Value – The project will directly result in improved efficiency and/or effectiveness for the client organization(s). Common metrics include NPV, IRR, EVA, and the balanced scorecard.

Taken together, the six criteria yield a more comprehensive view of project success. The ultimate goal of the project manager should be to maximize stakeholder satisfaction on as many success criteria as possible. To this end, the relative importance of each criterion needs to be clearly defined and documented at the beginning of a project, and revisited as necessary throughout its life. For example, project managers need to clearly communicate the inherent tradeoffs among the three process-related criteria: time, cost and product (the project trade-off triangle). Increases in the product corner of the triangle require corresponding increases in schedule and/or budget. Likewise, completing a project in less time and/or for less money than originally estimated usually requires reducing product functionality.

[10] The following is a sampling of the most interesting work on evaluating IT project success-failure: Lyytinen, K., and Hirschheim, R., "Information Systems Failures: A Survey and Classification of the Empirical Literature," *Oxford Surveys in Information Technology,* 4, 1987, pp. 257-309; Pinto, J.K., and Slevin, D.P., "Project Success: Definitions and Measurement Techniques," *Project Management Journal,* 19:1, February 1988, p. 67; Sauer, C. *Why Information Systems Fail: A Case Study Approach*, Henley-On-Thames, Oxfordshire, 1993; Shenhar, A.J., Dvir, D., Levy, O., and Maltz, A.C., "Project Success: A Multidimensional Strategic Concept," *Long Range Planning,* 34:6, December 2001, p. 699.

Figure 2: Stakeholder Rankings (& Ratings) of Success Criteria for 15 projects

Success Criteria	Stakeholder Groups											
	Project Manager		Team Members		Users		Sponsor		Top Mgmt		Overall	
Time	1	(8.67)	2	(7.73)	5	(5.54)	2	(8.13)	4	(7.14)	4	(7.44)
Product	2	(8.47)	1	(8.93)	2	(8.77)	3	(7.93)	5	(7.00)	1	(8.22)
Cost	3	(8.27)	6	(4.48)	6	(3.64)	4	(7.87)	3	(7.33)	6	(6.32)
Value	4	(7.47)	5	(5.59)	3	(7.42)	1	(8.60)	1	(8.73)	3	(7.56)
Use	5	(7.39)	3	(7.08)	1	(9.58)	5	(7.38)	2	(7.43)	2	(7.77)
Learning	6	(7.17)	4	(6.52)	4	(7.11)	6	(7.18)	6	(6.00)	5	(6.80)
N = 15 for all stakeholder groups												

Managing Stakeholder Perspectives

The challenge of managing different stakeholder perspectives is illustrated in 15 recently completed retrospectives. In each, five stakeholder groups were asked to rate the six success criteria on a 10-point scale (where 1 = not important at all and 10 = extremely important). Figure 2 presents the interesting results of this survey.

First, it is obvious that the different groups were interested in different things. Specifically, project managers and team members seemed to be more process-centric, focusing primarily on bringing a project in on time and meeting specifications. In contrast, project sponsors and top management were most concerned about a project's value to the organization. Not surprisingly, users cared most about whether or not the project's outcome (e.g., system) would be used by its intended clients. None of the groups ranked learning (preparing for the future) in their top three criteria; although all of them suggested that learning was of at least moderate importance (ranking 6 or higher).

The top three success criteria for all five groups were product, use and value (in descending order of importance). Project cost was ranked lowest overall. In fact, based on these findings, it can be inferred that two of the groups – users and team members – didn't seem to care how much a project cost, as long as it met specifications and was used by its intended clients.

Based on these findings, project managers need to pay careful attention to the absolute and relative importance of each success criterion for each stakeholder group. Furthermore, project plans need to clearly define measurable metrics for each success criterion, as well as the optimal time to measure. While process-oriented criteria can be monitored throughout the course of a project and evaluated at project close-out, the outcome-oriented criteria (benefits realization) probably cannot be evaluated until well after implementation.

In addition, project managers can use these findings to educate top managers who are too narrowly focused on cost and schedule. If maximizing *overall* stakeholder satisfaction is important, top managers should be focusing more on the product, use, and value criteria.

Failed Successes and Successful Failures

If the six success criteria were to be evaluated in a strict, absolute method (similar to that employed by the Standish group for time, cost, and product), the result would be a collage of all possible combinations. In fact, most projects would be judged to have failed on at least one of the process criteria (approximately 60% of the projects that we studied failed on time, cost and/or product), and significantly fewer would be viewed as being either a total success (40%) or a total failure (5%).[11]

[11] Note: 11 of the 72 retrospectives were inconclusive with respect to the success criteria; therefore, percentages are based on a total of 61 projects. Three of the 36 projects that failed on at least one process criterion were canceled before completion and were counted in both categories (thus the 5% overlap).

Our experience suggests that a more meaningful determination of project success/failure comes from analyzing overall stakeholder satisfaction on all six criteria. When we conducted this analysis on the 72 retrospectives, some interesting patterns arose, including "failed successes" and "successful failures" (see Figure 3 for examples of these two patterns).

Failed Successes. Seven projects were seen as successful from the process perspective (i.e., they met specifications and came in on schedule and on budget), but were seen as failures from the outcome perspective (i.e., they didn't add enough net value to the organization). Figure 4 presents a brief description of four of these case studies. An underlying theme in these failed successes is the importance of strategic and business process alignment. In each case, the successful efforts were derailed by changes in the macro environment.

The retrospective of Financial Services A. As an example, Project A in the financial services organization successfully met the defined business requirements. But when the business strategy changed, the key assumptions underlying the application became invalid, so the application solved a diminishing business problem.

The retrospective of this project provides a rich example of the types of benefits retrospectives can provide. The primary objective of Project A was to reengineer the financial services firm's recruiting of non-exempt or hourly associates to increase hiring capacity, reduce cycle time, improve the quality of new hires, and reduce the average cost per hire. At the time, the firm was undergoing immense credit-card account and customer growth. Accounts increased from approximately 5 million in 1994 to more than 33 million in 2000. The firm needed to proportionally increase its call center headcount to deal with this huge increase in customer calls. Prior to adopting Project A, management evaluated the existing recruiting process and estimated that it would fall 40% short of meeting the hiring demand.

Project A was a very large project for the firm, initially carrying the label "BCP" or Big Complex Project. The project budget was approximately $10 million and at its peak, over 25 business people and 60 IT associates and contractors were working on it.

In addition to generating a myriad of project management-related lessons, the retrospective process revealed fresh knowledge about developing applications on the J2EE platform and working with an offshore development team. Both sets of lessons benefited the IT department moving forward. Specifically, the project team experienced the joys and pains of working with Navion in Shanghai, China, a development team 12 hours ahead of them. Based on the results of the retrospective, the firm wrote a white paper on the quality of documentation needed to guide offshore work and the need to verify the quality of offshore code. This organizational learning was invaluable because the firm initiated additional projects using offshore resources and J2EE.

The retrospective also allowed the review team to step back and evaluate the six success criteria. Their analysis:

1. *Schedule* – A long, fuzzy front-end existed before the commitment to do the project. But once the schedule was established, it was met. While the team used no formal scheduling methodology, a modified waterfall lifecycle eventually emerged. It was modified to include parallel track development via overlapping "sashimi" phases, providing time savings and a significantly compressed schedule.
2. *Cost* – The project slightly exceeded its original budget, largely in increased personnel costs. The excess was deemed to be within an "acceptable range."
3. *Product* – The project team was judged to have done a good job of negotiating the initial project scope, freezing requirements early, and managing a tight change-control process throughout the project. As a result, the application met requirements and performed well.
4. *Use* – Upon implementation, the tool was used as originally intended and did fundamentally reengineer the recruiting process.
5. *Value* –Initially, Project A was deemed a success along a number of dimensions:
    - Hiring capacity increased immediately and the target growth of approximately 74% was nearly achieved by a corresponding 71% increase.
    - The target of increasing the hiring rate by at least 20% was far exceeded when results demonstrated an astounding 100% increase.
    - The target goal of reducing the 90-day attrition rate by 75% was met.
    - A reduction in cost-per-hire exceeded the target goal by 12%.
    - Hiring cycle time was reduced by 37%, just short of the desired 45% goal.

    In terms of these objective value metrics established at the onset of the project, Project A

Figure 3: Case Studies of Project Success-Failure

	Case Studies							
	Process Success - Outcome Failure				Process Failure - Outcome Success			
Success Criteria	Manufacturer	Shipbuilder	Real Estate Management	Financial Services A	Financial Services B	Midwest Bank	Consulting	Federal Government
Time	S	S	S	S	F	F	F	F
Product	S	S	S	S	F	F	F	F
Cost	S	S	S	F	F	F	F	F
Value	S	F	F	F	S	S	?	F
Use	S	F	F	F	S	S	S	F
Learning	S	S	S	S	S	S	S	?
Overall Stakeholder Satisfaction	F	F	F	F	S	S	S	S

Legend: S = Success; F = Failure

Figure 4: Case Studies of Process Success/Outcome Failure

Manufacturer

- *Organization*: A joint venture between two large multi-national corporations focused on delivering factory automation solutions.
- *Project*: Phase II of an ERP installation and conversion; manufacturing module of SAP's R/3 product; (1 year, $12.4M).
- *Evaluation*: Project was a success on all six process and outcome criteria, yet it was viewed as a failure by the organization's corporate holding entity that wanted to standardize corporate-wide on the Oracle ERP platform.

Shipbuilder

- Organization: Largest private US shipyard with 17,300 employees
- Project: TRIPS: Travel Expense InPut System; automated end-to-end travel management system; (9 months, $100,000).
- Evaluation: A successful process produced a successful product that was never used because ERP eliminated the need for the TRIPS application.

Real Estate Management

- *Organization*: Owns, develops, and operates some 300 office properties in 12 markets in the US; 780 employees; $1.53 billion in market capitalization
- *Project*: Strategic Lease Processing (SLP); Lotus Notes-based (COTS) customer relationship management application; implemented to provide strategic advantage in leasing vacant space; (2 years)
- *Evaluation*: A successful process produced an application that met specifications but didn't successfully integrate with business processes; no ROI due to lack of use. As stated by the firm's CTO, the application is "100% effective at 100% participation and 0% effective at 95% participation."

Financial Services A

- *Organization*: A publicly held, Fortune 200, bank holding company offering consumer-lending products; among the largest providers of MasterCard and Visa credit cards in the world.
- *Project*: Redesign and automate the global call center associate recruitment processes to increase hiring capacity, reduce cycle time, improve quality of hires, and reduce cost per hire; (20 months).
- *Evaluation*: The project delivered a scalable solution that met original business requirements and was delivered on-time without massive cost overruns; but the application was decommissioned due to changes in corporate staffing strategies.

was a success in the months following implementation. However, roughly one year later, in response to the downturn in the economy in 2001, the firm changed its hiring strategy, dramatically. As a result, the advanced features of the system were no longer needed. The system was decommissioned in favor of a BPO solution. The system had been built, and cost justified, on the assumption that continued business growth meant ongoing rapid headcount growth. The possibility of slow growth had been overlooked. Therefore, while Project A met nearly all of its stated goals, it failed to create a flexible hiring and recruitment platform and fell short of achieving an acceptable return on investment.

6. *Learn* – At the time of the retrospective, it was unclear whether or not the firm would make the institutional changes necessary to reduce the likelihood of a similar situation in the future. To this end, the review team recommended better strategy-project alignment, as well as re-baselining projects when fundamental assumptions get altered. When the hiring plans were being adjusted, Project A could have been re-scoped, carving out pieces of functionality, thereby

Figure 5: Case Studies of Process Failure/Outcome Success

Financial Services B

- *Organization*: (same as Financial Services A)
- *Project*: Internal development of a system to enable rapid development, testing, deployment, and measurement of collections strategies, to continually improve collections performance; (20 months, $5.7M).
- *Evaluation*: A change in project manager when the project reached "red status" resulted in a product with a 13-month ROI and a more adaptive organization, despite being six months late and costing more than twice the original estimate.

Midwest Bank

- *Organization*: One of the 20 largest banks in the U.S.; FY99 assets ~ $82B
- *Project*: Develop an automated system for efficient retrieval and storage of images, charge card vouchers, and documentation and processing of the associated workflow; (Fixed-price contract with large service provider; 2 years).
- *Evaluation*: Stakeholders were satisfied with a working product that was used by its intended clients despite experiencing 75% of the common mistakes outlined in Figure 2.

Consulting

- *Organization*: A 200-person IT consulting firm with 95% of its revenue coming from contracts with the federal government.
- *Project*: Redesign the Federal Transit Administration's Web site; (17 months, $270,000).
- *Evaluation*: Poor estimation and ineffective scope management resulted in a $100,000 loss on a fixed price contract; yet the project was considered a "loss leader" important for follow-on business.

Federal Government

- *Organization*: Army Transportation Agency; manages surface transportation of military equipment and supplies worldwide.
- *Project*: COTS-based global distribution system with predictive event management, using large systems integrator; (estimated: 9 years, $100M).
- *Evaluation*: This runaway project was killed after the first year of this nine-year project; successful de-escalation was achieved after changing the project manager and a key project sponsor.

creating downward scalability, and long-term business value.

From a typical project manager's or team member's process-centric perspective, Project A was a very successful IT project. Yet, from a top manager's or sponsor's outcome-centric perspective, it was a failure. Indeed, there is a lot more to project management than meeting specifications and coming in on time and under budget.

Successful Failures

On the other hand, a project shouldn't be written off as a failure just because it doesn't navigate the development process well. Projects that cost more and take longer to complete, yet deliver solutions that are used to solve business problems and add net value to the organization, have become a classic scenario in the world of IT project management. This point was proven by twenty-six of the projects we studied, and is exemplified in the four case studies described in Figure 5.

The retrospective of Financial Services B. Project B at the financial services organization provided a rich example of successful failures. It involved the mission-critical credit card collections system whose primary objective was to prevent losses and cure accounts that either go over limit or become delinquent by restoring the accounts to under limit and/or to their current status.

In January 2002, the firm embarked on an effort to restructure its business processes and underlying IT systems for collections and pre-collections strategies. The goal of Project B was to "Enable rapid development, testing, deployment, and measurement of collections strategies to continually improve collections performance."

The project was justified by regulatory compliance and financial return. The pre-existing collections business processes and systems had grown increasingly complex to manage; they could not support concurrent implementation of tests nor accurately track returns of new collections strategies. Furthermore, to adhere to corporate controls and governance, the firm needed to better trace its test results and returns. The business case for rapid strategy testing and implementation was an after-tax 3-year NPV of $6.7 million. The present value of that expected cost savings was $12.4 million; the required investment was $5.7 million.

The retrospective team found that the project encountered a number of issues early on. For one, although the Sr. Vice President of Financial Solutions (FS) originally requested and sponsored the project, no business executive was initially responsible for project delivery. The IT staff formulated the project plan, scope, and deliverables without significant business involvement. As would be expected, the result was several mismatches between the business leaders and the IT staff. After two months of project "wandering," the senior vice president of FS assigned a vice president in the sponsoring business unit to be accountable for delivering the expected results.

This executive set project delivery for late 2002 with a budget of $2.6 million – before requirements definition and project estimation. It soon became clear that these were unrealistic because:

- The scope was larger than originally conceived
- Little business process documentation existed
- Little systems documentation existed
- The requirements kept changing

Thus, the project team had to reverse engineer and document the existing business processes and IT systems, which proved to be a large archeological effort.

During the first nine months of the project, the IT project management staff also made some key mistakes. First, they did not communicate or publish to executives the formal project tracking of key milestones, risks, requirements and scope changes. The result: unmanaged business executive expectations, scope creep, and cost escalation. Second, the project management team micro-managed the project and blamed the technical team for missed milestones, rather than setting clear, realistic goals for the team. The result: slower progress and team apathy, low moral, and mistrust.

In October 2002, it became clear that the project would not be delivered on schedule, so it was given a "red" status.

A new program director took control in December, re-baselined the effort and project plan, and established a formal Program Management Office (PMO) team and a comprehensive project management program for this project. This program established formal work tracks, each with a designated lead, milestone tracking, communications plan, change management plan, and risk management plan with mitigation strategies. In addition, project delivery was revised to deliver in third quarter of 2003, with a 50% increase in budget.

The business executives immediately challenged these revisions because they wanted delivery in March 2003. By drawing on formal estimation results and project tracking metrics, the IT project manager was able to convince the business leaders that a June delivery might be possible, but the costs would be significantly higher. The IT project manager then tracked the project metrics and frequently communicated progress to the executives, which improved executive visibility and understanding. At the May 2003 executive meeting, the IT project manager used risk metrics and a formal risk profile to tell the executives that delivery would slip to September.

Under this new project management, team morale improved dramatically, collaboration increased, and senior management gained confidence, all because of the project management discipline, the clear goals, and the commitments being analytically driven.

Project B went live in August and was formally closed in September 2003. It cost $5.7 million, more than twice the original estimate.

The key lessons from the retrospective included:

- Define clear scope and requirements before establishing a delivery date.
- Conduct thorough and authoritative systems impact analyses.
- Assign a senior-level business executive to the project at the outset.
- Use a formal project management methodology with clearly defined metrics, risk management, and communication plans.

At the time of the retrospective, key business metrics were still being tracked to determine the expected return. But the initial results showed:

- $33 million reduction in charge-off accounts.
- Reduced time-to-value and increased capacity resulted in a 50% increase in number of concurrent collection strategy tests in production.

Project B was a classic case of an IT project that failed from a process perspective (and seen as a "runaway project"), yet it was turned around and yielded a successful outcome from an overall stakeholder perspective. As one retrospective participant stated, "The single biggest factor in [this project's] success was bringing in senior, experienced managers who had the dedication and focus to get the job done!" Indeed, the lessons learned led to managing projects in new ways, including policies requiring business ownership and procedures for handling "red status" projects.

As these case studies demonstrate, evaluating project success can be challenging. While all relevant stakeholders may occasionally consider a project to be a complete success (or failure), most IT projects will receive a mixed report card. These case studies also demonstrate the valuable learning from a retrospective, regardless of project success.

CONDUCTING A RETROSPECTIVE

Based on our six years of experience, as well as the opinions of professional facilitators,[12] retrospectives should be conducted after completing each major milestone in large projects, and one to two weeks after implementation. Benefits realization should be conducted later, when business value metrics can legitimately be assessed.

Retrospectives should be scaled and located based on the size and nature of the project. Thorough discussion and thoughtful analysis can usually be completed in one to three days. Location options include on-site, off-site local, and off-site residential; each has its advantages and disadvantages.

The two most important retrospective decisions are the choice of participants and facilitator. All major stakeholder groups need to be represented, but all the participants do not need to be in all the sessions. For example, it is often useful to hold anonymous feedback sessions with only the project team members present. The ideal facilitator is someone who was not a member of the project team, has subject matter expertise (e.g., systems development experience), and is a superb group facilitator (e.g., with the ability to create an open and constructive atmosphere).

As detailed in Appendix A, retrospectives should begin with a complete description of the project, including its context, the methodology and technical approaches taken, and an analysis of the various project stakeholders – that is, their power (i.e., influence over others and direct control of resources), level of interest, and degree of support/resistance. The project timeline provides a temporal explanation of project events including significant milestones, deliverables, and momentum fluctuations.

A lessons-learned section carefully evaluates what is going wrong (or went wrong) with the project and makes recommendations for improvement. A thorough retrospective also includes a root-cause analysis that uncovers the observed failure symptoms and when they were observed. Examples of failure symptoms in the two financial services cases included lack of strategic alignment (Project A) and lack of business ownership (Project B). Take-a-ways such as these can quickly improve upcoming projects.

As previously discussed, evaluating a project's success criteria typically proves to be the most difficult, yet potentially valuable, component of a retrospective. A thoughtful analysis evaluates all the criteria (time, cost, product, use, learning, and value), determines which combination of process-outcome criteria best describes the project, and suggests the lessons learned for each stakeholder group.

CONCLUSION

Given the critical role that project management plays in the field of information technology, we need to accelerate our progress on this typically slow and painful learning process. To this end, project retrospectives need to evolve beyond simple checklists of what went right and wrong to become more analytic, as exemplified by the case examples in this article. Managers need to recognize that virtually every project experiences some successes and some failures. Yet, regardless of the level of success or failure, every project should contribute to organizational learning and continuous improvement.

Based on the findings of this research, stakeholder perspectives on the several dimensions of success need to be considered, carefully documented at the beginning of a project, and revisited periodically throughout the project, including at least one post-implementation retrospective. Project managers need to become adept at negotiating the corners of "the

[12] See the following reference for a detailed review of how to conduct a project retrospective: N. L. Kerth, *Project Retrospectives: A Handbook for Team Reviews*, (New York: Dorset House Publishing, 2001).

tradeoff triangle" – time, cost and product – and the impact of those tradeoffs on the three outcome criteria – use, learning, and business value. The project charter should include the negotiated success metrics, the project dashboard should enable real-time monitoring of the metrics, and the project retrospective should document the actual results, concluding with overall stakeholder satisfaction.

There is a lot to be gained by looking in the rear view mirror from time to time. As George Santayana, philosopher, poet, and cultural critic once said, "Those who cannot remember the past are condemned to repeat it." We do this all too often in IT, as evidenced by the Chaos Report of the Standish Group, which estimates annual project waste at over $55 billion. If the retrospective process could reduce this waste by only ten percent, perhaps project managers could afford to pause and reflect more often!

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APPENDIX A. IT PROJECT RETROSPECTIVE TEMPLATE

- Organization Name and Description
- Project Name and Description
  - Why was the project undertaken in the first place? Initial vision? Business case?
  - What external competitive or environmental factors were significant and why?
  - What business metrics were supposed to go up or down as a result?
  - What were the institutional dynamics regarding governance and funding?
  - Organization map and stakeholder analysis
  - Type of project (e.g., system, business application, shrink-wrapped product)
  - Business criticality (e.g., strategic, infrastructure, maintenance, etc.)
  - Basic approach (e.g., internal development, COTS)
  - Lifecycle approach (e.g., waterfall, prototyping, code and fix, spiral)
  - Methodology(ies) employed (e.g., object-oriented, agile)
  - Technology (e.g., architecture, hardware, software, development tools)
  - Size (e.g., lines of code/function points, effort/team size, budget)
- Project Timeline
  - How do the project's phases, main facts, critical events and inflection points unfold when laid out chronologically? What happened and in what sequence? What is the factual storyboard?
  - What would a trend line of the project's momentum look like over time (+/-)?
- Lessons Learned
  - Common mistakes checklist
  - Symptoms of failure (lack of strategic alignment, lack of stakeholder involvement, poor planning, poor execution) and root-cause analysis
  - Recommendations for the future
- Evaluation of Success/Failure (time, cost, product, use, learning, value)
- Retrospective Participants and Authors
- Keywords; Search Tags
- Appendix – Project Artifacts
  - Project charter, business case, and/or white paper
  - Organizational map (including program office, project team, stakeholders)
  - Project history, log documents or issues management summaries
  - Project status meeting summaries
  - Size, effort, schedule, budget estimates (and relevant assumptions)
  - Size, effort, schedule, budget actuals
  - Architectural schematics
  - System design documents
  - Release plans (what functionality was scheduled in R1, R2, etc)
  - Conversion and implementation plans
  - Project completion documents
  - Audited business case results
  - Interim retrospective(s), lessons learned, or other documentation