

Forrester Consulting

HELPING BUSINESS THRIVE ON TECHNOLOGY CHANGE

Prepared for IBM Corporation

September 14, 2005

The Total Economic Impact™ Of IBM Tivoli Composite Application Manager For WebSphere

Project Director: Bob Cormier, Principal Consultant, TEI

FORRESTER®



Headquarters

Forrester Research, Inc., 400 Technology Square, Cambridge, MA 02139 USA
Tel: +1 617/613-6000 • Fax: +1 617/613-5000 • www.forrester.com

TABLE OF CONTENTS

Executive Summary	3
About IBM Tivoli Composite Application Manager For WebSphere (ITCAM For WebSphere)	6
The Organization Chooses IBM Tivoli Composite Application Manager for WebSphere Solution	6
Costs, Benefits, Flexibility, And Risks Of Implementing ITCAM For WebSphere.....	8
Conclusions	12
Appendix A: Total Economic Impact™ Primer	13
Appendix B: About The Project Manager	17

© 2005 Forrester Research, Inc. Circulation or disclosure in whole or in part of this report outside the authorized recipient organization is expressly forbidden without the prior written permission of Forrester Research, Inc. Forrester, Forrester Oval Program, Forrester Wave, ForrTel, WholeView 2, Technographics, TechRankings, Total Economic Impact, and TEI are trademarks of Forrester Research, Inc. All other trademarks are the property of their respective companies. Information is based on best available resources. Opinions reflect judgment at the time and are subject to change.

Executive Summary

In May 2005, IBM Tivoli commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by deploying IBM Tivoli Composite Application Manager for WebSphere (ITCAM for WebSphere). ITCAM for WebSphere provides monitoring infrastructure for Java 2 Enterprise Edition (J2EE) applications, enabling users to perform deep-dive problem determination, availability monitoring, and performance management for enterprise J2EE, IMS (Information Management System), and CICS (Customer Information Control System) applications running on z/OS, OS/390, AIX, HP-UX, Linux, Sun Solaris, and Windows environments. For this study Forrester examined the specific costs, benefits, flexibility, and the risk elements associated with an organization's investment in the ITCAM for WebSphere solution. Forrester interviewed a representative of a leading global manufacturing and financial services organization that does business in more than 150 countries and employs almost 50,000 people worldwide, which we will call the *Organization*. It has chosen to remain anonymous for this study.

After conducting in-depth interviews with the *Organization*, Forrester found that it had achieved significant benefits primarily in avoiding the costs of incremental mainframe hardware, memory, and servers and secondarily in system administration labor costs.

Purpose: The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of ITCAM for WebSphere on their organizations. Readers should use this study to better understand and communicate a business case for investing in ITCAM for WebSphere.

Methodology: IBM Tivoli selected Forrester for this project because of its industry expertise in application performance management tools and Forrester's Total Economic Impact™ (TEI) methodology. TEI not only measures costs and cost reduction (areas that are typically accounted for within IT) but also weighs the enabling value of a technology in increasing the effectiveness of overall business processes.

For this study, Forrester employed four fundamental elements of TEI in modeling ITCAM for WebSphere:

1. Cost and cost reduction
2. Benefits to the entire organization
3. Flexibility
4. Risk

Given the increasing sophistication that enterprises have regarding cost analyses related to IT investments, Forrester's TEI methodology serves an extremely useful purpose by providing a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

Approach: Forrester used a four-step approach for this study.

1. Forrester gathered data from existing Forrester research relative to ITCAM for WebSphere and the application performance management market in general.

The Total Economic Impact™ Of IBM Tivoli Composite Application Manager For WebSphere

- Forrester interviewed IBM Tivoli marketing and sales personnel to fully understand the potential (or intended) value proposition of the ITCAM for WebSphere solution.
- Forrester conducted in-depth interviews with an organization currently using the ITCAM for WebSphere solution.
- Forrester constructed a financial ROI model representative of the data collected in the interviews.

Key Findings: Based on interviews with the *Organization*, Forrester constructed a TEI framework (see Appendix A), and the associated risk-adjusted ROI analysis illustrating the financial impact areas. As seen in Table 1, the risk-adjusted ROI for the *Organization* is 699% with a break-even point (payback period) within 12 months after testing and deployment of the ITCAM for WebSphere solution.

Table 1: The *Organization* ROI, Risk-Adjusted

	Initial	Year 1	Year 2	Year 3	Total	NPV
Total costs	(\$191,000)	(\$4,120)	(\$32,120)	(\$32,120)	(\$259,360)	(\$245,423)
Total benefits	-0-	\$768,445	\$768,444	\$768,445	\$2,305,333	\$1,911,008
Flexibility options	-0-	-0-	\$51,012	-0-	\$51,012	\$51,012
Total net savings	(\$191,000)	\$764,325	\$787,336	\$736,325	\$2,096,985	\$1,716,596
Return on investment	699%					
Payback period	Within 12 months					

Source: Forrester Research, Inc.

The *Organization* will realize total three-year net savings of **\$2,096,985** primarily in avoiding the costs of incremental mainframe hardware, memory, and servers, and also in system administration labor costs and flexibility options, detailed as follows:

- \$1,993,333** in risk-adjusted cost avoidance savings of not purchasing incremental mainframe hardware, memory and servers by using ITCAM for WebSphere to significantly improve the performance of its mission-critical dealer parts ordering application (see **The *Organization's* Benefits And Savings**, p. 8).
- \$312,000** in risk-adjusted cost avoidance associated with senior WebSphere administrators, application architects, developers and contractors. Prior to implementing ITCAM for WebSphere only a very senior, 20-year tenured resource could identify and solve most significant problems. Today using ITCAM for WebSphere a more junior (three to five years tenure) WebSphere administrator, application support analyst, or the Level 2 support team can use ITCAM for WebSphere to do the initial investigation to isolate and identify the problem. Once diagnosed, the problem information can then be forwarded in context to the appropriate resource for resolution, such as an infrastructure analyst or a developer on the development team. The *Organization* estimates that it avoided hiring a senior administrator at a cost of \$120,000 per year (total of \$360,000; see **The *Organization's* Benefits And Savings**, p. 8). Below is an example of where ITCAM for

WebSphere helped operations make informed decisions on allocating IT resources to service applications:

- ITCAM for WebSphere helped the *Organization* detect and analyze an application problem where a particular transaction set would not complete (i.e., hung transaction). The *Organization* used ITCAM for WebSphere to cancel the hung transaction and free up processing so the rest of the workload could complete in a timely fashion, avoiding a recycle of the application server that would have affected the entire user community and avoiding any application outage. The deep-dive analysis capability of ITCAM for WebSphere also identified several issues within the application code that were causing these transactions to fail and allowed the *Organization* to make the necessary changes in a timely fashion. This hung transaction had been a known problem for some months and only after implementing and using ITCAM for WebSphere was the *Organization* able to identify the problems and repair them.
- **\$51,012** in risk-adjusted flexibility options. In addition, the *Organization* believes its investment in ITCAM for WebSphere has created future flexibility benefit “options” of which it plans on taking advantage. Both Forrester and the *Organization* believe that there is quantifiable value in having the flexibility and ability to deploy and/or upgrade WebSphere applications faster and more cost-effectively. The ability to use its existing ITCAM for WebSphere mainframe experience to implement ITCAM for WebSphere in its distributed environment will save capacity planning labor resources. The existence of the option to capture these savings has a present value that is estimated to be \$51,012 (risk-adjusted), included in the benefits in Table 1 (see **The *Organization's* Flexibility Options**, p. 9).

The objective of this study is not to illustrate common savings that other organizations can obtain by deploying an ITCAM for WebSphere solution, but rather to identify savings experienced by the interviewed organization. These results should be used as a guide to allow other organizations to determine the appropriate benefits for its particular environment.

Disclosures: The reader should be aware of the following:

- The study is commissioned by IBM Tivoli and delivered by the Forrester Consulting group.
- IBM Tivoli reviewed and provided feedback to Forrester, but Forrester maintained editorial control over the study and its findings and did not accept changes to the study that contradict Forrester’s findings or obscures the meaning of the study.
- The customer name for the interview was provided by IBM Tivoli.
- Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers should use their own estimates within the framework provided in the report to determine the appropriateness of an investment in the ITCAM for WebSphere solution.
- The study is not meant to be used as a competitive analysis.

About IBM Tivoli Composite Application Manager For WebSphere (ITCAM For WebSphere)

According to IBM Tivoli, the IBM Tivoli Composite Application Manager for WebSphere (ITCAM for WebSphere) solution provides monitoring infrastructure for Java 2 Enterprise Edition (J2EE) applications, enabling users to perform problem determination, availability monitoring, and performance management for enterprise J2EE, IMS, and CICS applications running on z/OS, OS/390, AIX, HP-UX, Linux, Sun Solaris, and Windows environments. IBM also provides monitoring capabilities for BEA WebLogic J2EE application servers.

ITCAM for WebSphere provides out-of-the-box monitoring of both mainframe and distributed environments without the need for intimate knowledge of the application code. It can be used by multiple IT roles supporting their IT services processes, assisting in the identification, analysis, and resolution of problems that adversely affect performance in production data centers.

ITCAM for WebSphere manages historical performance data, enabling IT planning groups to quantify production resource consumption patterns to plan for future capacity.

ITCAM for WebSphere features:

- Comprehensive J2EE diagnostics and problem determination: Detect, analyze, and fix application problems, often before they affect business users.
- Composite application monitoring: View correlated traces of complex application transactions that span J2EE boundaries to CICS and IMS to pinpoint hotspots in application code.
- Performance management: Monitor and optimize application performance by obtaining rich, historic performance data stored both in aggregate and at the transaction instance level.
- Application independence: Gain method-level application visibility without modification or knowledge of the application structure or design.
- Advanced monitoring of WebSphere Portal performance is included in the base product.

The Organization Chooses IBM Tivoli Composite Application Manager for WebSphere Solution

According to the *Organization's* Capacity Planning and Performance team leader, the *Organization* chose ITCAM for WebSphere because of its ability to meet the *Organization's* need to perform problem determination, availability monitoring, and performance management on its mission critical parts ordering application for its dealers, and because of its existing relationship with IBM as a strategic partner.¹ This parts ordering system is also the *Organization's* largest application and the

¹ When the *Organization* originally purchased this solution, it purchased the IBM WebSphere Studio Application Manager product through IBM's OEM relationship with Cyanea. IBM then acquired Cyanea in July 2004 and has since rebranded and enhanced this solution as IBM Tivoli Composite Application Manager (ITCAM) for WebSphere.

only WebSphere application it has running on a mainframe, and currently the only one using ITCAM for WebSphere. The application server is using WebSphere 5.1 utilizing a DB2 database as well as interacting with IMS. The development is done on desktops, and the integration environment is mainframe zSeries.

Historically this application began as an ERP-type solution over 20 years ago and was first Internet-enabled in the mid-1990s. About five years ago the *Organization* decided to move the application to a mainframe Web server. And about three years ago, as Java became more universally prevalent, it made the decision to update the application tier from C++ to Java, beginning the journey to modernizing this dealer parts ordering application. After moving the application to Java and adding new functionality, it discovered that the application was consuming about 15 to 20 times the DB2 resources it used to use (pre-Java).

ITCAM for WebSphere allowed the WebSphere system administrators to quickly identify where the application performance problems were so they could be fixed. After implementing ITCAM for WebSphere, the Java application is now only using 3.0 to 3.5 times the resources (pre-Java), which the *Organization* believes represents the industry standard for very large Java applications.

The two catalysts for choosing ITCAM for WebSphere were the rewriting of the application in Java and the significant growth in resources consumed due to the size and inefficiency of the application. Thereafter, the *Organization* felt a strong need to have visibility into the J2EE and IMS transactions to identify problems and resolve them in real time to further optimize the performance of this mission-critical application.

Relative to the inefficiency issues, the *Organization* felt it did not have enough instrumentation and visibility to monitor the application's performance. Bottlenecks plagued this application's Java environment and other Java environments for two to three years. In an attempt to solve these problems, the *Organization* installed ITCAM for WebSphere in early 2004 and initially used it in a limited test environment. ITCAM for WebSphere was fully tested between June and October 2004. In October 2004 ITCAM for WebSphere went live in both the development and production environments; currently it is using ITCAM for WebSphere on its mainframe environment to monitor its zSeries WebSphere.

The *Organization* recently purchased, but has not yet deployed, ITCAM for WebSphere for its open distributed systems environment; therefore information and data associated with this purchase are not included in this study.

The Organization's High-Level Objectives With ITCAM For WebSphere

Over the past several decades, the *Organization* has developed and nurtured very strong relationships with its dealer network; its overall goals and objectives include maintaining strong relationships with its dealers through efficient, high performing and highly available eCommerce Web sites.

Prior to the *Organization* implementing ITCAM for WebSphere, some dealer transactions were taking as much as 20 seconds to process; which was unacceptable performance. In the short term, the *Organization* was not concerned about losing dealers or revenue due to performance; it was, however, very concerned about maintaining the long-nurtured dealer relationships and hence committed itself to solving the performance issues.

Costs, Benefits, Flexibility, And Risks Of Implementing ITCAM For WebSphere

The *Organization's* Costs

The *Organization's* costs of implementing and maintaining ITCAM for WebSphere are as follows:

During the implementation of ITCAM for WebSphere, the organization incurred costs in the following categories:

- ITCAM for WebSphere mainframe license fees of **\$150,000** (as part of its Enterprise License Agreement), which included support and maintenance for the first year.
- Internal staff costs to plan and deploy of **\$12,000**. According to the *Organization*, the time and effort associated with ITCAM for WebSphere testing and implementation equaled 10% of a full-time equivalent (FTE) over 10 to 12 months, with IBM providing time and effort also (see next item).
- IBM Tivoli Professional Services of **\$15,000** to assist with ITCAM for WebSphere implementation.
- Two Linux host servers for ITCAM for WebSphere at a cost of **\$14,000** (\$7,000 each).

Ongoing annual costs associated with ITCAM for WebSphere are as follows:

- ITCAM for WebSphere support and maintenance of **\$56,000** (\$28,000 for each year two and three).
- Linux server support and maintenance of **\$3,000** (\$500 per year, per server for years one through three).
- Server hardware maintenance of **\$9,360** (\$130 per month, per server for 36 months).

The *Organization's* Benefits And Savings

The *Organization* reported realizing quantifiable benefits with the ITCAM for WebSphere solution in the following two categories:

- Hardware cost avoidance of **\$2,300,000**. A significant majority of the *Organization's* savings from ITCAM for WebSphere can be attributed to hardware cost avoidance. Beginning with rewriting its largest application in Java, through implementation and production, and using ITCAM for WebSphere to optimize its performance, the *Organization* was able to avoid purchasing additional mainframe hardware, memory, and servers. The *Organization* estimates these hardware savings to be \$2,300,000 over a three-year period due to better application capacity planning using ITCAM for WebSphere.
- Senior WebSphere administrators, application architects, developers, and contractors cost avoidance of **\$360,000** (\$120,000 annually for three years). Prior to implementing ITCAM for WebSphere, only a very senior, 20-year tenured resource could identify and solve most significant problems. Today using ITCAM for WebSphere a more junior (three to five years

tenure) WebSphere administrator, application support analyst, or the Level 2 support team can use ITCAM for WebSphere to do the initial investigation to identify the problem. Once diagnosed, the problem information can then be forwarded in context to the appropriate resource for resolution, such as an infrastructure analyst or a developer on the development team. The more senior resources are still involved to resolve the problem, but the issue is identified in a more cost-effective way. According to the *Organization* a typical problem that once took 20 to 30 hours to isolate and identify, now takes 1 hour with ITCAM for WebSphere.

The *Organization's* Flexibility Options

Flexibility, as defined by Forrester's TEI methodology, represents an investment in additional capacity or agility today that can be turned into business benefits later, at some additional cost. The *Organization* believes its initial investment in ITCAM for WebSphere mainframe solution has created the "option" to more cost effectively implement ITCAM for WebSphere for its distributed environment, taking advantage of the learning curve experienced by its Capacity Planning and Performance team in using ITCAM for WebSphere for the mainframe application. According to the *Organization*, the next time a major WebSphere application is deployed or upgraded on its distributed environments, its ability to solve problems will be more predictable, more methodical, and more iterative because it has experience using a tool (ITCAM for WebSphere) that identifies where time and system resources are being consumed.

Forrester and the *Organization* believe that there is quantifiable value in having the flexibility and ability to deploy and/or upgrade WebSphere applications faster and more cost-effectively. The ability to use its ITCAM for WebSphere mainframe experience in its distributed environment will save capacity planning labor resources of \$180,000 (\$90,000 per year in years two and three). The additional cost to take advantage of this flexibility benefit is the (recently purchased) \$92,000 ITCAM for WebSphere software license for distributed systems, plus \$17,000 in maintenance for year three. Although not quantified for this study, it will allow future or upgraded WebSphere applications to produce benefits to IT and the business faster.

The existence of the option to capture these future savings has a present value that can be estimated. The flexibility component of TEI captures that value using the financial industry standard Black-Scholes options pricing model. The *Organization* and Forrester value the above flexibility option at a risk-adjusted \$51,012 (\$75,045 unadjusted).

The value of flexibility is clearly unique to each organization, and the willingness to measure its value varies from company to company (see Appendix A for additional information regarding the flexibility calculation).

The *Organization's* Risks And Risk Mitigation Strategies

There are three aspects of risk and risk mitigation considered in this study: project risk, business risk, and the risks associated with the estimates of costs and benefits in a business case. Below is a summary of each.

Project Risk And Mitigation

There are risks associated with IT projects in general and specific risks cited by the *Organization* related to the implementation of the then-current version of ITCAM for WebSphere, known as IBM WebSphere Studio Application Monitor (WSAM, the predecessor to ITCAM for WebSphere).

At the time of its initial investment in WSAM, the *Organization* knew the product was not mature when compared with other tools it uses for evaluating capacity for IMS — DB2 or TSO for example.

The Total Economic Impact™ Of IBM Tivoli Composite Application Manager For WebSphere

As an early adopter, the *Organization's* risk mitigation strategy was to take a more deliberate "hands-on" approach to testing the product before using it on its most important dealer application. The *Organization* wanted to completely understand WSAM's features, functionality, and planned future enhancements. It was correct in anticipating that the WSAM monitor would cause a couple of outages.

The *Organization* highlighted two additional risks when it was asked to respond to IBM Tivoli's WSAM stated benefits and feature statements; the benefit or feature is described in the primary bullets below, immediately followed by the *Organization's* response in secondary bulleted text.

- According to IBM Tivoli, WSAM helps improve application availability and performance by providing deep-dive real-time problem detection, analysis and repair. Diagnostics at the method level can pinpoint code problems, which can help an architect or developer quickly fix a problem.
 - The *Organization* responded that the "deep-dive real-time problem detection" works better in its development and test environments versus the production environment, and it believes WSAM has to mature a bit more before it is able to do the "deep dive" in their production environment due to the unusually large size and complexity of their application.
- According to IBM Tivoli, WSAM can proactively prevent problems by forecasting resource requirements for new applications and graphically analyzing applications for effective use of resources. WSAM stores and displays historical performance data, enabling IT planning groups to quantify production resource consumption patterns to plan for future capacity.
 - The *Organization* agrees that WSAM has the ability to proactively prevent problems by providing visibility into large volumes of transactions more effectively. The *Organization* had also experienced data trimming problems with storing and displaying historical performance data, and had lost the history on two occasions with an earlier version of WSAM.

Business Risk And Mitigation

The *Organization* invested in the ITCAM for WebSphere solution to support its goal to maintain and enhance its long-term strategic relationships with its dealers by mitigating the business risks associated with application performance issues. Its dealers have a wide variety of experience in using technology, and the *Organization* wanted to ensure that performance issues were minimized. The business risk was not as much revenue loss as it was the longer-term enhancement of its dealer relationships.

Risks Associated With Estimates Of Costs And Benefits

Risk-adjusted and non risk-adjusted ROI are both discussed in this study. Since the future cannot be accurately predicted, there is risk inherent in any project. Risk assessments provide a range of possible outcomes based on the risks associated with IT projects in general and specific risks relative to a particular technology solution. Forrester has risk-adjusted the benefits in recognition that both the \$2,300,000 in hardware cost avoidance and the \$360,000 in WebSphere administrator savings are estimates (see **The *Organization's* Benefits And Savings**, p. 8). In addition the *Organization* may have discovered other means to avoid some of these costs independent of ITCAM for WebSphere. Forrester uses the average of three numbers: a best case, worse case, and most likely scenario to determine the risk adjustment, as follows:

Table 2: Risk Adjustments — The Organization’s Benefits And Savings

	Hardware cost avoidance	Administrator cost avoidance
Most likely scenario (100% of \$2.3M)	\$2,300,000	\$360,000
Worse case scenario (50% of \$2.3M)	\$1,150,000	\$180,000
Best case scenario (110% of \$2.3M)	\$2,530,000	\$396,000
Risk-adjusted benefits (average of three above scenarios)	\$1,993,333	\$312,000

Source: Forrester Research, Inc.

Forrester used the risk adjusted benefits in Table 2 to compute the risk-adjusted ROI. No risk adjustments were made to costs, as these expenses have either already been incurred by the *Organization*, or are contractually fixed.

With the benefit of hindsight, the *Organization* believes that its investment in WSAM carried a moderate level of risk at the time of purchase, mitigated by proactive planning and testing of the product.

Financial Analysis Summary — The *Organization*

Table 3 (below; repeated in the Executive Summary) is a summary of the costs, benefits, and flexibility options the *Organization* expects to achieve during the three year period by using ITCAM for WebSphere.

Table 3: The *Organization* ROI, Risk-Adjusted

	Initial	Year 1	Year 2	Year 3	Total	NPV
Total costs	(\$191,000)	(\$4,120)	(\$32,120)	(\$32,120)	(\$259,360)	(\$245,423)
Total benefits	-0-	\$768,445	\$768,444	\$768,445	\$2,305,333	\$1,911,008
Flexibility options	-0-	-0-	\$51,012	-0-	\$51,012	\$51,012
Total net savings	(\$191,000)	\$764,325	\$787,336	\$736,325	\$2,096,985	\$1,716,596
Return on investment	699%					
Payback period	Within 12 months					

Source: Forrester Research, Inc.

The *Organization* will realize total three-year net savings of **\$2,096,985** primarily in avoiding the costs of incremental mainframe hardware, memory, and servers, and also in system administration labor costs and flexibility options. In addition, the risk-adjusted ROI was an extremely favorable 699% (risk-adjusted).

If a risk-adjusted ROI still demonstrates a compelling business case, it raises confidence that the investment is likely to succeed, because the risks that threaten the project have been taken into consideration and quantified. The risk-adjusted numbers should be taken as “realistic” expectations,

since they represent the expected value considering risk. Assuming normal success at mitigating risk, the risk-adjusted numbers should more closely reflect the expected outcome of the investment.

Conclusions

This study is meant to provide the reader with a framework to examine the costs and benefits of IBM Tivoli Composite Application Manager for WebSphere. Based on our in-depth discussions with the *Organization*, Forrester projects a three-year risk-adjusted ROI of 699%. The net present value for the investment is \$1,716,596 (risk-adjusted).

For the *Organization*, a successful, well planned implementation allowed significant cost avoidance savings and benefits to accrue for both IT and the entire organization. In addition, the study found a value associated with the amount of flexibility that is inherent in ITCAM for WebSphere. In particular, there is quantifiable value in having the flexibility and ability to deploy and/or upgrade WebSphere applications faster and more cost-effectively. The ability to use its ITCAM for WebSphere mainframe experience to implement ITCAM for WebSphere in its distributed environment will save capacity planning labor resources.

Other organizations that are likely to see similar results have the following characteristics:

- They are currently using WebSphere and WebLogic.
- They have J2EE applications that require deep-dive problem determination, availability monitoring, and performance management for enterprise J2EE, IMS (Information Management System), and CICS (Customer Information Control System) applications running on z/OS, OS/390, AIX, HP-UX, Linux, Sun Solaris, and Windows environments.
- They have problems related to high volumes of transactions in a production environment, including slow performance, memory leaks, system and transaction hangs, or system crashes.

For our subject *Organization*, the ITCAM for WebSphere solution carried a moderate level of risk, a very positive 699% risk-adjusted ROI and a reasonable (within) 12-month horizon to recoup the investment.

Forrester makes no assumptions regarding the effects of ITCAM for WebSphere products at other organizations. This study examines the financial impact attributable to one organization. The underlying objective of this document is to provide guidance to technology decision-makers seeking to identify areas where value can potentially be created by using ITCAM for WebSphere solutions.

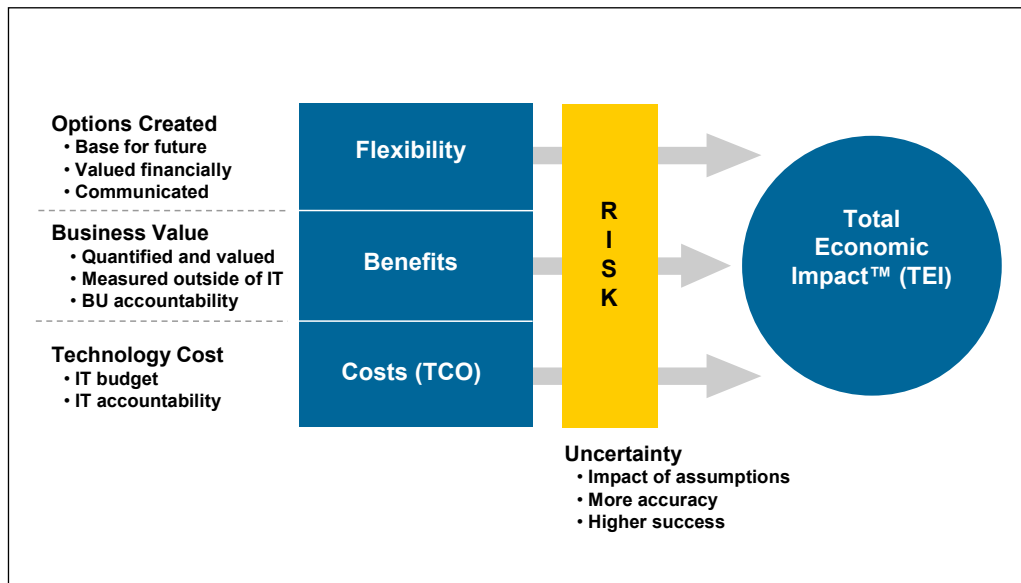
Appendix A: Total Economic Impact™ Primer

Total Economic Impact™ is primarily a common language tool, designed to capture and properly communicate the value of IT initiatives in a common business language. In so doing, TEI considers four elements of any initiative:

1. Benefits
2. Costs (sometimes referred to as total cost of ownership (TCO))
3. Flexibility
4. Risk

The figure below shows the TEI methodology conceptually. Benefits, flexibility, and costs are considered, through the filter of risk assessment, in determining an expected ROI for any given initiative.

The Total Economic Impact Methodology



Source: Forrester Research, Inc.

Benefits

Benefits represent the value delivered to the business by the proposed project. Oftentimes, IT project justification exercises focus on cost (e.g., TCO) and cost reductions. Among industry leaders, IT is deployed as an offensive weapon, with value expectations greater than simple cost reduction, especially when those cost reductions tend to focus within IT. TEI captures the value proposition of the proposed project by measuring the benefits against the incurred costs.

All benefits captured by TEI must be traceable back to one or more critical success factors (CSFs). These CSFs are directly linked to a higher-level business strategy. If a proposed technology

investment generates benefits that cannot be satisfactorily linked to a CSF, then it will not be included as a benefit for the organization in the model. In these cases, TEI requires that the benefit be discarded.

Under TEI, benefits may only accrue to the business units. “Benefits” derived through cost reductions within IT accrue as negative TCO to the IT budget, thereby showing a reduced TCO. (TCO is considered by TEI to be a single-dimension, cost-centric focus on the IT budget.)

The TEI process begins with a discovery of potential benefit areas. A representative from the organization under examination who has the ability to capture the benefit in question must validate each benefit captured during discovery. In other words, values cannot arbitrarily be assigned to a benefit if that person is not in a position to deliver that benefit should the project be approved.

Additionally, projects that are expected to deliver business value require some effort on the part of the business to realize that value. That effort may be in the form of training, organizational change or a modification of existing business processes. Therefore, TEI requires dialog with the business leaders actually responsible for making the necessary changes, in order to capture the proposed benefit during the justification phase. TEI captures this dialog in the form of the names of the individuals, which validates the value calculation of each benefit.

Within TEI, each benefit entered has a specific capture date. Although the benefit may be captured over time, TEI requires the specification of a date when most of the benefit has been captured. TEI will then place the value delivered in the appropriate time frame within the project.

Costs

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs. These may be in the form of fully burdened labor, subcontractors or materials. Additionally, costs consider all the investment and expenses necessary to deliver the value proposed.

Flexibility

Flexibility, as defined by TEI, represents investing in additional capacity that can, for some future additional investment, be turned into business benefit — for instance, an investment in an enterprisewide upgrade of the desktop word processor application where the primary driver may be standardization (to increase efficiency) and licensing (to decrease IT costs). However, a collaborative workgroup feature may translate into greater worker productivity when the organization is ready to absorb the discipline necessary to capture that benefit. The collaboration feature does not promise benefit during this phase of the project and must be captured later, incorporating additional investment, most likely in the form of training. However, the existence of the option has a present value that can be estimated. The flexibility component of TEI captures that value.

Flexibility can also be calculated by acknowledging that management has several decision points along the way for any given project. At each point, management can steer the project to a different outcome or cancel it altogether. Many net present value evaluations fail to take this management flexibility into account. Since TEI’s flexibility component uses the industry standard Black-Scholes options formula, the management flexibility factor is taken into consideration.

TEI divides a project into multiple phases. The first phase is considered the “benefits” phase — it is the phase expected to deliver the primary benefits. The benefits phase is usually no more than one budget cycle long and it is the primary reason the project is being considered. All other phases are

“options” or “flexibility” phases. For additional investment at some point in the future, business benefit can be captured during these “options” phases. TEI applies the Black-Scholes options pricing equation to all phases other than the benefits phase. The Black-Scholes equation uses five inputs to calculate the present-day value of flexibility or options:

- The value, or business benefit, that can be captured when the option is exercised; this value is expressed in present value terms.
- The time, to the date, at which point the option or flexibility expires. Expiration could be due to business changes or technology obsolescence.
- The cost of the investment to exercise the option and capture benefit.
- The risk-free interest rate (typically the interest rate of government securities is used).
- The volatility of the industry or sector; TEI uses the volatility of the stock prices within the market sector as this input.

Risk

Risks are used to widen the possible outcomes of the project. Since the future cannot be accurately predicted, there is risk inherent in any project. TEI captures risk in the form of risks-to-benefits and risks-to-costs.

Risks-to-benefits considers all possible risks to each possible benefit. Likewise, risks-to-costs considers all possible risks to each possible cost. Then, a range is chosen by applying best judgment for each cost and benefit, based on the set of risks assigned to each cost and benefit. The range is entered in the form of a low estimate, a most likely value and a high estimate. For example, the risks to a cost may result in a range from the expected value as the low estimate, to two times the expected value as the high for a particular cost (representing a potential two-times cost overrun).

TEI applies a probability density function known as “triangular distribution” to the values entered. The expected value — the mean of the distribution — is used as the risk-adjusted cost or benefit number. The risk-adjusted costs and benefits are then summed to yield a complete risk-adjusted summary and ROI.

Typical project risk factors to consider include the following:

- **Vendors:** The risk that the vendor of a product or technology may need to be replaced at some point during the project duration.
- **Product:** The risk that the product will not deliver the functionality expected.
- **Architecture:** The risk that the current architecture will not allow future infrastructure decisions and changes.
- **Culture:** The risk that an organization will be unable to absorb the new technology or adapt to its implementation.
- **Delays:** The impact on revenues of a project delay or cancellation.

The Total Economic Impact™ Of IBM Tivoli Composite Application Manager For WebSphere

- **Size:** The direct correlation of project risk to the size of the project, as measured by application size or budget.

Appendix B: About The Project Manager



Bob Cormier
Principal Consultant

Bob is a principal consultant for Forrester's Total Economic Impact™ (TEI™) service. He specializes in advising clients on the TEI framework — services that help organizations make decisions about the overall financial value of IT strategies and investments.

Bob came to Forrester through its acquisition of Giga Information Group and has more than 20 years experience in the IT and consulting industries. Prior to joining Giga, he held senior-level positions at two leading eBusiness consulting firms, ZEFER and Cambridge Technology Partners. Bob has successfully led company efforts to optimize financial, operational, and resource planning activities, incorporating leading-edge, professional service automation (PSA) applications and enterprise resource planning (ERP) systems. He has also held management positions at Digital Equipment and Anixter International.

Bob earned an M.B.A from Bentley College and a B.S. in business from the University of New Hampshire. As an adjunct professor, he has taught finance and economics courses for more than 10 years at Southern New Hampshire University and Daniel Webster College.