



Information Technology: Cost or Opportunity

Let's start with CIO size headache....

Like most organizations these days, your CFO is on the prowl, looking for costs to cut and budgets to trim. You have seen your Information Technology budget shrink over the years, even as you are congratulating yourself on some well done IT project or some slick technology that you implemented to bring your company into the twenty first century.

You look back at your IT empire and you see a vast sea of software applications ranging from spreadsheet applications that have suddenly become mission critical, to desktop database applications that people cannot live without. At the back office are your mainframe applications that you had sworn would retire by the millennium. And your web support staff are busy trying to keep abreast with the content that seems to be pouring in from all parts of your organization trying to find a portal to your customers. Your helpdesk is in India and your data warehouse is being run by a contract team somewhere.

Your software maintenance projects have all taken lives of their own. Some of them have been farmed out to Bangalore India, and others have turned into sandbox plays. Your development team is busy gaining critical skills that will help them get their next jobs. Your bottom third continues to go fishing while your top third is trying to fill the vacuum. The projects that were started with a deep sense of urgency and purpose, somewhere along the way, lost sponsor interest when the focus shifted.

In the midst of all this, your company is being acquired in a hostile takeover and the lawyers are demanding that all executive electronic mail be submitted as evidence. Your staff is scouring backup tapes and server images to comply with the court order that demands this evidence.

The Securities and Exchange Commission is demanding compliance with Sarbanes-Oxley. Which means you are busy documenting business processes, financial controls and the way your audit trail is managed – all to be completed in the next 3 months?

To your horror and dismay, your fifteen minutes of fame came in a lead article in the Wall Street Journal about the 10,000 identities that were stolen from your lost backup tapes. Now your company is defending a lawsuit and potential civil actions.

To cap it all, you are meeting extortion demands from an east European hacker team that is holding your e-commerce servers hostage with denial of service attacks. You were surprised when your beeper went off and you were informed that the web servers that were taking in half a million dollars of orders a day had slowed to a crawl as tens of thousands of zombie computers recruited by the hacker were harnessed to attack your servers. You have recruited the best white hat you can find while making plans to pay off the extortionists. As you nervously chew on your fingernails, the FBI and local law enforcement is also on the job.

Sounds like a really bad day... each day, every day, all the days. Can we help you with all of these? No!

At least, not all of these problems. But we can help with the part about managing your applications and getting the CFO off your back. And with keeping track of your projects and with the part about the business processes.



Portfolio Management

Sounds like the start of another headache.... But this white paper will try to shed some light on what portfolio management entails, and try to strip off some of the consultant jargon that plagues the IT industry. We will start by mentioning a few trends that have led up the current thinking on portfolio management.

Emergence of new risks

The IT industry has seen the emergence of new risks. From security vulnerabilities to catastrophic disasters to theft of customer data to denial of service attacks from satellites of the former Soviet Union, the cost of IT management now has to factor in the mitigation of these risks.

Emergence of increased regulatory costs

As government delves deeper and deeper into protecting society from its own misdeeds, regulation has brought on a whole new set of requirements for developing application systems. From the Privacy Act to the ones mandating access to disabled people to complying with the Sarbanes Oxley Act, regulations will drive up the cost of application development without necessarily increasing their opportunity potential.

View of IT investments as both cost and opportunity

It's been many years since IT investments were viewed as items of cost and not of revenue or opportunity. The IT budget was tucked away, along with other cost items under the CFO. Over the years, organizations understood that without the IT systems, they could not service their customers 7/24 or provide self service capabilities or track customer purchases and reward loyal customers. Suddenly, from being a cost item on the backburner, IT became an element of competitive advantage. And, as in all elements of strategy it became necessary to weigh the opportunities against the costs.

Inventory of Application Systems

At the cusp of 1999, many organizations frantically and feverishly gathered inventories of their application system to determine whether they were likely to crash on the night of December 31. Later, these inventory of application systems became a strategic asset because it provided line items for the bean counters. It was easy then to generate spreadsheets of cost against each of the applications to figure out how much an organization was paying out.

Development of Enterprise Architectures

Around the same time, the new mantra was "enterprise architectures". Every organization wanted to build one, if not on their own initiative, then due to the urgency of the Clinger-Cohen Act that mandates that all Federal Agencies must have a CIO function in place and a published enterprise architecture that would be matched up against a standard list of services that Federal Agencies offer to the citizen. Today, many, if not all Federal Agencies have some sort of published enterprise architecture. It usually is a large plotter generated diagram hanging outside the CIO's office and announcement (with a smirk) that the blessed thing cost a million dollars.

Advent of Service Oriented Architectures

Add to this a new twist in the way that applications are built. In the olden days, we defined a box called a system and then went ahead and defined the features and functions we wanted it to perform. We then procured the budget, started up the development team and project managed it to completion (at least 30% of all projects). If all went well, the system lived on for 5-10 years and consumed resources and constrained users with the functions it had, until it was either "modernized" or retired. Suddenly there was a new way to build a system by buying some of the functionality that it was due to perform, off-the-shelf from some service provider. With the advent of service oriented architectures (SOA), systems designers could use make vs. buy decisions at the functionality level. This brought in a whole new way of costing an application.



Outsourcing on a major scale

The past few years have seen an upsurge in outsourcing. Application systems development has been sent to India, China and Russia. Entire business processes have been contracted out to third party providers. The emergence of Service Level Agreements (SLA) to guarantee outsourced services to a level of adequacy for the outsourcing enterprise have become very common. The initial discomfort with the idea of outsourcing key IT systems has been replaced with a confidence that has come from seeing successful outsourcing reduce costs. The 12 hour time difference, in fact, has created the 24 hour software development/maintenance enterprise.

Decentralization of IT

The days of the glass house that centralized IT had become, are effectively over. As functional department users have become more literate with computers and with the induction of a new workforce that is very comfortable with personal computing, right from elementary and middle school, more users are taking charge of their own computing. The role of IT has become transformed in this environment to providing centralized, clean data for these users and taking over backbone operations for automated processes.

Portfolio Management – Another Silver Bullet?

Then somebody had the bright idea, that if we had the direction we are going defined by the enterprise architecture, if we have an inventory of applications and their costs, and have a new way of making make vs. buy decisions for new application funding, could we use the approach mutual fund investors use to look at a collection of investments and balance risks, opportunities, costs and payoffs? After all, software applications are capital assets that pay off over a time, with a steep initial expense! And thus, portfolio management for application systems was born.

What is a Application Systems Portfolio?

It is a list (collection) of applications that are deemed critical to an enterprise. These are creators of opportunities and staples that the business cannot do without. Over time, as the nature of the business changes, the list of critical applications may also change. As viable secondary providers become available, businesses may outsource these applications.

What is the subject of a Applications Portfolio?

What are the line items of a Portfolio?

Projects

A project is a designated and funded set of tasks that are related to an application system at various stages of its lifecycle (Planning, Requirements, Analysis and Design, Construction, Test, Cutover and Installation, Operations and Maintenance and Upgrades/Modernization. Projects are visible as funded line items in the IT budget

Projects can be in-house, contracted with in-house oversight or completely outsourced. Project costs include labor, materials and all related expenses.

COTS Products

A Commercial Off The Shelf (COTS) product is a purchased product that is commercially available. The cost of the product includes licensing costs and any requirement maintenance spending. IT budgets also figure in the cost of upgrading to newer versions and associated costs.



Software Applications	A software application is a system that belongs to the enterprise and is treated as an enterprise asset.
Physical Assets	Elements of the IT infrastructure that directly contribute support for application systems. These are assets that are used for: <ol style="list-style-type: none">1. Developing Application Systems2. Fielding Application Systems3. Maintaining Application Systems4. Upgrading/Modernizing Application Systems

The application systems portfolio becomes the subject of the portfolio management exercise.

What are the other factors that one must consider in a financial portfolio? The primary purpose of portfolio management is to derive a predictable (reasonably high confidence) of risk adjusted return in a investment area that is predefined.

What are the items of Risk?

In the application systems world, there are a variety of risks. Some risks relate to the development/procurement of applications, and others to the deployment and operations and maintenance. Though it is not our intention to describe an exhaustive list of all types of risks, we present a few of them to illustrate the techniques for defining risk.

Development/Acquisition Risks

Outsourcing Risks	These are risks related to use of an outsourced supplier. The specific nature of the risk can vary depending on where the outsourced supplier is located. Mitigation of risks may involve recourse to laws that do not exist to protect the customer or inability to enforce penalties and sanctions.
Completion Risks	70% of new systems development projects never reach completion, and those that do are invariably late and deficient because of scope changes made to bring them in on time. Risks include failure to complete as well as delay in completion. Risk also involves inadequate functionality based on what was initially planned.
Procurement Risks	The ability to procure systems gets harder and harder as the size, complexity and estimated cost of the project gets larger. More stakeholders become involved, and more regulatory pressures are applied, and expectations also tend to balloon.
Compliance Risks	Systems are required to comply with various Federally mandated requirements (at least for Federal Agencies, DoD and organizations doing Federal business)

Deployment Risks

Operational Risks	These are risks that appear day to day in the life of application systems and must be mitigated and/or managed. These involve everything from availability of trained and qualified staff to turnover and absence of operations personnel.
Security Vulnerability	These are risks that involve hackers breaking into your systems, vulnerabilities of database information, vulnerability of tapes and backup media and a variety of other risks. These also include vulnerabilities from "social engineering".



Hardware Failure	These are risks that result from catastrophic or degraded hardware failures.
Software Failure	These are risks that result from catastrophic or degraded software failures.
Infrastructure Failure Facility Risks	These risks include failure of supply of utilities and communication systems to the facility where the application system resources are housed.

Maintenance Risks

Migration Risks	These risks relate to the ability to transition to new versions of an application system without catastrophic or degraded operations.
Obsolescence Risks	These risks relate to underlying software components becoming obsolete. Different vendors have different timeframes for declaring their products obsolete.
Supplier Risks	These risks relate to non-availability of suppliers for key services or components of currently operational and critical application systems.

How do we assess the return on a portfolio?

This is the hardest part of portfolio management. The return on a portfolio is the aggregated return of individual application systems/projects within the portfolio. How does one assess the return of investment in an application system or project?

This is not very difficult when the application system directly returns revenues to the bottom line. Examples of such systems are those that impose a fee for use on its user base. It becomes more difficult if the application system is embedded as an essential support mechanism for a key business process. Order Entry, for example is a cost, but one that an enterprise would willingly incur to book revenue.

How do enterprises assess returns on their portfolio of applications? They can start by separating the applications that directly generate revenue streams and those that indirectly support the enterprise.

The next order of business is to determine which applications support which aspects of the business:

1. Functions which perform the core mission of the business be it meeting goals for a non-profit or making revenue for a profit-making enterprise. These are functions that are directly tied to the Business Areas and Lines of Business of an enterprise.
2. Functions which are essential but secondary to the core business of the enterprise. These are business functions which are supportive of the core business.
3. Functions which are administrative and are required for regulatory and other purposes.
4. Functions which are related to creation of new speculative opportunities.

How does one get these functions? From the enterprise architecture, of course! A good enterprise architecture would produce an As-Is and To-Be business model that contains, at a minimum:



Areas of Business that the enterprise is concerned with
Lines of Business
Key functions that support the lines of business
Key business processes that implement the functions

With the usual management passion for reducing everything down to metrics, we could arbitrarily assign two weights: one for the type of function that the application system/project supports and another for the “criticality” of that application for that business function.

How do we add items to/remove items from the portfolio?

Remember, that application systems must follow only after the business directions are established. Business directions are established by many postures:

1. Striving for sustained competitive advantage by unilaterally setting a planned direction (Leadership thrust). This planned direction may involve new processes, new skills, new technologies, new markets or combinations of these.
2. Reacting to a direction already established by a competitor by meeting or beating competitive strategies. (Follower strategy)
3. A blend of forward looking initiatives and reactions. (Staying in Place)
4. Making forward looking statements without a plan and hoping that the plan emerges while moving forward. (Posturing)

Either way, the business will be pointing out one or many of the following:

1. New lines of business or retiring some existing line of business
2. Changes/Improvements to existing lines of business
3. New business functions or outsourcing existing ones

Based on these considerations the applications portfolio manager is faced with the following decisions:

1. Do we add new items to the portfolio? If so, can we assess the risk factors as well as the payoff measures outlined above?
2. Do we trim items from the existing portfolio? If so, which items? What is the impact of trimming these items? Do we retire the application systems gracefully or abruptly?

A Simple model for Portfolio Management

1. Compose your inventory of application systems and projects. This inventory may come from your Y2K mitigation stack or may be an outcome of your enterprise architecture efforts.
2. Compose your business model. This either already comes out of your enterprise architecture work or may involve going through your customer facing materials and working with internal organizations to identify and line up business functions and processes. Categorize the business functions as mentioned earlier in this paper.
3. Relate your applications inventory to your business model. This involves relating every application system and project to your business functions.
4. Develop a weighting mechanism that allows you to rate an application.
5. Develop a set of risk criteria that is applicable to your enterprise. Each of these risk criteria imposes a potential mitigation cost to your application system. For each of your defined risk categories, assign the cost to your application. This can be done for capitalized costs as well as pay as you go costs.



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6. For each application you will get a cost criteria that is based on risks as well as the cost of procuring, operating and maintaining the application. You will also have a weighted payback factor for determining the potential impact on mission critical functions.
 7. Now you have a baseline, develop the forward picture for items that have been identified by the business as forward looking initiatives. Determine which of them require application support. Build strawman application placeholders with estimated costs for each of these application systems
 8. Play various risk scenarios that involve potential elements of risk becoming reality and evaluate the disaster recovery costs.

Or of course, call us!