A WHITE ELEPHANT IS NOT A BLACK SWAN: WHY YOU CAN DO MORE ABOUT IT PROJECT RISK THAN YOU THINK (A REPLY TO FLYVBERG AND BUDZIER)

Robert Zafft*

Abstract

Failed IT projects destroy value on a massive scale. Failure occurs because traditional efforts to improve IT performance treat project delivery as an operational endeavor driven by technologists. Progress, these technologists say, lies in ever more complex implementation methodologies. In reality, an IT project is a business endeavor which must be evaluated in financial terms, both as a standalone effort and in relation to other efforts competing for resources. Moreover, a client or vendor's projects represent a rolling collection of endeavors. They are best analyzed and managed as a portfolio. Proof of success will not only come through better project delivery and business ROI but the ability to insure IT projects for timeliness, adherence to budget, and full functionality.*

*Policy Advisory Group (Office of Tony Blair)
Tel: 7.775.264.2758
Email: robert.zafft@TonyBlairOffice-Advisory.org, robert.zafft@post.harvard.edu
**War is too important to be left to the generals (Georges Clemenceau)

Introduction

In a 2011 *Harvard Business Review* article, "Why Your IT Project May Be Riskier Than You Think," authors Bent Flyvberg and Alexander Budzier describe results from their study of IT change initiatives across 1,471 very large projects.[8] The authors declare their surprise that "fully one in six of the projects … studied was a black swan, with a cost overrun of 200%, on average, and a schedule overrun of almost 70%. This highlights the true pitfall of IT change initiatives: it's not that they're particularly prone to high cost overruns *on average*, as management consultants and academic studies have previously suggested. It's that an unusually large proportion of them incur massive overages – that is, there are a disproportionate number of black swans. By focusing on averages instead of the more damaging outliers, most managers and consultants have been missing the real problem."

The authors go on to identify elements of what they regard as a challenging but successful project and suggest several steps for avoiding black swans: (i) stress-testing the readiness of the company's balance sheet to absorb the cost of troubled projects; (ii) breaking big projects into ones of lesser size, complexity and duration; (ii) recognizing and making contingency plans to deal with unavoidable risks; and (iv) using the best possible forecasting techniques, including reference-class forecasting.

Flyvberg and Budzier correctly note that severely troubled projects disproportionately harm IT productivity and business results. However, this information should hardly surprise since Standish Group *Chaos Reports* going back to the mid-1990s evidence this imbalance, not only regarding large projects but mid-sized ones as well (Masticola, 2007).[9] Nor do these severely troubled projects, in the main, represent "black swans," which cannot, by definition, comprise "fully one in six" of any sample population.

In misdiagnosing the nature of severely troubled projects, Flyvberg and Budzier also err in their proposed remedies. As a result, the reader is left pondering where the roots of failure, and the source of performance improvement, actually lie.

This paper argues that the lion's share of severely troubled projects arise from miscommunication among project stakeholders: Finance Business, IT and implementation-services

---

[8] Average project sized surveyed was $167 million in budget.

[9] Aon actuarial analysis of Standish Group data from 1994-2009, shows that among mid-sized projects ($500,000-$1,500,000 in budget), the worst 2.5-5% of troubled projects generate 40-60% of cost overruns. 24% of projects of all sizes are abandoned before completion, and 98% of projects over $10 million in budget finish late, over budget or incomplete.

vendor(s). Moreover, what Flyvberg and Budzier perceive as the great risk of IT actually represents the great opportunity: since a handful of severely troubled IT project generate a majority of cost overruns, fixing or forestalling even a fraction of these projects will dramatically improve IT productivity and business results. CEOs and CFOs can achieve such improvement by adopting and adapting established risk-management techniques from other fields that face catastrophic and/or complex risk. As in these other fields, evidence of success will emerge not only in operational metrics but in the availability of affordable insurance and reinsurance.

1 A White Elephant is not a Black Swan

Nassim Taleb, originator of the Black Swan Theory, defines a "black swan", in part, as an event outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility (Taleb, 2007). Clearly, this definition does not apply to the subject of Flyvberg's and Budzier's article, a project class that comprises 17% of large projects and 9% of mid-sized projects (Flyvberg and Budzier, 2011).[10] Nor are such "fat-tail" losses, i.e., losses mainly arising from a small number of catastrophes, unique to IT. In the worker's compensation field, for example, six percent of cases account for half of aggregate losses (Lipton, et al, 2009).

A better metaphor for a severely troubled project would be "white elephant", "a possession that is useless or troublesome, especially one that is expensive to maintain or difficult to dispose of".[11] In the context of IT projects, white elephants describe endeavors with: (i) non-existent or poorly thought through business rationales; (ii) complexity, costs and duration far exceeding original estimates; and (iii) continued funding and existence notwithstanding lack of prospects for any reasonable return on investment (See, for example, Murray, et al, 2005).[12]

The frequency and severity of white elephant IT projects leave many CEOs and CFOs feeling like corner-office hostages. Their businesses and business results increasingly depend upon software and IT systems, yet almost all CEOs/CFOs lack the technical knowledge and bandwidth to probe independently into IT promises and problems. This disconnect makes fertile ground for reporting and agency problems.

The inadequacy of current methods for managing the financial aspects of IT project risk is evident from performance data. Why projects fail is less clear because the business and academic literature relies

largely on surveys, which are at best subjective and at worst, self-serving. Aon research indicates that even mature delivery organizations ("Delivery") fail to capture and use information relevant to identifying and measuring the root causes driving success or failure. In the first place, performance data gathering is usually carried out by Delivery (ofttimes including a project-management office ("PMO")), which does not have sufficient information by itself to judge success or failure. Information is lacking because IT projects represent means to an end. That end is a business endeavor with a targeted, risk-adjusted return on investment. The ultimate criteria for success or failure therefore lie external to the delivery organization. If these criteria are not communicated to all stakeholders and incorporated in both the project plan and the lessons learned, outcomes cannot be properly assessed nor root causes exposed.

Case Example - Why Business and Finance must define project success or failure

Management expert W. Edwards Deming observed that only the customer can define "quality" because only the customer knows whether his needs have been met at an acceptable price (Deming 1995). For IT projects, the "customer" is a combination of Business User and Finance; the Business User alone understands his needs and whether they have been met while Finance determines the acceptability of the price.

A recent conversation with the PMO leadership of a consulting-services division within a Fortune 50 technology company provides an example. The head of delivery services was asked to suppose that a customer project which had initially been budgeted at $1 million for six months was completed for $4 million over two years, with all of the overages fully covered by the customer on a time-and-materials basis. The executive was then asked whether he would consider such a project a success. "Absolutely," was the reply. "The project was completed according to the revised SOW and was fully paid for." We then asked his colleague with P&L responsibility whether the customer's CFO would likely consider successful a project that went over budget and deadline by 300% and whether that CFO would be eager to engage the consulting-services group in the future. The P&L leader just shook his head.

Aon experience suggests that Delivery not only fails to capture extrinsic information needed to assess business success/failure, but that data quality on matters relating exclusively to IT varies widely, too. (Zafft & NIckel, 2010-2011). Many organizations do not compile projects lessons learned. Where organizations do, there is often want of rigor or consistency in categorizing projects phases and

---

[10] Aon actuarial analysis of mid-sized projects shows that 9% of such projects exceed their budgets by 200% or more.
[11] Oxforddictionairies.com.
[12] Flyvberg's and Budzier's study is heavily weighted towards extremely large public sector projects. Public-sector projects comprised 92% of the study and averaged $167 million in cost. Given the public-sector's proclivity for white-elephant projects and the enormous size of projects surveyed, a significant number of severe losses should be expected.

identifying and defining factors contributing to success/failure. Where more than one phase or factor comes in play, rarely does Delivery try to allocate causation or severity across these phases or factors. As a result, a gulf opens between what an organization thinks leads to success/failure and what can be demonstrated as driving outcomes.

Agency issues constitute another reason for inadequate risk management. IT might not wish other stakeholders to know the real reasons for troubled projects. Common causes stated for project failure, such as inadequate documentation of legacy systems or poor specification of business requirements, have a self-serving quality. They sound plausible, cannot be double-checked without extensive technical knowledge and effort, and point the finger at someone else.

Agency issues connected with vendors are well known. Vendors have an incentive to bid low to secure a project and then to encourage scope changes that result in high-margin, time-and-materials work.

Vendors might bring an "A" team to sales meetings but staff the project itself with "B" and "C" players. In some situations, IT leadership and vendors can be on the same side vis-a-vis Finance and Business. Both IT and vendors derive income and job security from large, multi-year projects. Both have an incentive to ascribe blame for troubled projects on factors extrinsic to the information-technology portion of a project. CIOs often come from, or are recommended by, large integration firms. A CIO with a severely troubled project might think his job at risk; maintaining good relations with major integration firms, even if they have underperformed, might be essential to securing his next position. Conversely, "independent" experts can be captured by the client executive who will hire them for the next project. This is often the CIO. The experts may develop a bias over time for making this executive look good, rather than providing the CEO or CFO with an unvarnished assessment of the project and the performance of various stakeholders.

Table 1. Key steps

Step #	Description	Questions
1	Stuck to the schedule, even after the merger	Projects must balance financial returns from adherence to budget, timeliness and delivery of promised functionality. By analogy, should a surgeon stick to the schedule in an operation where complications develop?
2	Resisted changes to projects scope	Same questions as above
3	Broke the project into discrete modules	Sub-dividing projects represents best practices to control risk by promoting and ensuring incremental progress. But, how does this step square with management's decision in the example given for a "big bang" rollout, i.e., switching on all new-system components simultaneously?
4	Assembled the right team, including IT experts from both companies, outside experts and vendors	This begs the question of what the "right" team is. For example, were representatives from Finance and Business part of this team? A commonplace of sports is that a collection of superstars will not win without playing as a team. So, what rules and processes were adopted to promote teamwork?
5	Prevented turnover among team members	Retaining team members with critical skills/knowledge is indeed important, but most teams would also benefit from dropping weak or divisive players. In some cases, unless such players are let go, the team cannot succeed.
6	Framed the initiative as a business endeavor, not a technical one	The initiative WAS a business endeavor. Recognizing this fact and developing secondary principles from it should make this point Step 1, not Step 6.
7	Focused on a single target, "readiness to go live", measuring every activity against it	"Readiness to go live" comprises two targets, a functionality component (what is required to go live) and a time component (how close, or "ready" are we in building what is required) If Step 7 did not comprise a time component, Steps 1 and 2 would not matter. Moreover, earlier in the article, Flyvberg and Budzier state that the team had "two main objectives: to avoid mission creep and to go live as soon as possible."

Business and Finance are not, of course, without sin. Business Users often fail to think through or articulate business requirements in the design phase of projects, resulting later on in scope changes, overruns and delays. Business might also ask for bells and whistles where IT or the vendor must bear the

implementation costs. Salesmen can make promises Delivery struggles to keep. White-elephant projects, lacking strategic purpose or sufficient initial funding, are sometimes pushed through. Where budgets and IT resources are stretched, individual managers within Business and Finance have learned that making

unreasonable demands can maximize what is actually received. The squeaky wheel gets the grease.

Viewed in this context, the "key steps" Flyvberg and Budzier credit with successful completion of a large, tricky project are not steps but principles, and they raise as many questions as they answer.

Recognizing the project as first and foremost a business endeavor (Step 6) and recasting Flyvberg's and Budzier's "steps" as principles, not only allow us to reorder them in a more coherent fashion but helps us deduce implementing principles:

1. This project is a business endeavor with a targeted risk-adjusted return connected to project budget, timeliness and delivery of promised functionality

a.We are revamping a core banking system that for business/regulatory/technical reasons must go live in 18 months and be switched on simultaneously across the company

i.A system crash might disable the bank, expose us to severe liability and irreparably damage our reputation

b. To meet business goals, we must deliver a stable core system as quickly as possible. Success requires us to

i.Assemble the right team [ie, comprising all necessary skills and stakeholder groups] and prevent turnover among key personnel

1. "Key" personnel have skills or knowledge that cannot be replaced without materially threatening system functionality or timeliness

2. Define team-member roles, responsibilities, communications protocols and change-order processes

ii.Avoid changes to project scope that complicate development or delay rollout

1. Encourage changes that make the project simpler and faster without sacrificing minimum functionality

iii.Break the project into discrete modules that will let us confirm interim progress and address problems as early as possible

1. A "discrete" module is one that can be subjected to unit testing as proof of progress

2. As new units test successfully, incorporate them into increasingly complex multi-unit testing to reduce big-bang rollout risk

a.Project goals justify significant investment in testing and QA

c.We will principally measure project success by functionality performance (system stability and satisfaction of business requirements) and by timeliness of rollout

i.Operational decisions and tradeoffs during development must take into account the financial impact to business operations of sub-standard system performance and rollout delay

2 You Can't Avoid a Black Swan, But You Can Shoot a White Elephant

After identifying key steps for successfully completing a tricky project, Flyvberg and Budzier advise on how to avoid black swans. The authors suggest first stress-testing large technology projects in the pre-commitment stage by asking "Two key questions….First, is the company strong enough to absorb the hit if its biggest project goes over budget by 400% or more and if only 25% to 50% of the projected benefits are realized? Second, can the company take the hit if 15% of its medium-sized tech projects (not the ones that get all the executive attention but the secondary ones that are often overlooked) exceed cost estimates by 200%?"

This stress test suffers from several shortcomings. First, most enterprises do not undertake extremely large projects because they want to but because they have to. [13] Knowing that a large project one cannot avoid might go over budget by 400%+ and sink the company doesn't tell managers what to do if there is no other choice. Second, the stress-test question for mid-sized projects, focusing solely on budget overruns, does not address business impact – the very example Flyvberg and Budzier cite in the beginning of their article. Their example describes an initially medium-sized, $5 million project. The issue was not that the project cost more than $15 million but that a failed rollout crashed operations and cost the company $192.5 million in write offs. Third, the threshold for the stress test is corporate survival, which offers little guidance to managers aiming somewhat higher. Being told not to search for landmines by stamping one's foot on the ground is correct advice, but does not help one navigate a minefield nor confirm the absence of mines.

After recommending the above stress test, Flyvberg and Budzier suggest the following additional measures for avoiding black swans: (i) breaking big projects into ones of lesser size, complexity and duration; (ii) recognizing and making contingency plans to deal with "unavoidable risks"; and (iii) using the best possible forecasting techniques, including reference-class forecasting.

As mentioned above, sub-dividing larger projects represents project-management best practices. The other two suggestions, however, in declaring the risks in question to be "unavoidable" seek to accommodate them rather than to mitigate or eliminate them.

Strictly speaking, black swans cannot be recognized in advance or forecast because they lie outside the range of normal expectations, which in Flyvberg's and Budzier's case is one large project in six. White elephants, on the other hand, stand out.

---

[13] Flyvberg and Budzier cite Kmart as an example of a firm brought down by a bungled large-scale IT project. But, it appears from Flyvberg's and Budzier's article that Kmart was forced into launching this large-scale project by competitive pressures from Walmart and Target.

What has been wanting is a method for CEOs and CFOs to spot and dispatch them. As discussed below, this paper recommends a shotgun.

3 To Reduce or Eliminate IT Project Risks, Use a Portfolio Approach

Delivering complex IT projects on time, on budget and with full functionality is hard. What exasperates many CEOs and CFOs is that, on any particular project, IT or vendors can usually give a plausible, exculpatory reason why the project did not succeed. CEOs and CFOs find themselves suffering from, and paying additional money for, IT problems they cannot understand or control. The best way for corporate leaders to address this challenge is a shotgun approach which measures and manages IT projects on a portfolio basis, with independent underwriting and transfer of excess risk via insurance.[14]

3.1 Project underwriting

The portfolio approach combines independent, technically expert underwriting with proven insurance risk-management techniques. This approach is *cross-functional*, involving and communicating with all project stakeholders and forcing transparency and accountability. The goal is to give CEOs and CFOs operational insight into -- and financial control over -- Delivery.

Operationally, the portfolio approach looks at certain technical aspects of the projects, such as the experience and track records of IT and vendors, and the completeness, specificity and feasibility of project artifacts (e.g., Master Services Agreement, Statement of Work, high-level project plan, high-level business requirements, delivery-team CVs). Underwriting also looks to see whether the project has been sub-divided with gates or milestones so interim progress can be checked, and the extent to which cross-functional change-control processes are in place to deal with the issues and problems that will inevitably arise during implementation. Underwriting then goes a step further by requiring Business and Finance to define the financial parameters that determine success or failure. How much over budget can the project come in and still be considered a success? What delay can the project tolerate? What is the cost of delay per day? Per week or month? What is the cost to the business if functionality performs at 90% or 80% or 50% of projected levels, etc?[15] The underwriting

report, distributed to all stakeholders, identifies risks and recommends steps for reducing or eliminating these risks. Actuaries then price remaining Delivery risk using generic loss models, as well as models customized to the client's and vendor's particular implementation experience.

> ### Historical Precedent – Managing Risk through Independent Inspection and Underwriting
>
> The portfolio approach for IT-project risk adopts and adapts proven loss-control and risk-transfer methods that go back to the 1860s.
>
> 150 years ago, steam boilers represented the cutting-edge business technology, powering locomotives and heavy water transport. At that time, however, the U.S. economy averaged one boiler explosion every four days (Hartford Steam Boiler). These accidents were horrific: explosion, fire, flying metal, escaping pressurized, super-heated steam. The severity and frequency of accidents meant that no insurance company would cover boiler risk.
>
> In response, expert mechanical engineers and actuaries formed Hartford Steam Boiler Inspection & Insurance Company. By subjecting boiler installation, operation and maintenance to independent, expert engineering inspection and financial underwriting, Hartford reduced accident frequency and severity to the point where affordable risk transfer became available via insurance.

Financial underwriting puts a unique and revealing spin on delivery risk. Typically, project stakeholders focus on the details of getting things right. Underwriters, on the other hand, look at the financial impact to the client's business should things go wrong. This viewpoint enables underwriters to see and manage risks conventional IT best practices miss.

Project-based underwriting promotes transparency because technical underwriters provide an extra, expert, unbiased set of eyes overlooking project design and execution. Project milestones give prompt and regular notice to all stakeholders whether the project is on track. Greater transparency also promotes accountability. Requiring Business and Finance to define success or failure in financial terms helps establish a project's risk-adjusted return on investment. Together, these elements impose scope-change discipline since reasons for a scope change can be traced to a particular stakeholder, while the rationale for changing scope relies upon financial parameters set forth in advance. These parameters incorporate both Delivery cost and Business opportunity cost from delay.

---

[14] Flyvberg and Budzier cite Meskendahl, et al, to show how often companies fail to follow "the basic rules of project management." But, Flyvberg and Budzier to do not explore the implications of Meskendahl's main point, which is that "'It's not enough to just manage single projects well....Managers need to choose the right projects, exploit synergies between them, and terminate unnecessary projects.'"

[15] Underwriting is thorough but light touch. The time commitment is usually four-to-six hours for IT, with each of the other stakeholder groups spending two hours.

> ### *Case Example – Saving a Client's Fortune 50 Account*
>
> A financial-services company planned a $300,000 software development project. A key step involved migrating a Fortune 50 client's data by a set date. Delay would injure the client and threaten the account.
>
> The company's original project plan broke the work into seven phases, placing data migration sixth. Stakeholders were satisfied that, according to the plan, the Fortune 50 client's data would be migrated as promised.
>
> In reviewing the project, underwriters asked Business what the cost would be to the company if the project ran late. Since the Fortune 50 client was worth $10 million per year, late delivery threatened upwards of $50 million of net-present-value revenue. The underwriters noted that if the company spent an additional $10,000, it could hire the resources to migrate the Fortune 50 client's data in Phase 2, making timely migration all but certain.
>
> The company followed the underwriter's advice, adjusting the project plan and budget, and migrating the Fortune 50 client data in Phase 2. During implementation, the project ran late. But for underwriting's recommendation, the deadline would have been missed and the $50 million account, jeopardized.

Translating operational risk into financial metrics creates a common language among project stakeholders that reduces miscommunication. This common language also aligns stakeholders better by exposing agendas and forcing stakeholders to assume and pay for risks arising from their requirements. Quantifying risks allows stakeholders to adjust individual project features and Finance to allocate resources across projects based on risk-adjusted return.

3.2 Insuring project portfolios

Because delivery is hard, there will always be some overruns, delays and impairments. By analogy, over time, even the best managed, best equipped and best staffed trucking fleet will have accidents.

As with auto-transport risk, portfolio-based underwriting for IT projects offers several advantages. Tracking outcomes across a portfolio uncovers root causes whose existence or significance may not be knowable at the individual project level. Across the portfolio, aggregate impacts can be measured and correlations among factors, determined. Most importantly, the portfolio approach leaves nowhere to hide. Many excuses that might work on any single project do not hold water across a statistically significant number of projects. Over time using the

portfolio approach, stakeholders develop loss histories and ratings that influence the cost of insuring the projects in which they participate, in the same way a credit score affects the cost at which consumers can borrow money. Within Delivery, such ratings will shape careers. Within Business and Finance, they will determine the risk-adjusted cost of projects. For vendors, ratings will help determine who gets hired and who does not. Stakeholders therefore have very strong long-term incentives to perform individually and to take part in process improvements that require collective action.

> ### *Case Example – Dealing with a Table Pounder*
>
> A Business Unit Owner insisted that his project absolutely, positively, had to complete on time.
>
> Rather than arguing or negotiating, underwriters simply asked the Business Unit Owner to quantify the harm of each day of delay to his P&L. He could state any amount he wished, but the amount stated would be priced into the premium insuring against delay and be charged to his P&L.
>
> Faced with having to pay a higher premium, the Business Unit Owner conceded that his project could tolerate two weeks' delay without harm. As a result, IT was able to allocate scarce Delivery resources in accordance with the firm's financial priorities.

All well and good. But, who watches the watcher? How can CEOs and CFOs judge the underwriter's performance? In addition to aligning project stakeholders, the portfolio approach uniquely aligns the underwriter with, and shows how he has impacted, the company's bottom line. Ultimately, the underwriter's performance will be measured by how accurately he predicted and priced overall project losses, expressed by the loss ratio, or losses as a percent of reserve/premium paid. As a straightforward, aggregate financial metric, the loss ratio matches the way CEOs and CFOs are judged and leaves the underwriter himself with nowhere to hide. Moreover, where the company obtains risk transfer via re/insurance, the underwriter has skin in the game. Insurance represents an investment by the carrier in the quality of insured's operations, in this case Delivery. The underwriter profits when Delivery performs well, and he pays out when it does not. Between underwriter and company this means alignment, transparency and accountability.

4 Protect the Balance Sheet

Companies already "insure" delivery risk, badly. The market for insuring Delivery risk comprises both end

users of implementation services and the vendors which provide them.

4.1 End users

IT indirectly funds expected losses from implementation failures through a form of self-insurance that is opaque to Finance. CIOs put fat in project budgets and insert certain projects in the annual delivery schedule knowing these projects will be cut or delayed to pay for higher-priority projects.

This informal loss reserve typically represents 10-20% of the annual implementation budget. For a company with a budget of $50 million, the reserve would be $5-$10 million. By comparison, a conglomerate's recently sold $2 billion chemical division, a business line with considerable operational risk, spends about $8 million dollars annually on conventional insurance lines like property & casualty, workers' compensation, etc. The difference is that when the chemical division spends $8 million, it *transfers* risk; when the IT Department spends $10 million, the company still *retains* the risk.

Another way in which end users buy "insurance" is even more expensive: they hire blue-chip consulting firms. These firms typically cost at least 30-40% more than quality second- or third-tier firms. In exchange for this premium, blue-chip consultants make three implicit promises: (i) the consultant will not fail financially during the project period; (ii) the consultant will commit additional resources to bring a troubled project back on track; and (iii) if the consultant well and truly messes up, it will use its deep balance sheet to make the client whole.

Blue chip firms keep the first of these promises, but rarely deliver on the second or third without a negotiation or fight. Because implementation projects involve numerous interactions between client and vendor, a vendor being blamed for a failing or failed project can often raise excuses or counterclaims against the client. What usually results is a drawn-out negotiation in which the vendor may provide additional resources, but only in exchange for the quid pro quo of more money or more paid work. Where this fails, the parties often end up in court.

Finally, some end users require vendors to post performance bonds for certain types of IT work. In most of these cases, the surety bond addresses quite basic contractually agreed obligations, such as completion or delivery of work by a specific date. Importantly, the bond pays the end user directly in the event of failure to meet the agreed performance/delivery parameters.[16] This is in contrast to traditional vendor Errors and Omissions ("E&O") coverage, which pays the vendor (as policyholder) –

without any further recourse except possible subrogation rights.

Because bonds are underwritten to zero loss, they are expensive/capital intensive. They are also not financially scalable; a vendor performing 50 nearly identical project requiring 50 bonds would require 50x the collateral. In practice, vendors with highly repeatable projects enjoy economies of scale, scope and skill that cannot be reflected in lower bonding costs. In addition, because bonds in the IT-project context typically involve a constant (rather than declining limit), the bonds must price in the morale hazard arising from both vendor and end user slacking off in the belief that the bond will cover overages.

4.2 Vendors

Almost all implementation vendors of material size carry E&O liability insurance. Such insurance is typically required by end users as part of the contracting process.

There is a clear trend for implementation-services contracts to impose greater potential liability on vendors. Generally, *private*-sector contracts limit vendor's liability to the end user's direct losses and cap this liability at a specific dollar value. However, the "traditional" cap of 1x the vendor's fees under the contract has started to give way to caps of 3x-5x vendors' fees.

In the context of *public*-sector contracts, most vendor agreements with national governments (U.S. and foreign), contain no limitations or disclaimers on vendor liability. On this point, contracts with state/provincial and municipal entities show no consistent pattern.

One common trend across private and public sectors is a broadening and hardening of the provisions relating E&O insurance. In this regard, end users increasingly demand – and receive:

- The right to review and audit vendor's policy;
- Being made an additional named insured on vendor's policy;
- Vendor representations and warrantees that:
  – the policy limit is not diluted/eroded;
  – the insuring agreement in the vendor's policy contains certain features and omits certain exclusions;
  – the policy will be kept in force for the duration of the contract and for a specified (sometimes lengthy) period thereafter;
  – notice of vendor policy cancellation will be provided by the insurer or broker within a specified timeframe; and
  – Evidence that vendor has cyber risk coverage with specific (and non-standard) coverage grants that often track "coverage offerings" from certain insurers.

In isolated cases, end users have demanded additional terms such a vendor obligation to indemnify the client against the client's own negligence. Requirements relating to PI/E&O insurance have at times become so stringent and complex that the

---

[16] Here, the insurer/surety will seek to recover its "loss" from the vendor, subject to the defenses and excuses that may be raised.

vendor has had to purchase a separate "project" E&O policy for the engagement project.

The focus on "wrongful act" liability makes disputes worse without necessarily protecting balance sheets better. Increased end-user requirements for vendor's E&O insurance underscore the practical point that commercial risk only shifts to the vendor via contract if the vendor has the resources to deliver or to indemnify for failing to deliver. But, E&O insurance only indemnifies where coverage is triggered and the deductible exceeded. Here, standard E&O coverage requires the end user to prove losses arising from vendor's "wrongful act", such as negligence. As noted above, end user's own breach or wrongful acts may excuse or offset vendor's liability. In the context of a complex integration project, vendor, or its E&O carrier, usually has ample opportunity to raise such defenses. So, while tougher contract terms give an end user more negotiating leverage when a problem arises, they also give the vendor and insurance carrier more reason to fight. With high-limit E&O premiums rates and deductibles rising rapidly, vendor balance sheets must currently absorb higher premium costs and face greater exposure from increased retentions.

E&O insurance protects the vendor's balance sheet from *liability*, within the defined coverage terms and limits and subject to the deductible and exclusions. Such a policy does not protect the vendor's balance sheet from *losses* arising from contract performance where the client does not assert claims of a type and in an amount to trigger coverage. On very rare occasions (usually when the market is very soft and as concession to a large/important buyer), E&O insurers have been willing to offer some form of "cost of correction" loss coverage to IT businesses. This approach has not been successful – and the coverage has usually been removed quickly by the underwriter, due to an unacceptably high frequency/severity of correction claims. The conventional wisdom among traditional E&O insurers holds that providing cost of correction coverage to IT firms creates uncontrollable morale hazards.[17]

In many cases, the vendor may be called upon, or decide voluntarily, to commit resources over and above those budgeted. Sometimes the vendor wishes to preserve client goodwill. Sometimes, as in the case of a late-delivery penalty, the client need not assert a wrongful act to demand indemnification. Sometimes

the amount in issue does not exceed the E&O deductible, or is not worth the resulting increases in E&O premiums or deductibles. The resources committed price into the strategic give-and-take of client relationships.

Across a portfolio of projects, such commitments can aggregate to a substantial threat to the vendor's balance sheet. This is particularly true for the consulting-services divisions of technology companies, where implementation resources serve the larger commercial goal of selling software or services (eg, BPO, cloud hosting). The consulting-services team often must fixed-bid its project work based on limited due diligence into prospective client systems. Implementations problems, in such cases, can only be righted with funds from other ongoing projects, since once a project is completed, the revenues from the project are booked.

Aon research suggests that few vendors have a clear, ongoing understanding or ability to manage their aggregated loss exposures. Exposures include not only resources committed but the opportunity costs from delayed software/service launches. Consequently, vendors lacking this insight will also have an incomplete view of service margins, ROI and financial headroom for revised commercial terms or new offerings.

Moving from "wrongful act" coverage to a "wrap-up" approach will reduce disputes while better protecting balance sheets. The balance-sheet challenges of implementation projects, though daunting, are not unique. Large construction projects also represent high-cost, high-risk endeavors with many hands contributing towards a common, complex output.

Construction projects typically involve an owner, a general contractor, architect, engineering firm, and from a dozen to hundreds of subcontractors. Traditionally, each vendor obtained its own construction-defects policy, in which coverage required proof of wrongful act. When a defect was discovered, claims and cross claims would typically arise as the various project participants – and their insurance carriers – pointed the finger of blame at someone else. Under these circumstances, five times as much money was spent litigating liability as remedying defects.

In response, the insurance market developed construction "wrap-up" policies. With a wrap up, normally either the owner or the general contractor will purchase a construction-defects policy covering the projects and the vendors work on it. As a result, when a defect becomes known, fights and cross-claims are avoided because one carrier has assumed all the defect risk.

The wrap-up approach works in construction because best practices in that industry employ cross-functional planning methodologies with clear gates/progress milestones and transparent change-control processes involving all project stakeholders

---

[17] This article argues that such hazards are in fact controllable by: (i) underwriting on a multi-stakeholder project basis to effect loss control; (ii) by insuring on a portfolio basis to improve accountability and loss modeling, as well as to prevent adverse selection; and (iii) by employing a declining indemnity limit tied to project milestones. Underwriting experience and actuarial analysis show that implementing these steps will permit insurance risk transfer for IT projects that is affordable for the end user / vendor and profitable to the underwriter. Since 2.5-5% of troubled projects account for 40-60% of cost overruns (See footnote 11, infra), reducing such project by a fraction creates the financial headroom for all parties to come out ahead.

(Gawande, 2010).[18] This approach has been adapted to software implementation projects using the portfolio underwriting methodology described above. Underwriting experience and actuarial modeling have shown that moving from a wrongful act to a wrap-up approach will increase project success rates, reduce disputes among project stakeholders and provide better risk-management and risk-transfer protection to all stakeholder balance sheets.

5 Create Opportunities for Profitable Growth

CEOs and CFOs can more accurately weigh options based risk-adjusted return. Since resource constraints limit the opportunities firms can pursue, business leaders should prioritize among current options based on risk-adjusted return. IT projects often represent a prerequisite for realizing business opportunities; lack of insight into the true economics of these projects therefore prevents rational prioritization. The transparency afforded by the portfolio approach gives CEOs and CFOs the information needed to optimize their choices.

Improved delivery economics drive revenue. The worst 2.5-5% of troubled projects account for 40-60% of cost overruns (Nickel, 2010-2011). Fixing or forestalling a small percentage of these projects dramatically improves IT productivity. Higher success rates accelerate launch of revenue-producing business initiatives. In addition, higher IT productivity enables the client to undertake more initiatives.

Affordable, project-based insurance also permits clients to work with a wider range of implementation vendors. A client engaging a quality second or third-tier implementation firm for a project backed by insurance should pay approximately 15%-25% less than if the client had engaged a blue-chip consultant. Here again, savings can launch additional revenue-generating endeavors.

For software and software-enabled-services providers (e.g., BPO, hosted services), wider use of less-expensive vendors will drive software and services sales. Typically the cost of implementing enterprise software or services ranges from 2x-10x the license or subscription fee. High budgeted implementation costs, combined with implementation risks, retard technology sales. By reducing the client's total cost of ownership of the software/services, insurance will drive sales of such technology. For this reason, publicly traded software and services companies might sponsor insurance programs for their consulting-services units and external implementation partners. Such programs, through insurance ratings, would much more effectively rate the delivery capability of implementation partners than the current system of platinum, gold and silver certification. Top performers would earn premium discounts, while underperformers priced themselves out of the market.

Firms can manage the financial headroom required for new commercial terms and offerings. Without insurance, Delivery can only cover shortfalls out of funds from current projects, or from Treasury. Clients may lack the financial headroom to take on new kinds of projects or to offer more competitive commercial terms.

Insurance represents a transparent, rolling reserve. Delivery can use this reserve to attempt larger, more complex projects. Vendors can use the reserve to extend more generous commercial terms; clients can use the reserve to extract better terms.

6 Conclusion

Economy wide, failed IT projects destroy value on a massive scale. This situation, already bad, will worsen as business dependency on IT software and systems grows, operational complexity increases, and resource constraints continue.

Traditional efforts to improve project success rates have proven ineffective because they treat IT-project delivery as an *operational* endeavor driven by technologists, with improvement lying in ever more complex implementation methodologies.

Project delivery is in fact a *business* endeavor which must be evaluated in *financial* terms, both as a standalone effort and in relation to other efforts competing for resources. Successful historical precedents in boiler and construction risk show that improvement lies in reducing the miscommunication and misalignment that generate the lion's share of failures. A portfolio approach maximizes transparency and accountability, with progress measurable by the price at which underwriters will put skin in the game. Utilizing this approach will enable CEOs and CFOs to drive IT productivity and business results.

References

1. Deming, W. Ewdwards (1995) *Out of the Crisis*, MIT Center for Advanced Engineering Study, Cambridge, MA, Chapters 6-7).
2. Flyberg, Bent and Budzier, Alexander (September 2011) Why Your IT Project May Be Riskier Than You Think. *Harvard Business Review*. Available from: http://hbr.org/2011/09/why-your-it-project-may-be-riskier-than-you-think/ar [Accessed in October 2011].
3. Gawande, Atul (2010) *The Checklist Manifesto: How to Get Things Right*, New York: Metropolitan Books, 2010.
4. Hartford Steam Boiler. Available from: http://www.hsb.com/HSBGroup/History.aspx [accessed October 2011].
5. Lipton, B., et al, (2009) Medical Services by Size of Claim, NCCI 2009.
6. Masticola, Stephen (2007) A Simple Estimate of the Cost of Project Failures and the Breakeven

---

[18] Based on the example of the construction industry, Gawande, a surgeon, instituted a 19-item, pre-surgical checklist that reduced post-operative complications 36%, with knock-on benefits to outcome and cost.

Effectiveness of Project Risk Management, Siemens Corporate Research, presented at the 29th International Conference on Software Engineering.

7. Meskendahl, Sascha, et al (July 2011) The Art of Project Portfolio Management, multiprojectmanagement.org. Available from: http://mpm.tim.tu-berlin.de/fileadmin/docs/MPM-Artikel.pdf [Accessed October 2011].

8. Murray, Peter (2005) Contemporary Issues in Management and Organisational Behaviour, Cengage Learning Australia, p. 150.

9. Taleb, Nassim (2007) The Black Swan: The Impact of the Highly Improbable, *The New York Times,* April 22.

10. Zafft, Robert & Nickel, Loren (2010-2011) Unpublished actuarial and business research, Aon Corporation.