Intellectual Property Economic Damages Insights

Failed IT Projects: Dealing with Technology When Estimating Economic Damages

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Introduction

For purposes of this discussion, we will define information technology (IT) projects as follows: developing, modifying, or migrating software and computer systems used for accessing and utilizing information in a business environment. This may involve (1) customizing software to automate and optimize business processes, (2) integrating purchased software applications, or (3) creating intellectual property (IP) by developing new software technology.

As a result of wrongful conduct, incompetence, unrealistic expectations, or simply undeliverable promises on the part of both developers and users, many IT development projects fail. In fact, according to industry statistics, more IT development projects actually fail than succeed.

". . . if the failed IT project was outsourced to a contract development firm, the sponsoring company may try to initiate legal action (1) to claim breach of contract and (2) to attempt to recover damages."

If the failed IT project is an internal project, the sponsoring company has no choice but to absorb the losses, fix the problems, and move on. In contrast, if the failed IT project was outsourced to a contract development firm, the sponsoring company may try to initiate legal action (1) to claim breach of contract and (2) to attempt to recover damages.

The following factors set failed IT projects apart from more conventional contract disputes: (1) the intertwined roles of the developers and clients/users and (2) the difficulty of assessing reasonable expectations for a project's "success" in economic terms. This difficulty is due to the complexities of the software technology involved.

Most commercial professional services contracts include a promise to perform and deliver value (1) according to a specific schedule and (2) for a specific price. However, software developers working on an IT project struggle with the fact that "creative processes are not easily planned, and so predictability may well be an impossible target."[1]

An attorney involved in a software technology dispute can develop a stronger and more compelling case when an economic damages analyst and a technology consultant work synergistically to provide litigation support and expert testimony. The technology consultant can assist the economic damages analyst in understanding (1) the software technology and (2) its relevance in the marketplace. Subsequently, the economic damages analyst can use this information to develop a well founded economic damages/lost profits estimate.

This discussion addresses the issues of (1) the frequent failure of IT projects and (2) the possible considerations behind the high failure rate. This discussion provides insights and tools to attorneys and to expert witnesses testifying on the issues associated with the value of highly technical IT projects.

In addition, this article discusses the methodology of quantifying economic damages associated with the failure of an IT development project. And, this article emphasizes the importance of collaboration between the technology consultant and the damages analyst when estimating the economic loss.

Probability and Feasibility of Success

In 1998, a report from The Standish Group indicated that "74% of all IT projects fail, come in over budget, or run past the original deadline . . . 28% of projects fail altogether"; that "every year, $75 billion is spent on failed IT projects in the U.S."; and that "31% of projects will be canceled before they ever get completed."[2]

The Gartner Group advises businesses to "take care" when beginning new projects. It warns that 70 percent of IT projects, even if they are technically successful, will fail to reach the expected return on investment in the first year.

A tremendous amount of work has been done during the past decade to understand the reasons for such a high failure rate. In addition, corporate IT departments have introduced methodologies and "best practices" that will increase the probability of the success of IT development projects.

Nevertheless, a November 2002 survey that was carried out among 134 listed companies in the UK, USA, Africa, Australia, and Europe found that:

> Fifty-six percent of organizations admit they have had failed IT projects in the past 12 months, according to research carried out by KPMG International. The

average loss incurred by the businesses surveyed was £8 million (~$13 million) per project, with the largest single project failure costing £133 million (~$213 million).[3]

The survey also revealed that only 9 percent of surveyed organizations feel that delivering projects within budget is their most important measurement of success. In addition, only 21 percent of the organizations surveyed considered being on time was their top driver. The most commonly cited reasons for failure were: inadequate planning, poor scope management, and poor communication between the IT function and the business. And yet, many lawsuits related to failed IT projects cite budget or schedule overruns as evidence of a breach of contract.

These statistics are significant when an IT project fails and the client considers litigation to recover damages. When determining liability and considering reasonable expectations, it is important to understand the unique nature of IT project contracts—as compared with other types of business contracts.

An important question when an IT project fails is whether "success"—as contemplated in the IT development contract—was ever feasible to begin with.

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IT Development Project Contracts: Different from Other Contracts?

In what ways are IT projects different? First and foremost, project planning within a business often begins with a make/buy decision: Is it more prudent to perform a specific project internally or to subcontract it out? Sometimes IT projects are staffed exclusively with internal personnel. Sometimes, the project teams consist of a mix of internal and external staff. And, in other cases, the projects are outsourced 100 percent to consulting or contracting firms.

Interestingly, the rates of success and failure seem to be similar regardless of how the IT development project is staffed. The big difference comes (1) after a project team has failed to meet the objectives and (2) when it is time (a) to determine who was at fault and (b) to figure out how to absorb the costs.

If it was an internal project, the company has no choice but to absorb the losses, fix the problems (or discard the work that was done), and move on. But if the IT project was outsourced to a contracting firm, then the opportunity may present itself for the client to attempt to recover some of the costs through litigation.

Due to the high incidence of IT project failure, the initial choice between in-house development and contracting out to an external source is a strategic decision. That strategic decision needs to be considered later when sorting out reasonable expectations from a contractual viewpoint.

When a contract IT development project ends up over budget, over schedule, or producing software that does not function as expected, the client's first step is often to stop paying the bills. In response to this action, the contractor often will stop work. This series of actions and reactions leads to one party accusing the other of breach of contract—or perhaps to counter-suits alleging breach in both directions. And, under the terms of the typical IT project contract, it would often appear that the parties have breached the contract.

As with other deprivation-related controversy matters, it becomes necessary at some point to quantify the economic damages suffered by the parties. Once liability on the part of the defendant is established, the court will consider evidence with respect to the economic loss. This amount is the economic loss alleged to have been suffered by the plaintiff as a consequence of the defendant's breach of contract.

In the case of IT development projects, the economic loss is often in the form of lost profits arising from either (1) unplanned cost overruns or (2) lack of availability of much-needed computational resources. Sometimes the losses are tangible. This is the case when a new labor-reducing software tool fails to materialize and direct costs can be accounted for. And, sometimes, the losses are intangible and related to lost business opportunities.

Recovery of damages for lost profits is subject to the general legal principle that damages must be proximately caused by the wrongful conduct of the defendant. The calculation of compensatory damages arising from the breach of contract involves the application of basic legal principles. These legal principles relate to the defendant's promise to perform.

These legal principles are the foundation of many types of contract disputes. However, IT development projects are unique in that any hope of success is dependent from the beginning on both parties (1) fulfilling the roles required of them and (2) communicating accurately and in a timely manner with each other. This is true regardless of the specific terms of the contract. To understand this position, one need only look inside IT organizations that staff and execute entire projects internally.

When projects succeed, both the IT project teams and the users/internal customers are usually credited with success. Likewise, when projects fail to meet their cost, schedule, or functional objectives, blame is almost always attributed to miscommunication between all parties involved in the process. These partners include the business managers, the users, the project managers, and the software development project team members themselves.

The professional literature in the software and IT industry makes frequent reference to this phenomenon:

> Without a sound program management function, project costs overrun, timescales slip and the planned benefits lose their focus and are not realized.[4]
>
> Nearly half of all application development projects cost 70% more than originally budgeted. Managers cite lack of user input as the main reason for project failure.[5]
>
> The inability to get the support of users has long been a reason that IT projects fail.[6]
>
> Unrealistic expectations, poor project management, internal politics, changing business requirements, new technology, and expense cutbacks can all prevent an IT project from succeeding.[7]

Not Always What It Seems: Why Take the Risk?

There is an odd characteristic related to IT development projects. The underlying motivation for spending significant sums of money on projects with a high probability of failure may not be to complete and deploy the software/systems being developed. The real benefit and purposes of having members of an organization (1) work through a complex set of requirements and (2) pursue development projects across organizational boundaries may be to achieve alignment in business processes or cultures. This organizational objective may be achieved regardless of the software actually produced.

For example, when companies complete acquisitions and mergers, it is common for multiple organizations with disparate systems and tools to suddenly be faced with the need to consolidate. The organizations have to reconcile processes, terminology, internal and external financial reports, and operating methodologies. One effective way to do this is to charter a project ostensibly for the purpose (1) of centralizing information systems or (2) of migrating to a new system or software application.

In the process of attempting to sort through the differences between the businesses and to agree on new, common business processes, much of the desired communication and integration will take place. This is true whether or not the formally chartered IT project itself ever "succeeds" as contemplated in the project plan.

In fact, many organizations seem to be in a continual state of low-level crisis regarding late or over-budget IT projects. Yet, these organizations (1) successfully conduct business each day, (2) expand their market share, and (3) continue to acquire or merge with other organizations. This is all transparent if the IT project development is being performed internally. However, these organizational initiatives must be carefully considered if the development work is subcontracted and subsequently "fails." This is because such an outcome can result in litigation and in accusations of "breach of contract."

Why the High Failure Rate?

Best Practices

It has been 30 years since the microprocessor was invented and the computer revolution started. However, "best practice" is still an elusive concept when it comes to IT development project management. In the absence of a clear intent to defraud, it is tempting to attribute all IT project failures to incompetence or mismanagement on the part of the contractor or project team.

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However, it is well understood within the IT industry that:

> The gap between the best software engineering practice and the average practice is very wide—perhaps wider than in any other engineering discipline.[8]

Despite all the efforts to the contrary, it is still not possible to schedule invention. Even the use of the best software engineering practices cannot assure success. And, this is especially true if success requires inventing a new technique or process. However, there are IT development methodologies and tools, which have been developed and refined over the years, that are available to project managers. In addition, there are significant studies that do a good job of examining past IT development projects to determine which approaches work best and which are associated with high incidences of failure.

Exhibit 1 summarizes the best practices that reduce the risk of IT development project failure and increase the probability of IT project success.

The contractor for a software development project typically commits to:

- architecting, designing, developing, and delivering the software technology;
- satisfying specific written requirements;
- delivering in accordance with an agreed upon schedule;
- completing the work at an agreed upon price, or at an agreed upon time-and-materials rate; and
- using methodologies proven to increase the probability of success by identifying and mitigating risks along the way.

Unfortunately, it is typically not possible to prepare accurate IT project schedules that foresee all client problems. However, this is what many IT development clients ask for.

Nevertheless, most IT development contracts are entered into in good faith—with built-in risk on both sides.

If an IT development project begins to slip with loss of time, money, and opportunity on both sides, what needs to be determined is if it is truly a case of "breach"—a "violation of a promise,"—or just a good-faith/best-effort gamble that didn't pay off.

Wrongful Conduct, Incompetence, or Best Effort?

Empirical evidence would suggest that any attempt to conduct a large IT development project is risky. In fact, in its report entitled, "CHAOS: A Recipe for Success," published in 1999, The Standish Group[9] strongly suggests that projects be limited in scope to bite-sized chunks. The Standish Group recommends projects that can be completed in six months or less by teams of no more than six people—at a cost of less than $750,000.

The Standish Group research shows that as IT development projects become larger, the rate of success drops dramatically. This is true across all industry sectors, including retail, financial, manufacturing, and government.

When an internal project does get off track and scheduled deliverables are missed, both business managers and IT project managers should do their best to determine the source of the problems—and take corrective action. In many instances, the problems can be traced back to miscommunication between the parties involved. In other instances, the problems can be traced to incompetence on the part of the project managers or team members.

In some cases, the problems can be traced to a failure to adhere to the discipline of an established project management process. However, in other instances of failed IT projects, the conclusion is that every person involved gave it his or her best effort. And, the unsatisfactory results were, in retrospect, the best that could have been expected.

When IT projects are contracted to an external firm and the project fails, then the finger pointing often begins. The technology consultant can (1) examine the history of the project, (2) help determine whether "best practices" were followed, and (3) determine whether or not competent people, with the right skills and in the right roles, were assigned to the project.

Roles of the Experts: Technology Consultants and Damages Analysts

It is common practice within the legal community to work with both technology consultants and damages analysts at different phases of the IT contract litigation. A technology consultant is typically employed early in a case:

1. to help understand and explain the technical issues and jargon and
2. to formulate a strategy for submitting and responding to claims and requests during the discovery phase.

The technology consultant can try to answer the following questions. Were there realistic expectations? Was the work performed in a competent manner? Is the software technology truly proprietary or unique? Is it actually of any useful value? As the litigation progresses, a technology consultant may serve as an expert witness or work with the expert witness to prepare litigation support teams and demonstrative exhibits. The purpose of the demonstrative exhibits is to explain confusing technical concepts to the court and/or the jurors.

The role of the damages analyst is to estimate compensatory damages using generally accepted economic damages analysis methods. The damages analyst is often engaged after the litigation strategy has been formulated. Accordingly, the damages analyst may not be aware of all of the considerations related to the roles of the defendant and plaintiff as the IT project progressed.

Nonetheless, the damages analyst can often address the following questions. What really happened? Would the software being created really have had long-term value to the business or in the marketplace?

An IT economic damages analysis requires an understanding of both the economic value and the "technology components of value" from a technical viewpoint. The software technology components of value include:

- business functionality,
- alignment with trends in technology,
- maintainability, and
- integrateability.

When dealing with the software technology in an IT development project, these components of value may be confusing or ambiguous. And, these software technology components of value may often not be what they seem on the surface. However, the damages analysts' understanding of the technology components of value in developing a well reasoned estimate of economic damages.

The technology consultant can assist the damages analyst to ensure that all technology considerations are fully accounted in the economic damages estimation. These technology considerations include the following:

- assessment of the reasonableness of (1) the development contract and (2) the expectations of all of the parties,
- development of insight into the true underlying objectives of the IT project, and
- estimation of the true economic values of the IT system components.

A collaborative effort on the part of the technology consultant and the damages analyst will best serve the client—and the client's legal counsel.

The IT Project Document Set: The Background and History of the Project

The technology consultant should be responsible for examining the background and history of the project. The objective of this examination is to formulate opinions in seven key areas.

Exhibit 2 presents the "Project Management Checklist." This checklist provides a framework for this examination. In fact, this same checklist should be considered in the initial drafting of an IT project plan or development contract. The use of this checklist can ensure that the key considerations have been discussed and dealt with up-front (instead of later when problems arise).

There is often too much ambiguity to easily determine (1) whether a failed IT project was caused by the "wrongful conduct of the defendant" or (2) whether it was just an unfortunate case of naïve expectations combined with the inability to complete an impossible task.

The technology consultant will require access to all of the project documents, both formal and informal, in order to understand what transpired. These project documents should include:

- contractual agreements,
- requirements documents,
- architectural and design documents,
- weekly project reports and records,
- evidence of the project management methodology that was employed,
- program source code,
- computer(s) capable of compiling and running the software produced (including any third-party software),
- copies of output reports and other deliverables, and
- software and quality assurance documents.

Consideration of Damages

Once liability on the part of the defendant is established, the court will consider evidence of the economic loss related to the failed project.

Proof of the fact of damage must be separated from proof of the amount of damage. Even though liability has been established, it is essential in every claim to prove that there was an opportunity to realize lost profits.

A contract breach alone does not necessarily equate to lost profits. The plaintiff should show that the defendant failed to perform a contract. In addition, the plaintiff should show that had the contract been completed to specifications, the plaintiff would have economically benefited. Even though defendant liability is established because of lack of business functionality or other factors, the lost profits estimate could be zero.

Damages can be divided into two categories: (1) compensatory and (2) other, including punitive damages. This discussion will address the issue of compensatory damages related to a breach of contract claim. Specifically, we will consider a software technology project falling short of contractual commitments. The assumption is that the software being developed under the contract terms would have been expected to produce intellectual property (IP) of economic value to the plaintiff.

There are several steps to developing compensatory damages calculation in a breach of contract intellectual property case. The damages analyst should:

1. have a proper understanding of the legal issues related to the damages,
2. quantify the damages that are a result of the breach of contract claim, and
3. exercise reasoned judgment in analyzing the economic loss suffered.[10]

In cases involving IT projects and software technology, the process of estimating compensatory damages can be extremely complex. The technology consultant can provide technical advice to the damages analyst in order to sort out the technical complexities in this case.

Legal Issues Related to Damages

According to the *Handbook on the Law of Damages*, the primary aim in measuring damages is compensation, and this contemplates that the damages for a tort should place the injured person as nearly as possible in the condition he would have occupied if the wrong had not occurred, and that the damages for breach of contract should place the plaintiff in the position he would be in if the contract had been fulfilled."[11]

Recovery of damages for lost profits is subject to the legal principle that damages must be proximately caused by the wrongful conduct of the defendant. This legal principle governs the recovery of all compensatory damages.[12]

The second requirement for recovery of damages for lost profits is that damages can be proven with "reasonable certainty."[13] The reasonable certainty rule is applied to the fact of damages, not to the amount of damages.

Proof of the fact of damages in a lost profits case means proof that there would have been some profits. No profits equals no recovery. While proof of the fact of damages should be certain, proof of the amount can be an estimate, uncertain, or inexact.

Most courts have applied the test of objective foreseeability to lost profits damages cases. The lost profits damages claimed should have resulted from a breach of contract. The breach should be under circumstances in which it is reasonably assumed that loss of profits was contemplated by the parties as a probable result of the breach at the time the contract was signed.

In order to recover lost profits, a plaintiff must prove the following elements:

1. that the loss was caused by the defendant's conduct;
2. that profits existed or would have been realized—that is, that the existence of profits is reasonably certain; and
3. that a factual foundation exists from which a reasonable estimate of lost profits may be made.[14]

Estimating the Damages as a Result of a Breach of Contract Claim

There are several procedures in estimating the damages resulting from the breach of contract claim. These procedures include: identifying the intellectual property, considering the economic value of the intellectual property, quantifying damages based on generally accepted economic damages methods, and considering the remaining useful life of the intellectual property.

The damages analyst, with the assistance of the technology consultant, should gain a full understanding of the software technology and the relevant market to prepare a creditable damages estimate.

Identifying Intellectual Property (IP)

One of the first procedures in the damages analysis is to fully identify the IP subject to the legal action.

For IP, in this case software technology, to exist from an economic perspective, it should possess certain attributes. These attributes include:

- It should be subject to specific identification and recognizable description.
- It should be subject to legal existence and protection.
- It should be subject to the right of private ownership (and this private ownership must be legally transferable).
- It should have some tangible evidence or manifestation of the existence of the asset (a computer disk, a set of procedural documentation, etc.).
- It should have been created or have come into existence at an identifiable time or as the result of an identifiable event.
- It should be subject to being destroyed or to a termination of existence at an identifiable time or as the result of an identifiable event.

While an IP may not possess all of these particular attributes, there should be a specific bundle of legal rights (and other natural properties) associated with its existence.

It is helpful for the damages analyst to work closely with the technology expert to obtain a full understanding of the subject software technology. The understanding of the software should include a description of the software in technical terms.

The technical description could include information such as (1) size metrics, (2) language metrics, (3) development environment, (4) development timeline, (5) purchased components, (6) operations environment, (7) software code documentation, (8) software operations documentation, (9) software user documentation, and (10) software maintenance efforts.

By gaining a full understanding of the technical components of the subject software technology, the damages analyst will have a firm foundation to draw upon when estimating damages.

Economic Value

It is important for the damages analyst to understand the economic value of the IT project. For an IP to have economic value, it should possess certain attributes. Some of these attributes include:

- It should have the ability to generate some measurable amount of economic benefit. This economic benefit could be in the form of an income increment or of a cost decrement. This economic benefit is sometimes measured by comparison to the amount of income otherwise available to the owner if the IP did not exist.
- This economic benefit may be measured in any of several ways, including net income, net operating income, and net cash flow.
- An IP in commercial use should be able to enhance the value of other assets used in the commercial enterprise. These other assets may include tangible personal property, real estate, or other intangible assets.

The technology value components referred to in Exhibit 2—business functionality, alignment with trends in technology, maintainability, and integrateability—refer to the software technology having economic value and help determine the anticipated useful life.

Analysts recognize a distinction between the economic existence of IP and the economic value of IP. An example of

this distinction would be a copyrighted software system that, upon creation, is permanently locked in the company's vault. If the software is never used in the production of (or in the protection of) income, then it has no economic value—even though it has economic existence.

As presented in Exhibit 2, understanding the business functionality of the software technology is not enough. Business functionality without proper alignment with trends in technology, maintainability, and integrateability can significantly reduce the economic value of the software. These are important considerations when estimating economic damages related to the anticipated deliverables from an IT project.

Economic Damages/Lost Profits Methods

The most common methods for quantifying IP economic damages or lost profits are:

1. the "before and after" method,
2. the "but for" method, and
3. the actual/opportunity cost method.

Directly or indirectly, each of these damages analysis methods estimates value by either (1) the decrease in the value of the intellectual property related to the damage event or (2) the value (albeit negative) of the damage event itself.

The "Before and After" Method

The before and after method quantifies damages by comparing (1) the value of the subject IP before the damage event to (2) the value of the subject IP after the damage event. The difference, of course, is the economic effect of the damage event.

This method requires a valuation of software before the damaging event and a valuation of the software after the damaging event. Ideally, the "after" valuation is prepared as of a date after the damage event has ceased. The difference between the before and after values is one measure of the damage to the IP.

This difference in IP values between the two dates may not be the only damages suffered by the IP owner. In addition to the decrease in IP value, the owner may have (1) lost profits during the period of the damage events, (2) incurred damage remediation costs during the damage event period, and (3) incurred legal/administrative costs to prosecute the party responsible for the damage event.

The "But For" Method

The "but for" method quantifies damages directly by estimating what amount of economic income would have been earned by the IP owner "but for" the damage event.

The "but for" method typically involves (1) a backward looking projection of economic income that would have been earned from the IP use/ownership but for the damage event and (2) a forward-looking projection of economic income that would have been earned from the IP use/ownership but for the damage event.

The backward projection starts when the first damage event occurs and continues to the date of the analysis (often trial date in a litigation matter or the date of a damage expert's report). The forward projection starts at the analysis date (for example, the trial date) and continues until both (1) the damage event stops and (2) there is no more expected residual effect of the damage event.

Typically, the result of the backward projection is future valued to the analysis date, and the result of the forward projection is present valued to the analysis date. The total amount of damages is the sum of (1) the future value of the backward projection and (2) the present value of the future projection.

The "but for" method is one measure of the damages to the subject IP. Again, the IP owner may have incurred other losses due to the damage event, such as legal fees, expert witness fees, court costs, and so on.

The Actual/Opportunity Cost Method

The actual/opportunity cost method quantifies damages to the IP owner by examining:

1. the historical cost of developing and commercializing the IP through the analysis date;
2. the historical opportunity cost of not commercializing the IP through the analysis date; and
3. the prospective opportunity cost of not commercializing the IP from the analysis date.

The total damage indication is the sum of the three cost components.

The historical cost includes all:

1. direct costs—engineering, design, market research time and expenses;
2. indirect costs—for example, management time, support staff time, overhead expenses;
3. commercialization/promotional costs—advertising, promotion, marketing expenses; and
4. entrepreneurial incentive—a fair rate of return on all other development costs incurred during the development process.

All of these actual historical costs should be restated to current costs as of the analysis date. This restatement procedure is usually accomplished by applying price inflation trend factors to the actual historical costs.

The historical opportunity cost includes the income the IP owner would have earned from the use of the IP, absent the damage event. The historical opportunity cost is estimated from the date of the damage event through the analysis date. And, the historical opportunity cost is stated as a future value (that is, inflated to reflect current costs) as of the analysis date.

The prospective opportunity cost includes the income the IP owner would have earned in the future from the use of the IP absent the damage event. The prospective opportunity cost is estimated from the analysis date forward to the date when the damage event is no longer expected to affect the subject IP. And, the prospective opportunity cost is stated as a present value as of the analysis date.

The total damage indication of this method is the sum of the three cost components: (1) historical cost of development, (2) historical opportunity cost, and (3) prospective opportunity cost. In addition to this damage measure, the IP owner may have suffered other losses due to the damage event, such as legal fees, expert witness fees, court costs, among others.

In all economic damage methods, economic income can be defined in many different ways. First, economic income can be measured by increases/decreases in units (volume) sold, price per unit, market share (absolute or relative), market size, or by being/not being first to market.

Second, economic income can be measured by increases or decreases in fixed/variable production expenses, fixed/variable selling and administrative expenses, or fixed/variable research and development expenses.

And, third, economic income can be measured by increases or decreases in capital expenditures, working capital investments, or interest expenses. Finally, economic income can be measured by (1) a change in the absolute dollar amount and (2) a change (acceleration or deceleration) in the timing of any of the above economic variables.

The technology consultant working with the damages analyst can assist in quantifying the economic income that will be used in the estimation of damages.

Remaining Useful Life

Intellectual property value is a function of potential economic life. Projection of the useful life is usually necessary in the estimation of damages for intellectual property and can be an integral component of the economic analysis process, regardless of the methods used.

While methods of life estimation range from totally qualitative to rigorously quantitative, the remaining useful life estimation involves a consideration of the following factors:

- functional analysis,
- technological progress,
- economic trends,
- management policy decisions,
- government and regulatory policies,
- present condition and use of the IP,
- character and amount of service historically rendered by the IP,
- character and amount of service expected from the IP,
- other pertinent information, and
- professional judgment on the part of the experienced analyst.

The expertise of the technology consultant with respect to the remaining useful life of the software technology may be particularly useful. The technology consultant can address the technical issues with respect to the functional analysis (e.g., inadequacy and obsolescence), technological progress, economic trends, and other considerations of remaining useful life.

Damage Date

The analyst must estimate the damage amount based on a specified date (the "date of damages" or the "damage date"). The date of damages is determined by the courts based on the facts of the case.

There are four possible dates a court may select for assessing damages in a breach of contract case. These four dates are:

- the date of the contract,
- the date of the breach,
- the date of the trial, or
- a date between the breach and the trial.

In the case of a failed IT project, the date of the contract may be readily determinable, but the date of the breach may not be clearly evident. When did the project start to slip with loss of time, money, and opportunity?

Although the date of damage is determined by the courts, the damages analyst should consider the following facts:

1. that many IT projects run past the original deadline and
2. that the IT project may have not been fully operational as of the damage date.

A different damage date can result in a different damage estimate. For example, as previously discussed, the before and after method quantifies damages by comparing (1) the value of the software technology before the damage event to (2) the value of the software technology after the damage event. If the damage date changes from the date of the breach to the date of the trial, it is likely that the damages estimate will also change.

Quantifying Reasonable Expectations

The methods for quantifying damages—the before and after method, the "but for" method, and the actual opportunity cost method—require consideration of what were the reasonable expectations of the IT projects. The quantification of the economic loss should consider the reasonable expectations surrounding the project success—as measured by decreases in expenses, increases in revenues, decreases in capital expenditures, and so on.

When estimating damages, the damages analyst may consider that, according to industry statistics, most IT projects (1) come in over budget or (2) run past the original deadline.

As stated in *Micro Data Base Systems, Inc.* v. *Dharma Systems, Inc.*, "there is no rule that damages can be proved only by documents, only by experts, or only by disinterested third parties. The only pertinent rules are that damages must be based on evidence rather than guesswork, wishful thinking, and pie-in-the-sky dreaming."[15]

Guesswork, wishful thinking, and pie-in-the-sky dreaming do not provide a foundation for the damages estimate. Sound judgment based on a quantitative analysis with consideration of the reasonable expectations of the IT project, among other factors, provide the foundation for the damages estimate.

Summary

Efforts continue within both the business and academic communities to devise software technology development and project management methodologies that increase the incidence of success in IT development projects. But, as Martin Fowler points out, "Most software development is a chaotic activity. . . ."[16]

A significant clash of cultures takes place when the high-tech world of innovation, risk taking, failure, and wild success enters the courtroom. IT projects often begin as good-faith attempts by friendly parties to integrate or create software technology for the first time. However, if an IT project fails, it may then be subjected to objective scrutiny by nontechnical people. The nontechnical individuals will scrutinize the project in light of contractual terms that inaccurately reflect the reasonable expectations of the parties.

Damages analysts are often called upon to provide litigation support and expert testimony related to intellectual property disputes. According to *Recovery of Damages for Lost Profits*,[17] the use of unsubstantiated expert testimony is perhaps the most common error that produces reversals of lost profits damage awards. As this text indicates: "The expert who testifies to no more than final figure for lost profits, with no computation or substantiation to back it up, does not provide sufficient evidence to sustain a judgment for lost profits damages."

In this situation, the plaintiff has failed to establish lost profits with the necessary reasonable certainty. The expert's opinion should be based on facts, including all the data necessary to demonstrate how the opinion was reached.

It is advantageous for the technology consultant and the damages analyst to work in a collaborative way to produce a well founded damages estimate. The damages estimate should be based on the economic value of the software technology and on an understanding of what transpired as the IT project progressed. The damages estimate should demonstrate an understanding of the technology to ensure that, assuming defendant liability is established, the appropriate economic damages are awarded.

Notes:

1. Martin Fowler, "The New Methodology," martinfowler.com/articles/newMethodology.html.
2. The Standish Group, 1998, www.wavetech.com/New_BootCamps/Project+/Benefits.htm.
3. intellectuk.org/groups/it/groups/testing_operational_risk.pdf.
4. Contractor UK—from Information Risk Management at KPMG, November 2002.
5. The Standish Group, as reported by *InternetWeek*, September 6, 1999.
6. *InformationWeek,* November 1, 1999.
7. *InfoWorld*, September 27, 1998.
8. Fred Brooks, Kenan Professor of Computer Science, University of North Carolina, winner of the 1999 A.M. Turning Award, called "The Nobel Prize of Computing."
9. www.standishgroup.com.
10. Richard M. Wise, "Quantification of Economic Damages," 1999 *Journal of Business Valuation*, p. 361.
11. C.T. McCormick, *Handbook on the Law of Damages* (Egan, MN: West Publishing Co., 1935, reprinted 1975), p. 560.
12. Robert L. Dunn, *Recovery of Damages for Lost Profits*, 5th ed. (Westport, CT: Lawpress Corporation, 1998), p.2.
13. Ibid., p. 9.
14. Anthony A. Bongiorno, "Recovery of Damages for Lost Profits," *The Best of MCLE*, Vol. 7 No. 4., August 1996.
15. *Micro Data Base Systems, Inc.* v. *Dharma Systems, Inc.*, 148 F.3d 649 (7th Cir. 1998), *aff'g* No. 95 C 83, U.S. Dist. Ct. (N.D. Ind.).
16. Fowler, "The New Methodology," p. 2.
17. Robert L. Dunn, *Recovery of Damages for Lost Profits*, 4th ed. (Westport, CT: Lawpress Corporation, 1992), p. 470.

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Exhibit 1
"Best Practices" That Can Increase the Probability of IT Development Project Success

Risk Management

It is to everyone's benefit to tackle risks and address problems early in the IT development project when the problems are less expensive to fix. Some of the techniques commonly used to reduce IT project risk include:

- Use iterative development.
- Provide requirements management.
- Involve users in the project early and continuously.
- Schedule formal "go/no go" project reviews at regular intervals and checkpoints.

Iterative Development

By partitioning large, complex phases of the development project into more manageable pieces, IT project risks are significantly reduced and key functionality is delivered to the users more quickly. In addition:

- Critical functionality and important user features are available earlier.
- Change is more manageable.
- Risks are identified early in the project lifecycle when it is possible to react to them.
- User feedback is enabled and encouraged in order to elicit the system's real requirements.
- Stakeholders can receive concrete evidence of the IT project status.

Requirements Management

Change control procedures provide a framework for evaluating, controlling, and approving important changes made during the IT project. In addition, project requirement management procedures ensure that all project stakeholders are aware of the changes that affect them.

- Protects the development project by ensuring that change proposals are considered systematically.
- Improves the quality of the decisions made by ensuring all concerned parties are involved.
- Improves visibility of necessary changes by ensuring all concerned parties are notified.
- Combats "mushy milestones" by making sure each work product is reviewed, signed off, and placed under change control before it can be considered complete.
- Increases accountability.

User Involvement

Involving system users throughout the development project is important to building a product that the end users will use and like.

User involvement saves time because it eliminates one large source of requirements changes—the additional features requested by the users as the IT project progresses. It's better to involve users early on—while the software is still malleable, and before a lot of work has been expended.

Exhibit 2
IT Development Project Management Checklist:Looking Forward/Looking Back

A technology consultant considers the following seven factors when analyzing a failed IT development project or reviewing a proposed IT development project contract agreement.

1. Detailed, Stable Project Requirements?

The client should provide detailed requirements and information that are (1) sufficient and (2) stable enough for the contractor to produce what is desired and agreed upon. Or, in recognition of the fact that requirements may change as the business evolves and the project progresses, both the client and developer may decide to agree to—and follow—an adaptive process. This adaptive process should give the client much finer-grained control over the software development process in exchange for foregoing fixed-bid contract requirements.

2. How Is Project Success Defined and Measured?

Are the requirements, deliverables, and expectations agreed upon in the contract complete and reasonable so as to actually be achievable? Are the people and resources that need to be provided by all parties to maximize the probability of success available, assigned, and fully funded? Is/was the project "success" even feasible?

3. What Are the Technology Value Components?

As project "success" is defined in the contract, what would the usefulness/value of the resulting software technology be when considering:

- business functionality,
- alignment with trends in technology,
- maintainability, and
- integrateabilty.

Business functionality alone, without any other value component, may be of significantly reduced economic value. This is especially true if the software is not aligned with trends in technology. Simple or superficial comparisons of functionality with other available software will not result in accurate comparisons of economic value.

The value of the software technology will come from a long expected useful life. Software that is reliable, easy to maintain, and easy to integrate will be easier to adapt to the ongoing changes in a business and in the computer industry.

4. Competent Project Team Members Doing Their Best?

Who are the project team members? What is their background and experience? Does it seem that the project managers and project team members from both sides are experienced and technically competent? Even competent people must still decide to do excellent work, both (1) from a technical perspective and (2) in how they communicate and work as a team.

5. Are Development Project "Best Practices" Identified and Used?

To what extent are "best practices" followed by both parties during the planning and execution of the project in order to maximize the probability of success?

IT development methodologies and tools that provide a trusted framework for requirements gathering and project management should be used by the developers. These methodologies and tools will keep the client out of trouble and the project on track.

At the same time, the client must ensure that the business process modeling is sufficient, accurate, and timely.

6. Timely and Complete Communication?

What are the procedures for communicating the IT project status, milestones, open issues, and problems encountered along the way? Are these communication procedures likely to identify and reduce risk, phase by phase, as the IT development project progresses?

7. Negligence or Best Efforts?

Looking back at the failed IT development project, do the results appear to be the best that could have been expected, given all of the unforeseen problems that occurred? Or, were either the IT contractor or the client negligent in the project management, resource allocation, communication, or execution of the IT project?