3

Portfolio Flexibility

As the tides of the marketplace ebb and flow, the strategic piers need to bend and bob to them. And as these piers move, so too must the program of ships tied to them. Should we use iron bars or flexible nylon rope to tie the projects to the strategies? Or should we use string or steel cables? The methods we choose to keep projects linked with the shifting strategies need to be flexible yet firm enough to see any project through marketplace storms. On the same note, we need to make sure that our strategic piers can hold the ships we choose to tie to them. A project too large, too long, or too populated can rip a strategy to shreds even if the tie ropes are well strung. The last chapter showed how to develop proper piers for the marketplace and how to tie project ships to them. This chapter will first focus on how a company should choose which ships can tie to their strategies (initiative methodologies). Then, the rest of the chapter will show how to choose the proper methodology ropes for the projects (project methodologies) and how to monitor those methodologies and projects for strain.

3.1 Risk and Methodologies

As touched on earlier, a well-known general rule in the IT industry is that if a project doesn't provide a solution within six months, then it will fail. This mantra of IT projects is based on the well-developed know how that business rules change so dramatically over a six-month period that any IT project release will be based on requirements that are out of date. If a project doesn't deliver usable results in this time frame, the odds of entering into a downward spiral of scope creep increases dramatically. More recently, with the introduction of safer programming languages and COTS, business leaders now expect results in one to two months rather than the traditional six-month timeframe. These newer demands have added a level of risk that PMs have addressed by improving their release cycles.

Over the years, IT professionals have become very aware of the level of uncertainty inherent in almost all IT projects. This is why risk management is so deeply engrained into the project tasks of most IT PMs. A common tool used by IT PMs to mitigate risk is to split the project's deliverables into subdeliverables and thus create multiple functional releases—or iterations of the final release. They realize that business rules, or microstrategies, change so frequently in today's turbulent marketplace that they want to make sure projects don't fail as a result. Therefore, projects that iterate out their releases are providing project sponsors with options to change the course of the project rather than scrap it completely if the businesses strategic direction changes. Such options allow businesses to reduce the amount of loss attributed to cancelled projects and instead leverage the work of partially completed projects in a slightly new direction.

Notice how I wrote that project direction, or scope, should only be changed slightly. A fine line exists between disastrous scope creep and altering the direction of the project to match that of the corporate strategy. A project that changes too much from the original design risks failure. For example, IT projects tend to have a lot of time spent determining the best technical approach to problems before diving in and constructing. So if a project changes course too dramatically, then the new project deliverable may not make sense with the technology chosen for the original requirements. Scope management provides

another well-documented set of project management tasks that most PMs follow. Change control systems, release signoffs, and time/functionality tradeoffs are just a few examples of how PMs keep projects pointed in a somewhat constant direction through scope management. The PMO, on the other hand, ensures that projects include flexible and frequent release schedules in their business cases before initiative approval and during project implementation. This provides companies with at least some slight wiggle room instead of being tied down to an entirely inflexible portfolio of projects.

3.2 Flexibility

What is meant by portfolio flexibility? Chapter 2 showed some examples of how changes in the marketplace can, through changes in the corporate strategy, put pressures on IT-based projects to change course. If the initiatives for project A and project B were designed to have just one release, then their project phases would have prevented them from being as flexible as they were. Figure 3.1 shows a comparison of two basic methodology types. The top figure shows the classic waterfall methodology, where each phase of the project follows the previous phase until the final project release is achieved. Newer methodologies have incorporated iterations of the phases and iterations of the releases to allow for higher quality, better mitigation of risks, and quicker reaction to changes in the environment (e.g., the corporate strategy). IT project portfolio flexibility is achieved when the IT-based *business initiative* methodologies incorporate iteration of the releases and when IT *project* methodologies incorporate iterations of the phases.

We will start by looking at how IT initiative methodologies can better design iterative releases into their business cases by using a powerful tool called Real Options Analysis. This tool shows how to bring together risks, project goal options, and cost/benefit analysis to lay a foundation for a flexible, auditable and sellable business case. Then, we will show how an IT PMO can leverage the power of established, iterative methodologies to create methods tailored to how a company prefers to audit their own portfolio. Flexibility applies not only to the methods used, but also to how they are chosen. As we review the various methods, it is

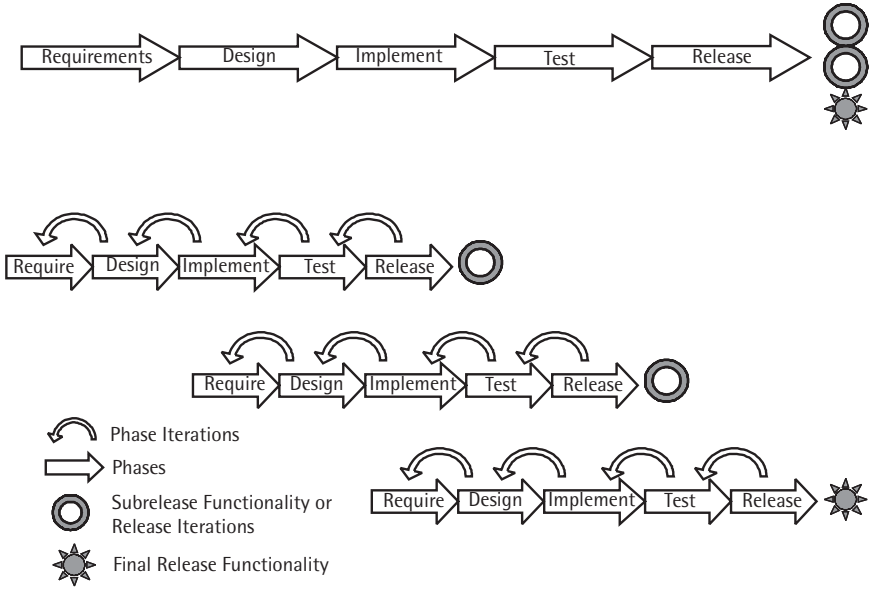

Figure 3.1 Single project release versus iterative project releases.

a central theme that the company provides its employees freedom in choosing from a core set of methods. Methodologies must never be overly constrictive and thus prevent the creative freedom required of IT-based project success.

3.3 Initiative Methodologies

A common cliché muttered by many IT PMs is that "if you do well on your midterms, then the finals will be that much easier." With IT-based business initiatives, project sponsors have the opportunity to plan out a project in sufficient detail to truly increase the chance of success. Consider the business case as the first midterm; if this is done well, the final project release will have a much better chance of success. Organizational effects, technical risks, cost analyses, resource requirements, and stakeholder lists are just a few of the elements of an IT-based business case that should be addressed. "There must be a balance between front-end planned activities and ongoing iteration during the project" [1].

While thorough planning is important, experienced PMs also live in constant fear of the analysis-paralysis beast that can delegitimize a cause. This is just one of many balancing acts that any PM will face during the project lifetime. The most inevitable is the famous chaos/order teeter totter toward the end of any IT-based project. But if a foundation of order and clarity is established well in the beginning and maintained deep into the project lifecycle, then a project has a better chance of tottering towards an orderly end.

Many IT-based initiative methodologies have been introduced by academics and implemented by businesses. Here, we will morph the concepts of several of these to come up with a process, a business-case template, a cost/option analysis approach, and a metric-mapping template. The first three are fairly standard for any business case. But the metric mapping is central to the needs of a successful PMO. Tracing project milestones back to the metrics, or hurdles, established in the project's business case is critical to being able to test for the health of a project. This, in turn, is necessary to prioritize projects and maintain an efficient IT project portfolio. However, because methodologies can be as constraining as they are guiding, PMOs should tailor methodologies to the custom realities of each organization.

One example of such a tailored methodology is shown in Table 3.1 and Figure 3.2. A company can have better control over the ideas generated by its business units if staff members are given structured guidelines. In this methodology, the person with an idea to improve the business can be considered to be in phase 1 of the business initiative methodology. The PMO acts as a reality check for the business case writer by providing a list of possible technical or organizational risks that the resulting IT-based project may encounter. In phase 2, the PMO provides guidance on standard risk, option, and cost/benefit analyses. The data that results from this phase is central to writing the business case in phase 3. The PMO can provide business case templates that writers can use to best sell their idea. After the business case is submitted, phase 3 continues with the project sponsor "preparing the battlefield" for project approval. In some cases, if the approval process is nothing more than a nod during the presentation, then the project preparation process will overlap into the project timeline. Once an initiative is

Table 3.1
Goals for the Phases of a Business Initiative Methodology

Phase 1	*Understand the Problem and Its Context*
	Specify Objective
	Identify Stakeholders
	Analyze Problem
Phase 2	*Risk/Option/Costs Analysis*
	Risk Analysis
	Options Analysis
	Cost/Benefits Analysis
Phase 3	*Presentation and Project Prep*
	Document the Case
	Make the Case
	Project Prep
Phase 4	*Project Auditing*
	Ongoing Reviews
	Metric Mapping

Source: [2–4].

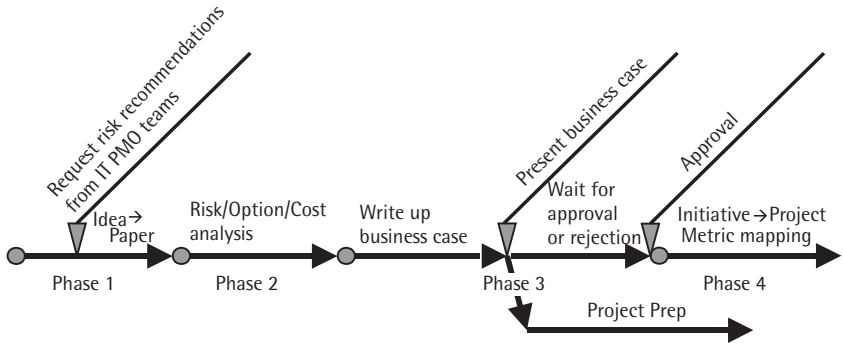

Figure 3.2 Phases of a business initiative methodology.

approved and funded, phase 4 of the initiative methodology kicks in. This last phase overlaps the chosen project methodology through the life of the project. Such overlapping ensures that future PMO audits correctly map business case hurdle points to milestones on the project.

3.3.1 Phase 1—Understand the Problem and Its Context

Most companies have staff members among their business units that are hungry to present new business improvement ideas. These ideas can only become fuel for the company if they are presented to and funded by those with the authority and the accountability for the success of the company. But what percentage of business initiatives ends up being a waste of the executives' time? How many sponsors of bad ideas block out the stream of good ideas just because they have louder voices? For good ideas to sprout from the current corporate strategy, the executives need to continually communicate the constant variations in its strategy. And for these ideas to be presented clearly, they need to follow a constant format set forth by the reviewing committee. To help ensure that early idea formation maps to what a company wants, the PMO can require that staff members use a template that also lists some of the current microstrategies of the various business units. An idea can evolve by first writing a preliminary initiative plan that addresses such things as [5]:

- What will be done;
- The project's sponsor;
- The link to organizational direction and business goals;
- A top-level description of the project's costs, benefits, and risks.

If the idea generator has any questions on organizational fit or technical feasibility, the IT PMO can provide two teams to offer advice (see Figure 3.3). This will help filter out any ideas before they are fed into the initiative pipeline as business cases.

3.3.2 Phase 2—Risk/Option/Cost Analysis

The job of the organizational gap and technical gap review teams at this stage isn't to reject ideas; rather, it is to offer the business case writer a list of risks. It would then be up to the writer to present her case with a complete review of these risks or to "filter" her own idea out. This review should present various options that the project can take if any of these risks become barriers to success. Then, costs should be tied to

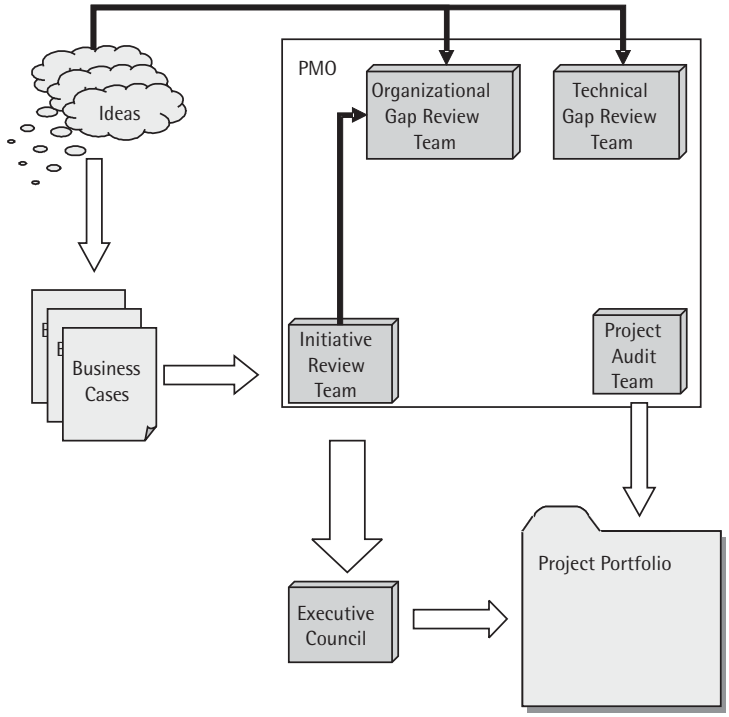

Figure 3.3 Initiative review process flow with PMO support.

these different options. Once cost analysis is included, the plan can start addressing "the issues that the seniors are most worried about. When the smoke clears, the thing that really matters to senior management is the numbers" [4]. But before the sponsor calculates the cost/benefits of the project, he needs to formalize the risks provided by the PMO teams and then develop a list of options.

3.3.2.1 Risk Identification

In Chapter 1 we showed how some risks gradually diminish, while others vary over the life of a project. Another way to categorize risks is by grouping the technical and organizational risks as unique risks and the market risks as commercial risks.

Unique risks, also called private risks, are those that are partially under the control of the PM. The level of control the manager has over these risks and the amount of damage the risks can incur on the project

are both measured subjectively based on past experiences, gut feel, and probability equations. The higher these risks are, the lower the value of the project. Figure 1.5 shows how these risks gradually reduce in magnitude over the lifetime of the project.

Market risks are those that are not controllable by the PM. Examples include natural disasters, interest rate changes, and tax rate changes. While still subjectively calculated, their probabilities are based on statistics from other competitors, government, or academic research. Examples of approaches used to calculate the probabilities associated with market risks include the Black-Scholes formula, the binomial approximation, and risk-neutral methods. Though Figure 1.5 shows these types of risks as uncontrollable, financial markets take the approach that higher risk yields higher returns. While project sponsors would prefer to lower the incidence of unique risks, they may be more accepting of higher market risks.

As an example, let's look at project B from Joe's Telecommunications. Table 3.2 shows some of the tasks the sponsor would come up with and submit to the PMO for review. Once the PMO has "sanity checked" the project idea, the PMO can provide what it feels would be technical and organizational risks if the project were approved. Initiative sponsors would then map these risks and any others they felt should be included (e.g., market risks) to the initiative tasks. This mapping would then serve as a foundation for developing alternative options and cost/benefit analyses for the business case. Here, we will show how this can be done by evolving the business case for project B a bit further.

3.3.2.2 Cost/Benefit Techniques—Net Present Value, Profit Index, and Internal Rate of Return

Figure 3.2 shows how we mapped the technical and organizational risks (unique risks) and the market risks to the tasks. The figure also lists some high-level options the project can take at the end of each phase. If the PM is able to mitigate the unique risks sufficiently and avoid the downsides of the market risks, then the project has a good chance of ending successfully. However, if the project triad is adversely affected by any of the known or unknown risks, then the project can end in an unsuccessful state. At this point (either actual or planned phase

Table 3.2
Unique Risks Versus Market Risks on a Project

Goal	*Make Field Reps More Independent/ Efficient*			
	Tasks	*Unique Risks*	*Market Risks*	*Options*
Phase 1	Build up and train call center to handle new load		Minimum wage increases	
	Add dial-in number and configure phone switch	Technical problem with phone switch (tech)	Cost of 1-800 calls goes up	
	Train field reps	Field reps rebel over new training and responsibilities (org)		
				No problems
				Abandon project
				Fix problems, move forward
Phase 2	Develop mobile device software	Programmers' code too buggy (tech)	Programmers' union goes on strike	
	Purchase, test, and roll out mobile devices	Mobile devices are buggy (tech)		
	Integrate mobile software with call center databases		Radio frequency antennae company goes out of business	
	Train field reps	Reps are too busy for training (org)		
	Train IT help desk	IT help desk is understaffed (org)		
				No problems
				Abandon project
				Fix problems, move forward

completion date), the project sponsor has three choices: continue on with the next phase of the project, abandon the project, or fix the problems with the current phase and then move onto the next phase. These are options that need to be presented in the business case to enable the approval committee to make the best comparison with other proposed business initiatives. And they need to be presented in the context of the risks (mapped to the tasks) first and the cost/benefit analyses second.

When developing the business initiative methodology, there needs to be a requirement for financial audit points. That is, there needs to be a way for some auditing committee to track the progress of the approved project back to some original set of financial metrics in the business case. With such a standard set of metrics, auditors will then be able to compare apples to apples when balancing the health of the project portfolio. Different chief financial officers (CFOs) prefer different financial metrics when monitoring the progress or success of any project. The two most common are the net present value (NPV) method and the internal rate of return (IRR) method. Two other metrics that are used on IT projects are the profit index (PI) and the payback (PB) period.

NPV

To understand NPV, we must first understand the time value of money, or the present value (PV) concept. To receive $100 two years from now, the PV of that $100 is actually just $83 if we were able to get a 10% return on that money. In other words, if $83 is put in a bank today and earns 10% annually, we would end up with $100 in two years. Now, the NPV is defined as the PV of the expected future cash flow (e.g., $83) minus the initial cost of the project. "It represents the contribution of that investment to the value of the firm and, accordingly, to the wealth of the firm's shareholders" [6]. In general, a project should be accepted if its NPV is greater than or equal to zero and rejected if its NPV is less than zero. Or, in a portfolio of initiatives, if two or more mutually exclusive investments with equal risks have positive NPVs, the project having the largest NPV is the one selected. In short, "the NPV approach considers both the magnitude and the timing of cash flows over a

project's entire expected life" and is a good measure for comparing project value [6].

IRR

Continuing with the example of the $83 invested, if we only got $96 in two years then the actual rate of return would be 8% instead of the expected 10%. The benefits, or the return from a project, can be measured in the same way using the IRR metric. The IRR is defined as the discount rate that evaluates the PV of the benefits (net cash flows) from a project with the PV of the total costs (net cash outflows). In a business case, obviously, the IRR is a projected value—it is the rate of return the project sponsor *expects* to get from the risky investment. The higher the perceived risk, the higher the expected IRR, in theory. This can be referred to as the risk premium, or the return investors expect over the risk free rate one would receive if they invested in U.S. Treasury bills [6].

When choosing metrics to monitor the progress of projects, a survey of 74 of the 100 largest firms in the *Fortune* 500 industrial firm listing indicated that 99% of the firms used IRR compared to 85% that used NPV [6]. However, the problem with using IRR to track project success is that, as we saw with Joe's Telecommunications, the projects can take several turns and deliver several different functional points. Each of these deliverables can provide different rates of return. Such multiple IRR calculations can end up being too complex to provide meaningful results. "Although several techniques have been proposed for dealing with the multiple internal rate of return problem, none provide a simple, complete, and generally satisfactory solution" [6]. The better metrics, therefore, for measuring the progress of a project are those that monitor real dollar values such as NPV rather than those that monitor dollar ratios such as IRR.

PI and PB

Two other metrics that could be incorporated into a business initiative methodology are the PI and PB measurements. The PI is similar to the NPV, but instead of subtracting the initial costs of the project from the PV of the future income, we divide the latter by the former. So if the PI is less than 1.0, then the project costs more than it returns. And if the PI

is greater than 1.0, then the project is considered to be profitable. The PB is the time it takes for the project deliverables to earn enough money to pay off the costs of the project. This number, usually calculated in days, "gives some indication of a project's desirability from a liquidity perspective because it measures the time required for a firm to recover its initial investment in a project" [6]. Whichever metric is chosen for the initiative methodology, either one from the samples presented here or a more advanced one, it needs to be applied to all projects consistently so that project health can be normalized across the portfolio.

3.3.2.3 Real Options

With the different options the project can take and with the tools to conduct cost/benefit analysis, the business case writer can now draw up some decision trees. Figure 3.4 shows an example of a decision tree for phase 1 combined with a decision tree for phase 2 (Joe's Real Options

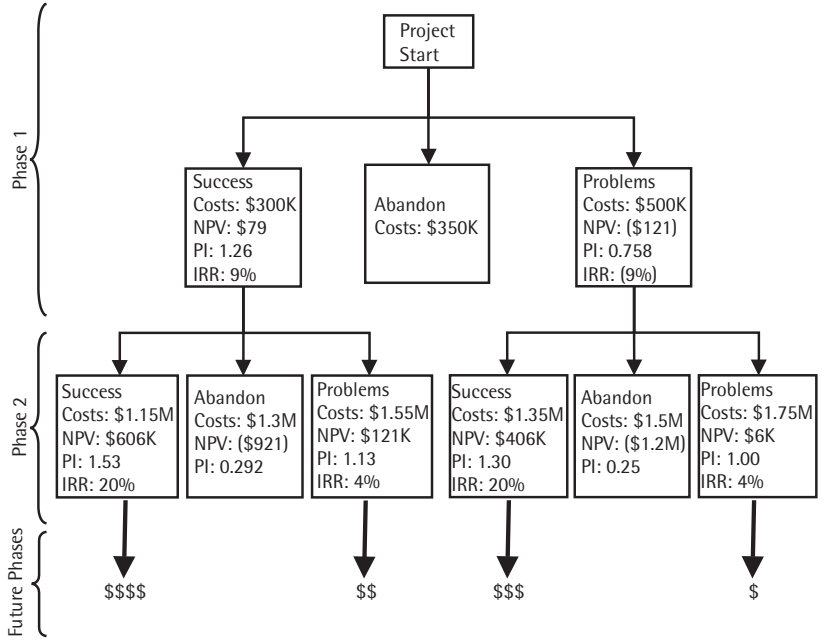

Figure 3.4 Real options analysis of a multiphased project. (M = millions, K = thousands.)

calculator used for this figure is on the accompanying CD-ROM). Most nodes on the tree show the NPV, the PI, and the IRR that would be realized if the project took the respective paths. With the different paths shown, an initiative reviewer can now see the costs that will result if any of the known risks affect the desired path of the project.

Because each phase has its own set of deliverables that produce their own returns, separate IRRs are shown for each phase. This is done because, as mentioned earlier, combined IRRs not only can become overly complex for multiphased projects, they are hard-won numbers (i.e., complex) that are still based on subjective estimates. Complexity that sits on a foundation of subjectivity can be more of an annoyance than a benefit for initiative review teams.

However, the NPV and the PI are shown as cumulative values for the whole project. For example, phase 2 NPV and PI numbers represent the return and costs for the functionality delivered in both phase 1 and 2. If the sponsor chooses to abandon the project, there will be some added costs associated with dismantling any hardware that was purchased, retasking idled resources, and paying off software or outsourcing contracts. Even more painful, the reviewer can see that there will be no NPV or PI because the product will never be delivered.

The combination of these two decision trees shows a set of real options that can help better decide whether this is a project worth financing. What makes this more than just a decision tree is how future benefits can still be realized in phase 2 even if the project is seeing negative returns from a problematic phase 1. As mentioned in Chapter 1, Real Options mapping is a way for the business case writer to conduct early mitigation of the identified risks. While the majority of risk management will be conducted during the project by the PM, Real Options analysis can provide early risk mitigation by showing the true value of the project. In this case, if the approval of the project was decided by the numbers presented for phase 1 only, the 50/50 risk of seeing negative NPV or a PI of only 1.26 might be enough to not approve it. But if the reviewing committee saw that if phase 1 completes, no matter the delays, they will then have options to realize projectwide PIs of 1.30–1.53. And if the Real Options analysis was carried further to future phases, the initiative may appear even more attractive.

NPV, as a tool for decision analysis, fails to take into consideration flexibility. By combining options and their respective NPVs, we can now see how the value of flexibility offers a more optimistic and realistic view to the decision maker. They can see that, even if the project is doing poorly, the additional options the project deliverable provides is more valuable than the intermediate project deliverables. "The appropriate mind-set is to recognize that the net present value technique systematically undervalues everything because it fails to capture the value of flexibility. NPV is only valuable as a tool because risk is assumed to be unchanging during the life of the project" [7].

Most projects are made up of *rainbow* options—phased projects that include design, construction, and rollout phases and that are subject to multiple sources of uncertainty [7]. With compound rainbow projects, one has the option to stop or defer the project at the end of each phase. Thus, each phase is an option that is contingent on the earlier exercise of other options—an option on an option (or options). For example, at the end of phase 1, the viability of the project could be reexamined based on project health up to that point. Either the project would be abandoned, fixed and continued, or continued without need for repair.

3.3.3 Phase 3—Presentation and Project Preparation

Once the general vision, objectives, risks, options, and cost/benefit analyses have been gathered, the business case can start to take shape. As the IT PMO provided guidance on risks and cost/benefit metrics, so can it also provide guidance on the business case by providing a common template—a template that is easy to follow "with clearly defined minimal acceptance criteria" [5]. Too much structure can inhibit the way a great idea can be best presented. On the other hand, certain elements of the proposal must be kept consistent to help with future auditing.

Phase 1 (of Figure 3.4) provided a means to develop a basic vision and set of objectives; the level that an executive summary should be written. From this, the business case can evolve by including a problem statement and a vision statement. Phase 2 went into far more detail by first developing a list of tasks, or work packages, from which a list of risks could be derived. Additional details could be added, such as

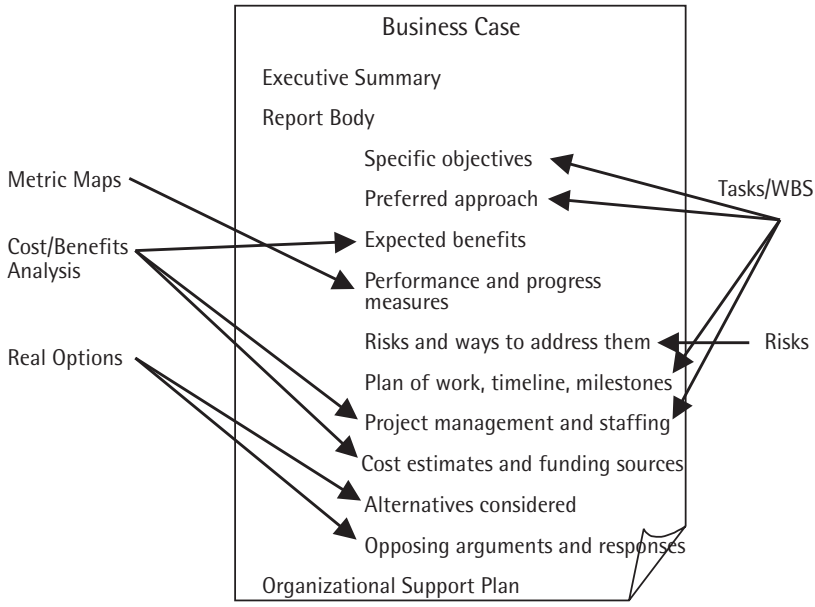

Figure 3.5 Linking elements of a business initiative to a business case. (*After:* [2, 4, 8].)

milestones, funding sources, and the risk mitigation plan. Figure 3.5 shows a business case template that can be used by all IT-based business initiatives.

Business case writers should not feel constrained to just the business case. They need to be able to sell their ideas using a whole host of communications approaches. The marketing of their ideas should include "a variety of presentations, both oral and written, with supporting media such as handouts, slides or demonstrations" [2]. But once the initiative is approved, the business case needs to explain how it will continue to garner organizational and executive support. An organizational support plan needs to be developed that explains how the stakeholders will enthusiastically embrace the final deliverable. Many times IT projects deliver some wondrous piece of technology, only to have it used as a doorstop because it wasn't marketed properly. While marketing to the stakeholders occurs throughout the project, marketing to the executives occurs before, during, and after the project timeline. "In order to retain support and funding beyond the initial approvals, state how and when

you will give progress reports against the performance measures established in your business cases" [3].

Once the project is submitted for approval, the project sponsor has an opportunity to prepare the groundwork for a successful project kickoff. The following are some examples of long-lead activities that PMs can do while waiting for financing [4]:

- *Project planning.* Complete high-level Gantt charts and work breakdown structures.
- *Staffing.* Recruit key personnel and prepare transfer paperwork.
- *Stakeholder committee formation.* Have the sponsor lead this committee and then fill it with key stakeholders that will help ensure organizational embracement of the project deliverable.
- *Equipment and tool acquisition.* Submit requests for long-lead items, such as server racks and hard-to-find installers.
- *Facilities.* Search out and negotiate with the facilities department for space.
- *Operational concepts.* Develop communication plans for e-mail, phones, pagers, meetings, and escalation procedures.

3.3.4 Phase 4—Metric Mapping

The previous sections focused on auditing the project deliverables at the end of each phase for cost/benefit metrics. While these are important tools in the review process, many sponsors want to audit the project before a phase completes. Auditing of this kind can't focus on returns because the final product hasn't been released. Instead, the audit team will look more at elements of the project triad, such as percentage of functionality complete, percentage of budget used, and days left before the next milestone. Other metrics can look at the areas that the PMBOK brings up, such as number of risks eliminated and number of bugs found and fixed (quality). Because such metric tracing requires clear touch points between both the business case and the corresponding project, development of the initiative and choice of the project methodologies need to be in synch. As financial portfolios have basic metrics that monitor security risks [e.g., earnings

per share (EPS), price/earnings (P/E) ratio], project portfolios have metrics to monitor project risks (NPV, IRR). But how can the PMO team ensure that each project in the portfolio is using the same metrics to verify that the projects are meeting their original goals? By adopting a suite of standard project methodologies, the PMO can make sure projects use consistent metrics to trace project cost, health, and risks back to the business case.

3.4 Project Methodologies

Before a project starts, it is critical to success that some method be established and communicated to the project stakeholders. Because IT projects involve so many nonconcrete work packages, milestones, and deliverables, some structure needs to be in place to hold everything together. For example, how can a PM know for certain that a developer has completed a coding module if no third party testing was done to verify it? How can the project sponsor know that a chosen technology will work if proof-of-concept documents weren't signed off? And why would end users use a delivered product if they were never trained on it? Testing processes, prototyping approaches, and training timelines are all examples of methods a PM needs to announce as part of the project methodology.

Industry has also learned over time that because projects vary so dramatically, different methods need to be used to ensure success on different projects. To support this, many methodologies have been invented for IT projects of various shapes and sizes. And because no two projects are ever the same, these methodologies act only as templates to support each project-specific methodology. One PM may look at an approved business initiative plan and see his battlefield. Another PM may look at the same plan and see her canvas. Each PM will then decide to mold a methodology template they feel will best ensure project success. The methodology template must fit not only with the mechanics of a project, but also with the psychology of the project microsociety. Because few PMs know how to play the methodology card game well, the IT PMO needs to establish a knowledge in and a support structure for some subset of these methodologies. This will, in turn, allow even

the inexperienced PMs to leverage the right methodology for their projects.

Supporting all known IT project methodologies would be impractical for an IT PMO that is trying to keep a small footprint in the organization. Instead, a subset of methodologies needs to be chosen. Figure 3.6 shows the IT PMO in the center, supporting a larger virtual IT PMO (i.e., a PMO that appears larger than it actually is due to the organizationwide support from business units and PMs, to name a few). The details of the structure of a virtual IT PMO will be addressed further in the next chapter. The point to be made here is that the IT PMO should not decide on the set of methodologies to use behind closed doors. Rather, it should coordinate a sampling of PMs from the enterprise to come up with a short list of methodologies (step 1). Such an approach would reduce backlash from the project management staff because some self-appointed guru in the PMO office didn't create and

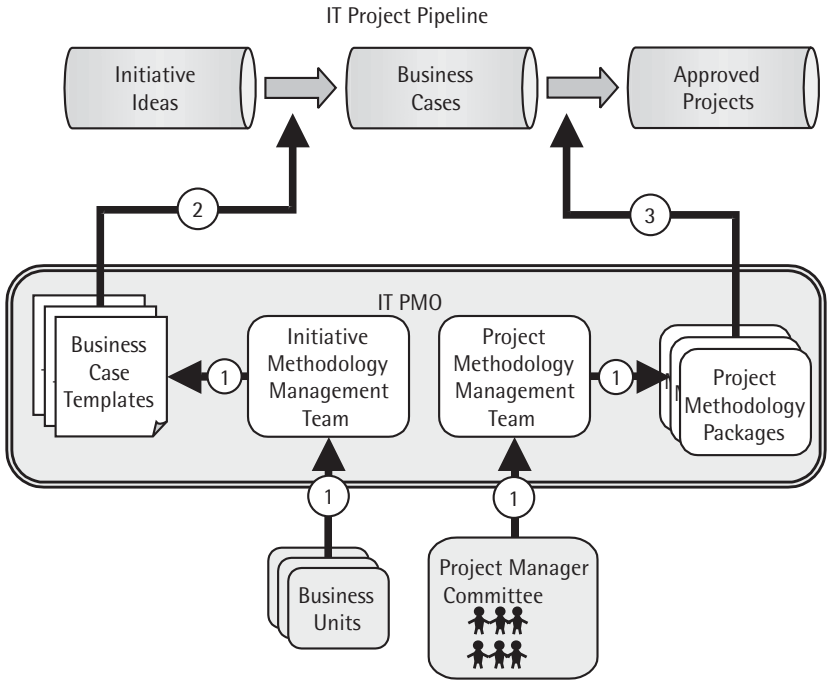

Figure 3.6 Virtual IT PMO—methodology management teams.

then impose a corporate-specific methodology. Instead, by allowing them to choose from methods voted on by those who will use them (step 3); the PMs will feel more confident as their projects progress. Furthermore, the PMO would be able to better compare the health of projects by placing an equal number of audit points in similar locations on each methodology.

The adopted project methodologies should be flexible to strategic long-term projects (e.g., ERP) and to tactical quick-implementation projects (e.g., eBusiness). To allow for such flexibility, high-level components that are common to most scenarios should be required in all audits. Tackle only the very basic standards and procedures, such as how to create a project plan, how to track issues, the use of a project charter, and so forth [9]. To support metric mapping in the methodology, these deliverables should associate with the phases of a project (i.e., the requirements gathering, design, and implementation phases). These end-of-phase deliverables will eventually act as audit touch points to monitor project metrics. As the organization learns, adopts, and gets comfortable with the basics, other elements of the methodologies can be added: document templates, instructions, and process guides. In short, any methodology should have [10]:

- *Breadth.* It must be transferable (flexible) across project types.
- *Depth.* It should show sufficient detail for each stage and phase.
- *Clarity.* It should be easily understandable.
- *Impact.* It must allow for measurable results.

3.4.1 Pitfalls

Understanding the need for project methodologies, we must, however, be wary of the pitfalls of spreading the religion of methodologies. One easy trap that PMOs can fall into is the overenforcement of project methodologies. A main reason so many projects run into problems is because of "too many procedures or too much methodology" [11]. The overt case for a methodology is "a long list of its supposed benefits, including standardization, documentary uniformity, managerial

control, and state-of-the-art techniques" [12]. The covert case for methodologies, on the other hand, is that they can do "grievous damage [to a project] by trying to force the work into a fixed mold that guarantees a morass of paperwork, a paucity of methods, an absence of responsibility, a general loss of motivation" [12].

As many have pursued the golden fleece of project methodologies, many a project has failed because of its strained attempts to fit the mold of a methodology that was incorrectly dictated by a central office. Furthermore, "methodologies seek to force convergence through statue. Better ways to achieve convergence of method are: Training, Tools and Peer Review" [12]. By providing a source for training, a simple set of project tracking tools, and reliable audits, IT PMOs can effectively instill an enterprisewide project methodology. And any project methods training needs to be "more about behavior change and less about Gantt charts and PERT charts" [11].

Most new IT PMs who are allowed to run a project with little to no knowledge of proven project methodologies tend to fail. However, many seasoned PMs have shown success at managing projects from the seat of their pants. Once these managers are forced to follow a standard methodology, they become constrained and they falter. So how does a company introduce methodologies that mitigate the risk of new managers or new project types while still allowing for the freedom that have made experienced managers so efficient? PMOs need to have projects follow a method so that they can compare the health of projects side by side. If different methods are used, projects may unfairly be graded lower than others because the PMO would be comparing apples to oranges.

3.4.2 Audit Points

"Most PMs are preoccupied with bringing the project to a successful finish, and they cannot be expected to clearly see the project in an objective manner of supporting the enterprise mission" [13]. To continually ensure that a project's deliverable will end up supporting the enterprise mission, or strategy, the IT PMO's audit team can conduct audits at various key points of a project. In order for PMs to know when audits will occur, such audit points need to be added to each project

methodology adopted by the organization. The following four figures show how a PMO can establish four audit points on each major phase of a project: initiation, execution start, testing start, and completion. In this case, the virtual IT PMO project committee decided to choose four methodologies that a PM could use and that the PMO audit committee would understand: a professional organization method—PMBOK by PMI, a private company method—Rational Unified Process (RUP) from IBM, a classic standard method—Spiral, and a new standard method—Extreme Programming (XP).

In the RUP, we see that the initial audit point is placed at the kick-off point of the project (see Figure 3.7). The second audit point is put at the end of the first elaboration phase but before the start of the second

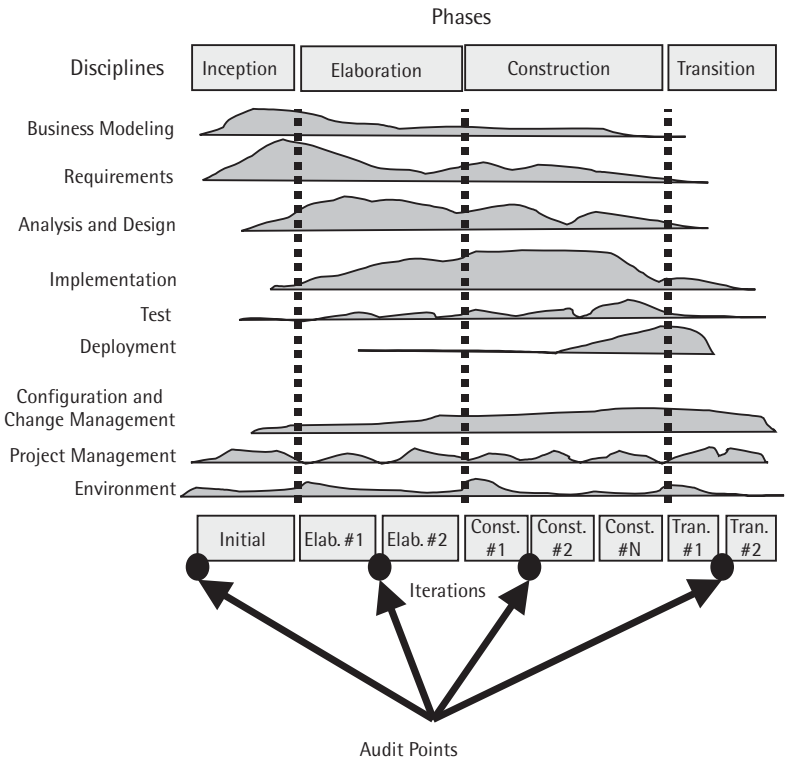

Figure 3.7 Project workloads over time with PMO-specific audit points. (*After:* 14].)

elaboration phase. This ensures that there are some tangible deliverables that the audit committee can review. Though the high-level diagram for this methodology doesn't show a test phase, we can deduce that it will more than likely start at the end of the first construction phase. So, we will put the audit point there. Keep in mind that each of these methodologies are defined to allow flexibility based on project management feedback. This same principle applies to how a PMO enforces audit points. As more and more projects are reviewed, the PMO should flex their audit points to the feedback from the audited projects.

The Spiral methodology (see Figure 3.8) was one of the first methodologies to introduce the concept of iteration. In this classic methodology, prototyping is used as a way to fine tune the final design

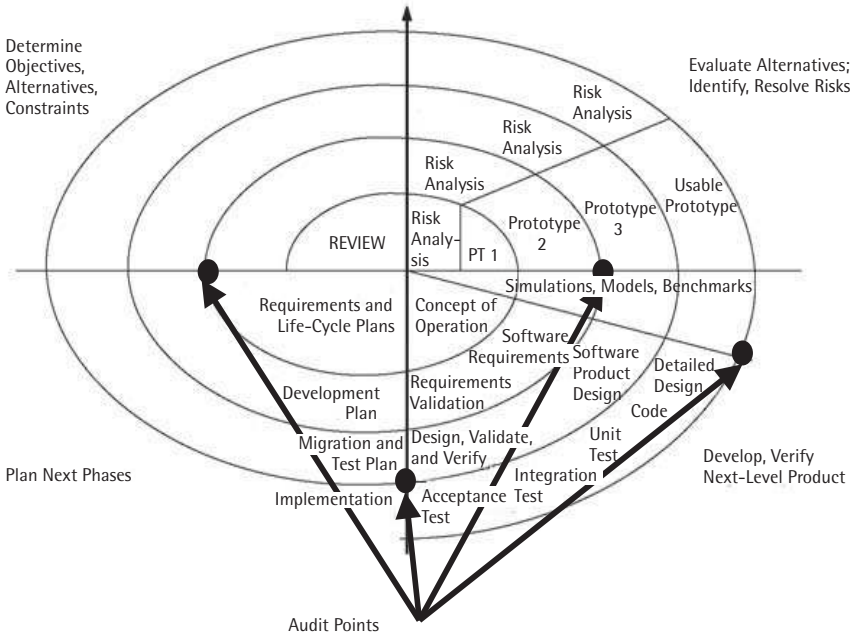

Figure 3.8 Spiral project methodology with PMO-specific audit points. (*After:* [15].)

while, at the same time, overcoming some high-risk proof-of-concept requirements. With the Spiral approach, a project starts in the center and spirals out through the four quadrants (objectives, risks, tests, and plans) over time. As the project reaches the outer rings of its lifecycle, its final product has been thoroughly tested and aligned with the end users' requirements through prototyping, risk assessment, testing and planning.

While it is easy to see which elements of an IT-based project are highlighted in this methodology, there are still some common elements that allow for the introduction of consistent audit points. Because prototyping is a merge between design and construction, the PMO took the midpoint and placed the second audit point after the completion of the second prototype. Because this methodology points out where the formal testing phase begins, it isn't too hard to place the third audit point.

XP is another highly iterative methodology that was introduced more recently. It calls for such processes as pairing developers together when writing software and *refactoring* (or revisiting and refining)

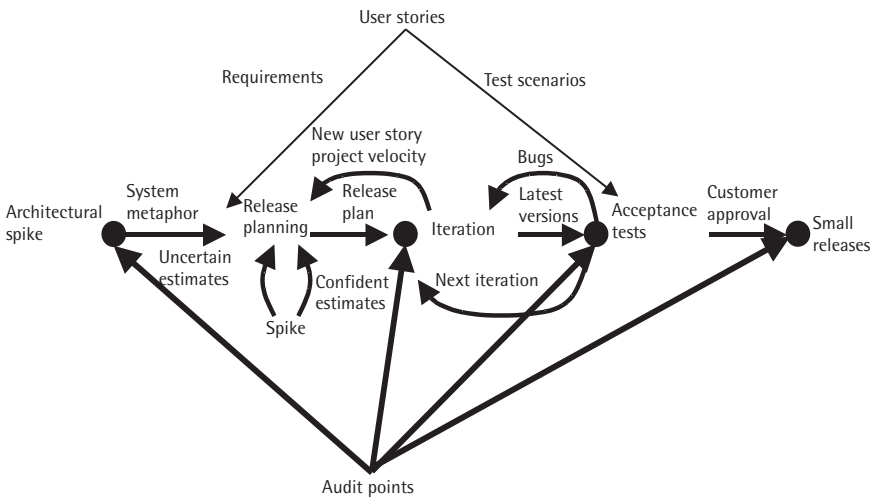

Figure 3.9 XP project methodology with PMO-specific audit points. (*After:* [16].)

previously approved software code. Figure 3.9 shows how the process flows of this methodology involve returning to previous phases as design reviews and tests require. Where the Spiral methodology diagram shows how a product evolves through development outward, the XP diagram shows how a product is iterated back on itself as it progresses forward.

Though Figure 3.9 is only the highest-level view, we can still see where the audit touch points can logically go. But, again, before the audit points are placed, the PMO needs to understand all layers and every deliverable of the methodology. Because the PMO will not only be enforcing the methodology, but also providing training on the methodology, a solid understanding is required. Here we see the construction start audit point is placed at the beginning of the iteration phase. Because there can be multiple iterations per release, it would need to be established at the beginning of the project that this touch point would be required at the beginning of the first iteration of each release. XP makes the placement of the other three touch points fairly clear.

The PMBOK is more of a generic methodology that was designed to support any project type, including non-IT projects. Nonetheless, by choosing only four audit points, the PMO can more easily see where to place them in even a high-level methodology diagram, as shown in Figure 3.10.

3.5 Summary

Before a program or project is funded, it goes through an approval process first as a technical idea and then as a business initiative. The sooner guidance can be provided to business initiatives, the better their chances of success. The IT PMO first provides assistance to an initiative by listing the potential risks for the business case writer. Then, after the IT PMO develops an initiative-submission methodology and a small set of business-case templates with a representative group of business unit leaders, initiative sponsors can write and then submit standardized business cases. While these business cases will have elements that are common among

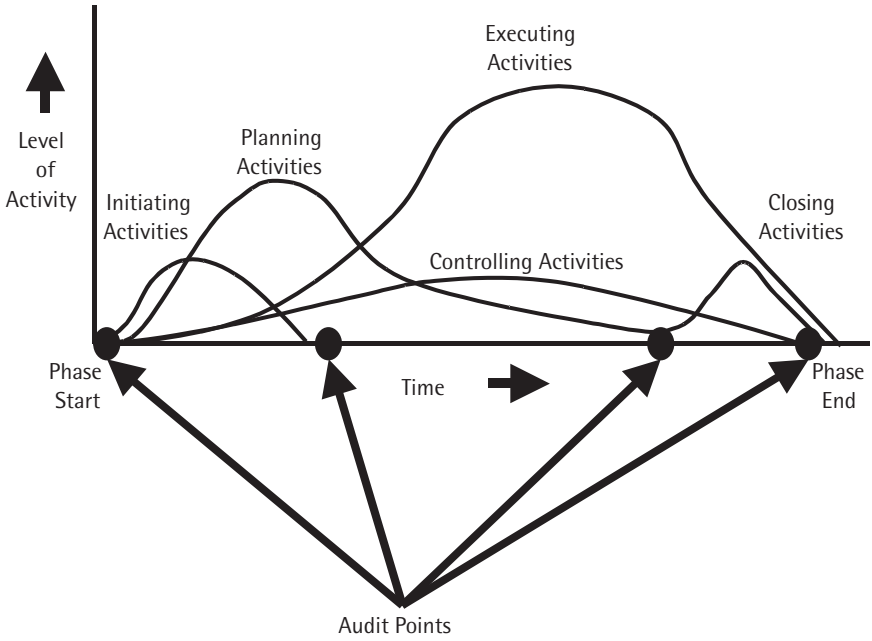

Figure 3.10 PMBOK project methodology with PMO-specific audit points. (*After:* [17].)

all other business cases, the sponsor should use other marketing approaches to win approval. Also, the IT PMO can support business case writers in understanding not only how to apply metrics such as NPV and IRR, but also how to use them to gauge the project's health during project audits.

Project methodologies, while critical to project success, should not be dictated by a central organization. Rather, a PM should be able to choose from a set of methodologies voted on by a committee of PMs. The chosen methodologies must adhere to highly iterative patterns. Projects that stretch iterations too long will face more scope-creep battles and produce more unaligned deliverables. Projects with shorter iterations will be able to react to changes in the layers of the strategy and stay aligned. Also, to ensure that IT PMO audit teams will be able to consistently map metric actuals back to initiative estimates, each methodology chosen should have auditable milestone points added to the

end of each phase by the IT PMO. Ongoing initiative and project methodology training by the IT PMO will solidify their proper usage and the health of the portfolio.

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Appendix 3A: Case Study—Artesia BC—Flexible Balanced Scorecard

Traditionally, project sponsors have measured success levels of their IT-based projects using financial metrics. However, such metrics don't reveal the entire story. A more complete analysis of a project's success would include its impact on staff, customers, and the organization's function [18]. The Balanced Scorecard, developed by Robert S. Kaplan and David Norton, provides a means to choose metrics from four key performance areas that will help better align the various business units with the corporate strategy. In the case of IT-based projects, such metrics, or KPIs, can be invaluable in maintaining a well-balanced project portfolio. Some examples of KPIs that could be chosen include [19]:

1. Financial perspective—NPV, IRR, and payback;
2. Customer perspective—data from formal customer surveys, loyalty indexes, and market segment growth figures;
3. Internal business (organization function) perspective—process performance measures for requirements development, cost estimating, system design, or resource planning;
4. Growth and learning (staff) perspective—new skill and competency acquisition, employee morale, and process improvement.

At the end of 1999, the Artesia Banking Corporation decided to implement the Balanced Scorecard approach to achieve their strategic vision [20]. With 225 million EUR in net consolidated profit and with 1.2 million customers, this Belgian banking and insurance company's vision was to be in the top 25% of European banks in terms of return on equity by 2002. As their Balanced Scorecard initiative became embraced by executives and the grassroots, Rob Van Rensbergen, MIS/DSS manager and Balanced Scorecard lead, realized that they had accumulated far too many KPIs. Not only had these accumulated measures become out of alignment with the strategy, they had become unmanageable in his Excel spreadsheet.

To ensure the KPIs added true value, Van Rensbergen reviewed them and reselected a small set that represented each key performance

area. He then purchased a software tool that specialized in gathering and reporting on KPIs. These efforts ended up paying off well when Artesia merged with Dexia in July 2001. As it turned out, because Dexia also had implemented a Balanced Scorecard, the two companies were better able to merge cultures and more quickly able to align on a common strategy. Today, Dexia continues to grow as a successful international banking and insurance conglomerate.

When rolling out a Balanced Scorecard or an IT PPM framework, organizational support is critical to success. The sponsor of such an initiative needs to gain executive and grassroots support through robust training and internal marketing efforts. And to ensure the long-term value of such frameworks, they need to be flexible to the changing marketplace. KPIs of a Balanced Scorecard, for example, need to change to support evolving corporate strategies. This means that a project that started six months ago may need to be reevaluated based on KPIs that have changed to support a new strategy.