A Forrester Total Economic Impact™ Study Prepared For IBM

Measuring The Total Economic Impact Of IBM Rational Integrated Solution for Application Portfolio Management

Multicompany Analysis

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About Forrester Consulting
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Executive Summary

In October 2011, IBM commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by deploying IBM Rational tools and IBM Professional Services to drive improvements in the application portfolio management (APM) process. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of IBM tools and services on their organizations.

APM is part of a contemporary approach to modernization and rationalization that moves organizations from tactical one-off decisions about modernizing an application or small groups of applications to making strategic decisions in the context of how well the portfolio suits current and future business plans. At its essence, APM strives to provide transparency into the key business functions an application supports and its health and viability. This brings insight to IT and business leaders, allowing them to make more strategic decisions about application investments and sourcing.

IBM Provides Improved Transparency And Cost Efficiency Within APM

Our interviews with four existing customers and subsequent financial analysis found that a representative organization based on the organizations we interviewed experienced the risk-adjusted ROI, costs, and benefits shown in Table 1. See Appendix A for a description of the composite organization.

Table 1
Representative Organization Three-Year Risk-Adjusted ROI

ROI	Payback period	Total costs (PV)	Total benefits (PV)	Net present value (NPV)
101%	13 months	($1,551,280)	$3,507,306	$1,956,026

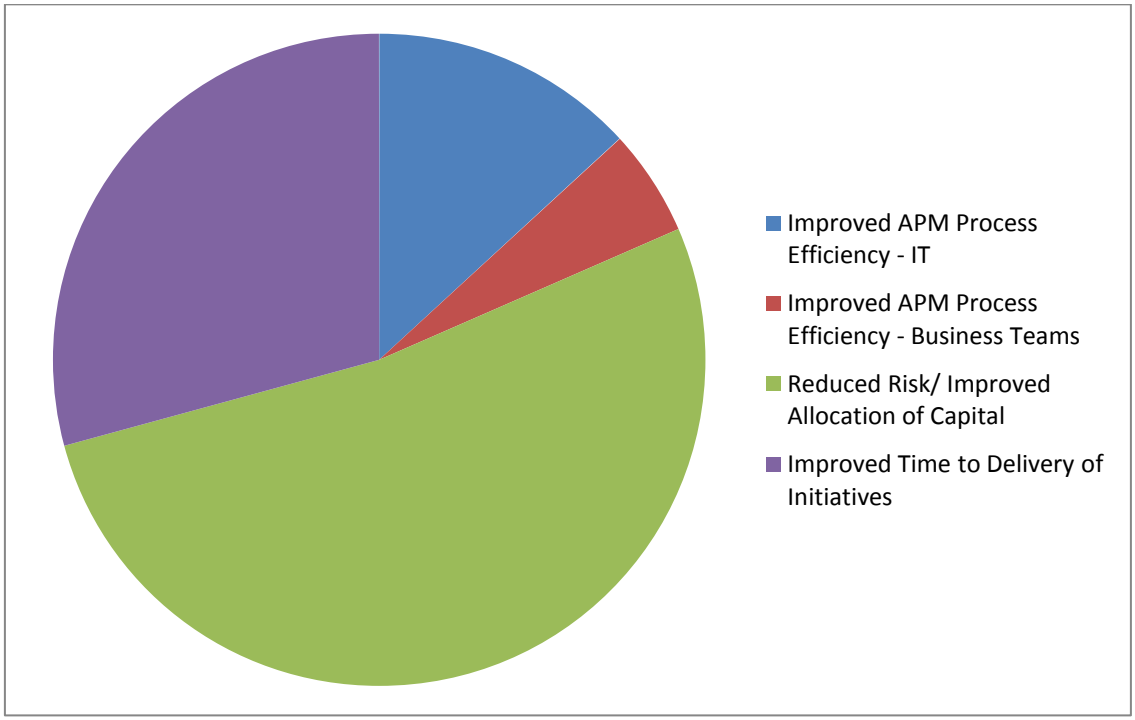
Source: Forrester Research, Inc.

- **Benefits.** The firms we interviewed derived the following benefits by using the IBM tools and services as part of their APM efforts, which we, in turn, ascribe to our composite organization. In addition, organizations noted several qualitative benefits, including improved transparency and improved communication with IT and the rest of the business along with being able to refocus efforts away from reactive tasks to proactive, value added activities. Quantified benefits included:
    - **Improved process efficiency — business and IT.** It reduced the time and effort to collect, manage, and report on the application environment, leading to improved efficiency within and outside of the IT organization.
    - **Reduced risk/improved allocation of capital.** It created transparency into the contents of the application portfolio — an inventory and some basic descriptive metrics about the applications. As a result, organizations were more efficient in the tactical activities — identifying redundant applications, obsolete applications, and dependencies on obsolete technology and applications.

- **Improved time-to-delivery of applications.** It enabled firms to curtail lower-value tactical activity — enhancements to low-value systems/those earmarked for retirement in favor of new innovation that provided greater return to the organization. Focusing on higher-value activities aligned IT activity to strategic business goals.

- **Costs.** The representative organization experienced the following costs from the investment in IBM:
  - **Software cost.** Investment in IBM software licenses and recurring maintenance for IBM Rational Focal Point and IBM Rational System Architect.
  - **Professional Services.** Investment in IBM Professional Services to provide assessment and training around the use of IBM tools to best integrate into the organization's existing processes.
  - **Internal implementation and support.** The cost of internal full-time equivalents (FTEs) to plan, implement, and support the IBM environment as part of the existing APM environment. This also includes the cost for data entry, managing feed data, and interpreting results.
  - **Infrastructure cost.** The cost of server resources to run the IBM environment.
  - **Training and change management cost.** The cost of IT and end user staff to get proficient on IBM tools and to integrate successfully into the existing APM workflow.

Figure 1
Benefit Breakdown By Category



Source: Forrester Research, Inc.

Factors Affecting Benefits And Costs

Table 1 illustrates the risk-adjusted financial results that were achieved by the composite organization. The risk-adjusted values take into account any potential uncertainty or variance that exists in estimating the costs and benefits, which produces more conservative estimates. The following factors may affect the financial results that an organization may experience:

- Maturity of the APM environment prior to engaging with IBM.
- Number of modernization and rationalization projects.
- Size and growth of the application environment.

Disclosures

The reader should be aware of the following:

- The study is commissioned by IBM and delivered by the Forrester Consulting group.
- 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 IBM.
- IBM reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.
- The customer names for the interviews were provided by IBM.

TEI Framework And Methodology

Introduction

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing IBM. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

Approach And Methodology

Forrester took a multistep approach to evaluate the impact that IBM can have on an organization (see Figure 2). Specifically, we:

- Interviewed IBM marketing/sales/consulting personnel and Forrester analysts to gather data relative to IBM and the marketplace for IBM APM tools.
- Interviewed four organizations currently using IBM to obtain data with respect to costs, benefits, and risks.
- Designed a composite organization based on characteristics of the interviewed organizations (see Appendix A).
- Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews as applied to the composite organization.

Figure 2
TEI Approach

Source: Forrester Research, Inc.

Forrester employed four fundamental elements of TEI in modeling IBM solutions and services:

1. Costs.
2. Benefits to the entire organization.
3. Flexibility.
4. Risk.

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

Analysis

Interview Highlights

A total of four interviews were conducted for this study, involving representatives from the following IBM customers:

1. An Asian provider of telecommunications products and services with 15 million annual subscribers. The organization recently undertook a consolidation of its IT environment across individual business units, with the application of APM as a key way to improve flexibility and reduce cost within its application environment.

2. A North American financial services corporation belonging to the federal government providing services and products across the country. Prior to the investment in IBM, the organization had limited visibility into its current application portfolio of supported and unsupported applications.

3. A North American division of a global telecommunications provider which had used IBM to help drive their rationalization initiatives across their application environment.

4. A European transportation and logistics organization servicing clients throughout the globe. The company leveraged APM to drive a strategic IT simplification initiative.

The four interviews uncovered several common themes that drove the analysis:

- **The lack of transparency into the application portfolio was a major problem for all firms.** Customers were caught between a rock and a hard place — the size and complexity of their application environments were increasing, but they lacked the transparency that would provide insight into what to do about it, so tactical modernization flourished while strategic work languished. The cost of the portfolio rose every year, but spending was haphazard — the application owners with the loudest voice garnered the lion's share of funding with little regard for linkage to business strategy.

  To say these firms had no transparency would be false — they had what they could gather from disparate sources around the company. But lacking central storage and governance, it was a dubious source of untruth rather than the single source of truth it should be. The manual effort to collect, analyze, and report data on the application environment wasn't worth the dubious return; business leaders challenged IT on the costs and resource consumption, yet IT had little in the way of verifiable information to explain. This fractious process made the process of modernization, rationalization, and consolidation of applications difficult and ineffective and eroded the trust between business and IT leaders.

- **The epiphany isn't the need for transparency but how to create and maintain it with some veracity.** Customers intuitively understood the value of APM; what they lacked was a process and tooling to help them create it. Every organization modernizes applications, and all of the organizations interviewed had previously attempted rationalization of their application environment with varying levels of limited success. Ad hoc processes and disjointed spreadsheets didn't yield the level of visibility and efficiency they required.

- **APM is a continuous process that can be aided by tools.** Customers saw the investment as a combination of rethinking the modernization process to be more strategic, creating insight into what is and blending it with how things should be, and introducing the requisite tools and services to be successful. The IBM tools Focal Point and System Architect were a key part of the investment in creating transparency and improving the efficiency of collecting, analyzing, and reporting on the portfolio. Customers blended internal and external staff to drive use of IBM tools into the existing application teams.

- **APM is more than buying a tool — after all, a fool with a tool is still a fool.** With no disrespect intended to our readers or interviewees, the adage is true if overly candid. Picking up a scalpel does not make you a brain surgeon, and you can't buy a bushel of APM. Many of the interviewed organizations failed at early attempts because they lacked the process or tools or both. This coupled with lack of executive support doomed initial attempts at improvements. The investments in IBM were a second attempt at improving the way they collect, analyze, and report application data. The success of this second attempt was based on the right combination of executive buy-in and internal and external skills to drive change and measure improvement. Success requires the right level of investment in skills, processes, change management, and tooling.

- **The long-term impact was transformational.** The greater visibility and transparency had a long-term effect on our interviewees' application portfolios, such as the ability to have meaningful interactions with business owners around the health of, investments in, and strategy for the current application portfolio and how IT actions should match the overall business strategy. The organizations we interviewed expected stronger dialogue and alignment between IT and business leaders as a result of the new working relationship.

Composite Organization

Based on the interviews with the four existing customers provided by IBM, Forrester constructed a TEI framework, a representative company, and an associated ROI analysis that illustrates the areas financially affected. The representative organization that Forrester synthesized from these results represents a North American services institution with 8,000 employees and $1.4 billion in annual revenue. The organization currently spends roughly 8% of revenue, or $112 million on IT, with 22% of the overall IT budget devoted to application support. The organization has a total IT staff of roughly 300 FTEs, with 15% or 44 FTEs devoted to managing and supporting the application environment. Additional characteristics of its application environment include:

- Total current application count of 1,600 (1,200 supported and 400 unsupported) applications, up from 1,400 (800 supported and 600 unsupported) at the time of the investment in IBM.[i]

- A mix of off-the-shelf (COTS) and custom applications. Currently, the organization has 60% COTS applications and 40% custom, a change from 50% COTS and 50% custom at the time of the investment three years ago.

Framework Assumptions

Table 2 provides the model assumptions that Forrester used in this analysis.

Table 2

Model Assumptions

Ref.	Metric	Calculation	Value
A1	Hours per week		40
A2	Weeks per year		52
A3	Hours per year (M-F, 9-5)		2,080
A4	Hours per year (24x7)		8,736
A5	Hourly salary		$48

Source: Forrester Research, Inc.

The discount rate used in the PV and NPV calculations is 10%, and time horizon used for the financial modeling is three years. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their respective company's finance department to determine the most appropriate discount rate to use within their own organizations.

Costs

This section describes and lists the projected incremental costs for deploying and using the IBM tools and services over a three-year period. Estimates are based on initial estimates and will vary on an implementation-by-implementation basis.

License Cost

This is the cost to purchase licenses for both Focal Point and System Architect. The total three-year cost including annual software maintenance is $720,000 (PV of $673,817). The common entry point cost of Focal Point only will be much lower.

Professional Services

This is the cost of IBM Professional Services to assist in assessing, planning, and integrating the tools into the existing application environment. The representative organization will spend 1,100 hours upfront and 100 hours on an ongoing basis to engage with IBM. The total three-year cost equates to $350,000 (PV of $337,171).

Internal Implementation And Support

This is the cost of internal staff to integrate the IBM tools into the environment and to support the tools on an ongoing basis. The representative will invest 1,200 hours upfront to aid in the implementation and roughly 0.75 FTEs to support the tool set on an ongoing basis. Assuming an hourly rate of $60, the total three-year cost equates to $342,000 (PV of $295,817).

Infrastructure

This is the cost of server resources to run the IBM software. The representative organization will allocate four servers at a cost per server of $8,000. In addition to the base cost, the organization will incur annual maintenance of $5,760 per year. The total three-year cost equates to $49,280 (PV of $46,324).

Training And Change Management

This is the cost to train existing application support and application owners on the use of IBM tools. The total cost equates to $90,000 over three years ($80,763 in PV terms).

Total Costs

Table 3 summarizes the incremental costs incurred by the reference organization for implementing IBM tools and services over a three-year period.

Table 3

Total Investment Cost, Non-Risk-Adjusted

Cost category	Initial	Year 1	Year 2	Year 3	Total	PV
IBM licenses	($450,000)	($90,000)	($90,000)	($90,000)	($720,000)	($673,817)
Professional Services	($275,000)	($25,000)	($25,000)	($25,000)	($350,000)	($337,171)
Internal implementation and support	($72,000)	($90,000)	($90,000)	($90,000)	($342,000)	($295,817)
Infrastructure	($32,000)	($5,760)	($5,760)	($5,760)	($49,280)	($46,324)
Training and change management	($36,000)	($18,000)	($18,000)	($18,000)	($90,000)	($80,763)
Total costs (original)	($865,000)	($228,760)	($228,760)	($228,760)	($1,551,280)	($1,433,892)

Source: Forrester Research, Inc.

Benefits

This section illustrates the representative benefits from investing in IBM tools and services to improve existing or initiate new APM processes. Organizations noted that the decision to invest in IBM solutions was seen as a way of improving the efficiency of application staff and the transparency and visibility around the state of health and readiness of the application portfolio.

Process Efficiency

Customers used the IBM solutions to move away from manual processes for collecting, analyzing, and reporting on application information. Prior to the investment, many of the interviewed organizations kept track of application data through disparate spreadsheets residing in different places, maintained by different people with different agendas in mind. Data tended to be siloed, and collecting, formatting, and reporting to the business consumed a significant amount of resources. With the growth of the application environment, the process of collecting and reporting on information grew in complexity and effort, often resulting in duplicate conflicting information, which required reconciliation and assimilation by individual application owners and business stakeholders.

To calculate this benefit, Forrester examined both the impact to IT application teams and business stakeholders responsible for producing and acting on application data. For IT, we assume the representative organization devotes a total of 10 staff (combination of junior and senior staff) for collecting, analyzing, and reporting application data to business stakeholders. With a total of 1,400 applications at the time of the investment, these IT resources spent between 50% and 60% of their time on this task, particularly during end-

of-year and end-of-quarter budget assessments. **Organizations reported between 15% and 30% improvement in the time and cost to perform these tasks.** Table 4 illustrates the calculation used.

Table 4
Process Efficiency Impact — IT

Ref.	Metric	Initial	Year 1	Year 2	Year 3
	FTEs participating in APM process				
A1	IT senior staff	4	4	4	4
A2	IT junior staff	6	6	6	6
	Percent of time allocated to APM				
A3	IT senior staff	50%	50%	50%	50%
A4	IT junior staff	60%	60%	60%	60%
	Cost per resource				
A5	IT senior staff — fully burdened salary	$180,000	$180,000	$180,000	$180,000
A6	IT junior staff — fully burdened salary	$110,000	$110,000	$110,000	$110,000
	Percent savings				
A7	IT senior staff		15%	25%	30%
A8	IT junior staff		15%	20%	20%
At	Improved APM process efficiency — IT		$113,400	$169,200	$187,200

Source: Forrester Research, Inc.

Table 5 illustrates the impact of IBM to non-IT staff, particularly business application owners who are tasked with deciding how best to prioritize resources to support their applications. Prior to the investment, a total of 14 employees were spending roughly 20% of their time reconciling the disparate application data to help prioritize how best to manage mission-critical applications. Based on interview data, **the estimated savings compared with the pre-investment state equates to between 10% and 20%**, resulting in a total annual savings of between $42,000 and $84,000. Table 5 illustrates the calculation used.

Table 5
Process Efficiency Impact — Business

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	FTEs participating in APM process — business	14			
B2	Percent of time	20%			
B3	Cost per resource	$150,000			
B4	Percent savings		10%	15%	20%
Bt	Improved APM process efficiency — business teams	B1*B2*B3*B4	$42,000	$63,000	$84,000

Source: Forrester Research, Inc.

Reduced Risk/Improved Allocation Of Capital

In addition to improving the process to collect, analyze, and report on information about the applications, another common theme heard during the interviews was the insight into how the application portfolio was being managed. Focal Point and System Architect provided the means to analyze and structure application information in an easily consumable way, allowing for a greater depth of insight into the portfolio. For example, one organization noted prior to the investment that it had no way to accurately assess the mission criticality of the applications. As a result, initiatives around modernization and rationalization rarely realized their expected return as data was not tracked and there was no way to hold a dialogue with business leaders as to which initiatives had the highest corporate priority. IBM tools allowed the organization to improve the visibility across the entire portfolio of applications, allowing budget spending to more closely match the business unit and corporate priorities. Notably, this meant that they could free up funds and resources that were spent on operations and maintenance previously to instead deliver valuable, new required functionality and innovation.

One way of measuring the outcome of improved transparency and visibility into application portfolios is to understand the difference between mission-critical applications that are adequately supported and those that are not. Several organizations noted that prior to the investment in IBM, it was difficult to assess if spending was adequate across all mission-critical applications. As a result, those applications that were undersupported provided a lower level of return to the business. The use of IBM tools allowed the organization to take a deeper view into the application portfolio, increasing the likelihood that mission-critical applications are funded

appropriately, providing the highest possible return to the organization, and closing the gap between underfunded applications and optimally funded applications.

To calculate this benefit, Forrester assumes that the improved transparency around the application environment increases the likelihood that mission-critical applications are adequately funded, resulting in a higher overall return on spend to the organization. The model assumes that at the start of the first year of analysis, 20% of the 800 supported applications were classified as mission-critical. **Adequately funding these mission-critical applications would, on average, return to the organization a 15% premium on top of the cost to support that application.** In this case, if the cost to support is $60,000, the benefit returned to the organization would be $69,000 or 15% greater than the cost.

Prior to the investment in IBM, the organization estimates a mission-critical application that is not adequately supported would result in a decreased annual benefit. This was a significant problem for many of the organizations interviewed that tended to underfund mission critical applications to the non-optimal benefit of non-critical applications. Underfunding these mission-critical applications reduced the annual return by an estimated average of 5% per year. As a result, an application that would contribute $69,000 in yearly value would contribute $3,450 less in value to the organization. Effectively funding mission-critical applications by having the visibility to make better decisions around the application environment reduces the likelihood that those organizations will see a reduction in ROI. As a result, the representative organization can realize $552,000 in risk avoidance through improved visibility of the application data. Table 6 illustrates the calculation used.

Table 6
Reduced Risk/Improved Allocation Of Capital

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
C1	Current supported applications	1,200		800	1,000	1,200
C2	Percent of applications — mission-critical	20%				
C3	Annual ROI — mission-critical apps (expected)	15%				
C4	Annual ROI — mission-critical apps (underfunded support)	10%				
C5	Average yearly application support cost	$60,000	$69,000			
C6	Reduction in ROI resulting from ineffective spend	5%		$3,450	$3,278	$3,114
Ct	Reduced risk/improved allocation of capital			$552,000	$655,500	$747,270

Source: Forrester Research, Inc.

Improved Time-To-Delivery On Application Initiatives

The final benefit area noted in the interviews was the ability to make decisions faster as a result of an enhanced view of application information. Prior to the investment, organizations noted not only the time it took to decide on potential rationalization and modernization initiatives but also how quickly those initiatives took once started. The reason for delays in many cases was inaccurate or incomplete information around the current state of the application. This resulted in time reassessing requirements once the initiative was underway, delaying and extending out the date of completion. While one impact of this delay is increased cost of the initiative, another component is the resulting impact to the overall business in delaying project completion. Delaying the impact typically has higher visibility to the organization and means that the organization will have to wait on the anticipated benefits.

To calculate this benefit, Forrester assumes the organization undertakes a series of projects annually to modernize and rationalize its applications. On average, prior to the investment in IBM, the average duration time was 120 days. As the organization increased the visibility within the application environment, **the organization reduced the duration time from 120 days to 50 days on average**. The cost savings resulting from this reduction is reflected in the first process efficiency benefit noted earlier. However, **the impact of improving the time to complete has an effect on the overall business in that the organization can receive the benefits from the project sooner.** Assuming the typical ROI on the initiative is 40% (on a project cost of $80,000, this would equate to a value of $112,000), we can quantify the improvement in time-to-delivery by taking the value gained from the improvement in time and looking at the benefit of repurposing that value to other areas of the business (measured by the annual cost of capital). Table 7 illustrates the equation used.

Table 7
Improved Time-To-Delivery On Application Initiatives

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
D1	Number of ongoing projects	140				
D2	Time to provide enhancements (days) — pre-IBM	120				
D3	Time to provide enhancements (days) — post-IBM	50				
D4	Project cost	$80,000				
D5	Project ROI	40%	$112,000			
D6	Annual cost of capital	12%	1%			
Et	Value of improved time-to-delivery of projects		$2,578	$360,855	$360,855	$360,855

Source: Forrester Research, Inc.

Total Benefits

Table 8 illustrates the total benefits over the three-year cash flow.

Table 8
Total Benefits

Ref.	Benefit category	Year 1	Year 2	Year 3	Total	PV
Ato	Improved APM process efficiency — IT	$113,400	$169,200	$187,200	$469,800	$383,572
Bto	Improved APM process efficiency — business teams	$42,000	$63,000	$84,000	$189,000	$153,358
Cto	Reduced risk/improved allocation of capital	$552,000	$655,500	$747,270	$1,954,770	$1,604,989
Eto	Improved time-to-delivery of initiatives	$360,855	$360,855	$360,855	$1,082,564	$897,392
	Total benefits (original)	$1,068,255	$1,248,555	$1,379,325	$3,696,134	$3,039,311

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement the IBM APM solution and later realize additional uses and business opportunities. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix B).

Perhaps the greatest benefit provided by APM, yet lamentably the hardest to quantify with veracity, is the impact that APM insight brings to the strategic planning and orchestration of all work done in IT. For example, insight into the fact that the applications and technology that underpin a key business function are in poor health enables business leaders to see, understand, and take action — to invest proactively and avoid failure of the business function. That insight will eventually govern many or all new investment decisions because even new projects must integrate with the application environment. Insight into health avoids miscues and bad decisions. In an environment where the number of applications has been reduced by 30% to 40%, it creates the opportunity to better show the transparency between IT initiatives and business impact.

Basic application inventory information supports strategic planning in a number of ways. For example, it may reveal that a dozen applications all support the same key business function. That insight enables business leaders to see the resources wasted on the 11 redundant applications and rationalize them down to one. Quantifying the value of this type of insight is difficult without some indication of how much redundancy exists in the portfolio from M&A activity and organic growth. Insight also enables business leaders to be proactive with new project requests: Do we already own one of these applications? Can we adapt functionality we already own to fit the new requirement? But one thing is certain — without the information, business and

IT leaders are flying blind. These benefits are not reflected in this financial analysis, but readers should not underestimate their value.

Risk

Forrester defines two types of risk associated with this analysis: implementation risk and impact risk. "Implementation risk" is the risk that a proposed investment in IBM may deviate from the original or expected requirements, resulting in higher costs than anticipated. "Impact risk" refers to the risk that the business or technology needs of the organization may not be met by the investment in IBM, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

Quantitatively capturing investment and impact risk by directly adjusting the financial estimates results in more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as "realistic" expectations, as they represent the expected values considering risk.

The following implementation risk that affects costs is identified as part of this analysis:

- Cost of software and implementation costs may be higher than anticipated.

The following impact risk that affects benefits is identified as part of the analysis:

- Lower efficiency benefits and reduction in transparency may be less substantial than anticipated.

The TEI model uses a triangular distribution method to calculate risk-adjusted values. To construct the distribution, it is necessary to first estimate the low, most likely, and high values that could occur within the current environment. The risk-adjusted value is the mean of the distribution of those points. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Financial Summary

The financial results calculated in the Costs and Benefits sections can be used to determine the ROI, NPV, and payback period for the organization's investment in IBM. These are shown in Table 9 below.

Table 9
Cash Flow — Non-Risk-Adjusted

Cash flow — Original estimates						
	Initial	Year 1	Year 2	Year 3	Total	PV
Costs	($865,000)	($228,760)	($228,760)	($228,760)	($1,551,280)	($1,433,892)
Benefits		$1,068,255	$1,248,555	$1,379,325	$3,696,134	$3,039,311
Net benefits	($865,000)	$839,495	$1,019,795	$1,150,565	$2,144,854	$1,605,419
ROI	112%					
Payback period (months)	12.3					

Source: Forrester Research, Inc.

Table 10 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values in the Risk section to the cost and benefits numbers in Tables 3 and 8.

Table 10
Cash Flow — Risk-Adjusted

Cash flow — Risk-adjusted estimates						
	Initial	Year 1	Year 2	Year 3	Total	PV
Costs	($865,000)	($228,760)	($228,760)	($228,760)	($1,551,280)	($1,433,892)
Benefits		$1,011,930	$1,185,252	$1,310,125	$3,507,306	$2,883,799
Net benefits	($865,000)	$783,170	$956,492	$1,081,365	$1,956,026	$1,449,907
ROI	101%					
Payback period (months)	13					

Source: Forrester Research, Inc.

Appendix A: Composite Organization Description

For this TEI study, Forrester has created a composite organization to illustrate the quantifiable costs and benefits of implementing the IBM APM solution. The composite company is intended to represent a North American services institution with 8,000 employees and $1.4 billion in annual revenue and is based on characteristics of the interviewed customers.

The total current application count is 1,600 (1,200 supported and 400 unsupported) applications, up from 1,400 (800 supported and 600 unsupported) at the time of the investment in IBM. It has a mix of off-the-shelf (COTS) and custom applications. Currently, the organization has 60% COTS applications and 40% custom, a change from 50% COTS and 50% custom at the time of the investment three years ago.

In purchasing IBM, the composite company has the following objectives:

- Improve the transparency of the APM process.
- Improve the effectiveness of APM through improved time to complete application initiatives.
- Reduce the cost of collecting, reporting, and analyzing APM, data etc.

Appendix B: Total Economic Impact™ Overview

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility.

Benefits

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

Costs

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

category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

Risk

Risk measures the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections, and 2) the likelihood that the estimates will be measured and tracked over time. TEI applies a probability density function known as "triangular distribution" to the values entered. At minimum, three values are calculated to estimate the underlying range around each cost and benefit.

Flexibility

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity, if activated. The collaboration can only be used with additional investment in training at some future point in time. However, having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix C: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Although the Federal Reserve Bank of the United States sets a discount rate, companies often set a discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their respective organization to determine the most appropriate discount rate to use in their own environment.

Net present value (NPV): The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Present value (PV): The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total net present value of cash flows.

Payback period: The breakeven point for an investment. The point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

IBM Rational Focal Point is a portfolio management/decision support tool. The tool helps organizations make the right decisions for their portfolio and incorporate organizational, customer, and stakeholder value

into these decisions. The APM information model provided with Focal Point delivers out-of-the box workflows, role-based views, collaborative decision support, financial analysis, and analytics. These elements can be further customized. To make APM decisions actionable, it also supports project identification and definition, road mapping based on resource and financial constraints, business case analysis, what-if analysis, and project selection based on desired selection criteria. Integration with IBM's cross-platform Application Lifecycle Management (ALM) solution, allows approved projects to be transferred to the IBM ALM. Progress of these projects can be tracked in Focal Point, so that experience from projects can be factored into future application portfolio decisions.

IBM Rational System Architect is an enterprise architecture and business process analysis tool, that supports defining as-is and to-be business, IT and systems architectures, architectural alternatives, and architectural roadmaps to show how business, operational and technical capabilities need to incrementally evolve to support tomorrow's business. System Architect supports a variety of architectural standards, such as TOGAF 9, and integration with Focal Point enables enterprise architecture to inform decision making and scenario planning related to application portfolios.

A Note On Cash Flow Tables

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in Years 1 through 3 are discounted using the discount rate (shown in Framework Assumptions section) at the end of the year. Present value (PV) calculations are calculated for each total cost and benefit estimate. Net present value (NPV) calculations are not calculated until the summary tables and are the sum of the initial investment and the discounted cash flows in each year.

Table [Example]
Example Table

Ref.	Category	Calculation	Initial cost	Year 1	Year 2	Year 3	Total

Source: Forrester Research, Inc.

Appendix D: Endnotes

[i] Unsupported applications are typically user-procured and do not have a formal support allocation.