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The Financial Impact of Operational Process Improvements within a Microsoft Windows Environment Examining the Total Economic Impact™ Of Microsoft Operations Framework (MOF)

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The Financial Impact Of Operational Process Improvements Within A Microsoft-Centric Environment

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Executive Summary

In June 2005, Microsoft commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by using key components of Microsoft Operations Framework¹ (MOF) to improve the reliability of their Microsoft Windows Server-based systems, drive operational process efficiency and effectiveness within a Microsoft-centric environment. This study illustrates the ways that organizations have achieved value through changes to their existing operational and support processes, maximizing the benefit of their existing Microsoft investment and providing greater reliability and availability of Windows-based systems.

In conducting in-depth interviews with five existing customers, Forrester found that customers can achieve higher efficiencies in operations and support, improved system availability and reliability, as well as reduced variability of service to the organization's end user customers. In many cases, customers were able to improve reliability and maintain operational costs even while the organization was growing.

Purpose

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of using specific process improvements found within Microsoft Operations Framework to improve the reliability of Windows Server-based systems. Forrester's aim is to clearly show all calculations and assumptions used in the analysis. Readers should use this study to better understand and communicate a business case for using key components found in MOF to improve system reliability, increase service levels and reduce the cost of operations.

Methodology

Microsoft selected Forrester for this project because of its industry expertise in Microsoft technology as well as IT process improvement methodologies 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 the economic benefit of using key components of MOF to drive specific process improvements:

1. Costs 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 C for additional information on the TEI methodology.

¹ www.microsoft.com/MOF

Approach

Forrester used a five-step approach for this study.

1. Gathered data from existing Forrester research relative to the ways in which organizations are implementing best practices and process improvements around the use of Microsoft technologies.
2. Interviewed Microsoft marketing and product development personnel to fully understand the potential (or intended) value proposition of using key guidance found in MOF.
3. Conducted a series of in-depth interviews with five organizations that are currently using specific guidance that contributes to process improvements within a Microsoft-centric environment.
4. Constructed a financial model representative of the interviews. This model can be found in the TEI Framework section, below.
5. Created a composite organization based on the interviews and populated the framework using data from the interviews as applied to the composite organization.

Key Findings

Forrester's study yielded several key findings:

- **ROI.** Based on the interviews with the five existing Microsoft customers that had adopted guidance found in MOF, Forrester constructed a TEI framework for a composite organization (see Appendix A) and the associated ROI analysis illustrating the financial impact areas. As seen in Table 1, the ROI for the composite company is 45% with a breakeven point (payback period) of 2.1 years after deployment.
- **Benefits.** The interviews yielded several benefits regarding the value of change, incident, and configuration management process improvements using guidance found in MOF. Those organizations that had focused on improving their change, configuration, and incident management processes realized efficiency savings to IT and end user staff through a more standardized process. In addition, having greater control over IT operations drove higher levels of availability and reliability of IT systems, minimizing disruptions both inside and outside the organization.
- **Costs.** The primary costs of adopting best practice costs in MOF include internal labor costs around training and change management, external professional services fees, and incremental technology spend needed to support the process changes. Forrester assumes that most of the costs will be incurred in the first year of analysis, with reduced incremental costs in the second and third year of analysis.

Table 1 illustrates the risk-adjusted cash flow for the composite organization, based on data and characteristics obtained during the interview process. Forrester risk-adjusts these values to take into account the potential uncertainty that exists in estimating the costs and benefits of a technology investment. The risk-adjusted value is meant to provide a conservative estimate, incorporating any potential risk factors that may later affect the original cost and benefit estimates. For a more in-depth explanation of risk and risk adjustments used in this study, please see the Risk section.

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Table 1: Composite Company ROI, Risk-Adjusted

Cash Flow Analysis (Estimates)						
	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$157,920)	(\$24,684)	(\$16,456)	(\$8,228)	(\$207,288)	(\$200,142)
Total benefits		\$42,806	\$134,296	\$185,834	\$362,936	\$289,523
Net present value (NPV)						\$89,381
ROI						45%
Payback (years)						2.1

Source: Forrester Research, Inc.

In several cases, it should be noted that the time to realize a positive return from the investment in MOF was lengthy, and positive payback was not achieved at the time Forrester interviewed the client. Several factors contributed to the actual level of return by the customers interviewed. The level of maturity around existing processes and the speed with which the organization could respond to process changes were major, primary factors as to when the organization could achieve a positive payback. *Those organizations that realized a shorter payback tended to have strong management support for driving change within existing processes.*

Disclosures

The reader should be aware of the following:

- The study is commissioned by Microsoft and delivered by the Forrester Consulting group.
- Microsoft 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 obscure the meaning of the study.
- The customer names for the interviews were provided by Microsoft.
- Forrester makes no assumptions as to the potential return on investment 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 using guidance found in MOF.
- This study is not meant to be used as a competitive product analysis.

Improving Efficiency and Reliability within Microsoft Solutions

According to Microsoft, efficient and reliable use of Windows-based systems to solve business problems usually requires cooperation between people, process and technology. This conclusion has been reached after working closely with customers to understand the causes and successes in applying Microsoft-based solutions to complex business workloads. Some organizations feel that to improve the efficiency and effectiveness of their existing Microsoft environment an additional investment in technology or people is required to respond to the changing demands of the business. In response to this need, Microsoft has invested in providing reliable technology, but also actionable guidance and best practices for efficient and reliable operations and training for the people that implement and support these systems.

However, a key part that is often left out as an organization grows is the ability to improve IT's process in order to optimize the value achieved from existing technology. Microsoft's Operations Framework is a compilation of actionable best practices that organizations can use to improve their existing processes around their existing environment, which can result in higher reliability and availability of these systems and better efficiency in providing more dependable service to the business.

Projects related to improving operational processes have traditionally had relatively longer ROI. However, Microsoft has indicated that they realize there is more they can do help customers see positive returns in a shorter timeframe, improving the ROI. Based on that, Microsoft is already making additional investments in both guidance and tools to help customers fully implement operational improvements more quickly.

Analysis

As stated in the Executive Summary, Forrester took a multistep approach to evaluate the impact that using key guidance found in MOF can have on an organization:

- Interviews with Microsoft marketing and product development personnel.
- In-depth interviews of five organizations currently adopting key guidance found in MOF process and team models with the goal of improving reliability and reducing costs.
- Construction of a common financial framework for measuring the potential value that customers have received from adopting components of MOF.
- Construction of a composite organization based on characteristics of the interviewed organizations.

Interview Highlights

At the time of the interviews, each of the organizations had used or was in the process of using guidance found in MOF. The interviewed organizations included two organizations that were based in the financial services industry; one in real estate management; one government agency; and one nonprofit charity. Three of the organizations were based in North America, one in Europe, and one in the Middle East. A list of interviewed organizations appears below:

- Business Development Bank of Canada (BDC) is a financial institution wholly owned by the government of Canada. BDC plays a leadership role in delivering financial, investment, and

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consulting services to Canadian small businesses. BDC currently employs 1,500 full-time employees. Of the total employees, 105 are located within IT, with 35 staff devoted to IT operations.

- Bouwfonds is an international property company with three core activities: property development, property financing, and asset management. Bouwfonds operates on the private and commercial markets and is one of the largest property companies in the Netherlands. In 2005, Bouwfonds' net profit was €314 million with 1,700 employees throughout the globe. Bouwfonds currently has 80 staff within IT, with roughly 28 staff devoted to IT operations.
- Banque Saudi Fransi (BSF) is a full-service commercial bank located in the kingdom of Saudi Arabia. BSF has 56 offices throughout the kingdom with roughly SAR 47,704 million under management. BSF has a total of 1,560 employees, with roughly 110 employees located within IT.
- Compassion International is a nonprofit child care advocacy agency that works to connect sponsors with children located in developing countries throughout the globe. Compassion currently helps more than 770,000 children in more than 20 countries. Compassion currently employs over 1,500 staff around the globe, with 130 staff located within IT, and 35 of that staff located in IT operations.
- A Canadian government agency with roughly 7,400 employees and an IT staff of 65 employees.

The composite organization created from the results of the customer interviews represents a mid-sized financial services organization with approximately 1,200 employees. The composite organization has offices located throughout the globe and annual revenue of \$150 million. The organization had been undergoing a period significant growth and was looking for tools to drive the efficiency and effectiveness of their current IT investments.

The five in-depth interviews uncovered several common characteristics that drove in the construction of the composite organization:

- Each organization saw focusing on ways to improve existing IT processes as a key to growing the efficiency and effectiveness of the IT organization. All organizations had realized a steady increase in demand for IT resources while at the same time pressure to maintain existing IT operations spending.
- Each organization had centralized their environments around Microsoft technologies and were looking for ways of leveraging best practices across their different types of Microsoft investments.
- Each organization was in the process of using key operational guidance found within Microsoft's Operations Framework (MOF). Most of the organizations interviewed had experience with ITIL and other process improvement methodologies and saw MOF as a way to leverage many of the best practices found in ITIL to a Microsoft-centric environment.
- The organizations interviewed generally saw the value created from adopting MOF best practices occurring within two areas: 1) operational process improvements allowed operational staff to be more proactive in identifying and responding to incidents within their environment, and 2) process improvements allowed existing staff to become more efficient by ultimately reducing the overall number of incidents and shortening the time for incident resolution. By

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improving the efficiency of the operations staff, organizations were able to slow the growth of operations staff while at the same time allowing senior staff to focus on more proactive and strategic initiatives, maintaining the overall cost of IT delivery while increasing service levels to business units.

- In addition to operational efficiency savings, organizations noted that reducing the number of unplanned incidents has a positive impact on IT support and reliability for both the organizations' end users and ultimately the organizations' customers. Financially, this is seen from the perspective of improved support efficiencies, as well as reduced end user and customer downtime.
- Organizations noted that there was a lengthy time window to implement operational best practices and payback was not immediate. In all cases, organizations adopted best practices incrementally, depending on the level of organizational will to embrace process change.

TEI Framework

Introduction

From the information provided in the interviews, Forrester has constructed a TEI framework for those organizations considering using specific guidance found in MOF. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that impact the investment decision.

Composite Organization

Based on the interviews with the five existing customers provided by Microsoft, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas affected financially. The composite organization that Forrester synthesized from these results represents a midsized financial services organization with approximately 1,200 employees. See Appendix A for more details on the composite organization.

Framework Assumptions

Table 2 lists the discount rate used in the PV and NPV calculations and time horizon used for the financial modeling.

Table 2: General Assumptions

Ref.	General assumptions	Value
	Discount rate	10%
	Length of analysis	Three years

Source: Forrester Research, Inc.

Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their finance department to determine the most appropriate discount rate to use within their own organization.

In addition to the financial assumptions used to construct the cash flow analysis, Table 3 provides salary assumptions used within this analysis.

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Table 3: Salary Assumptions

Ref.	Metric	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 (24 x 7)	8,736

Source: Forrester Research, Inc.

Costs

For the purpose of this analysis, Forrester identified several key cost categories based on customer interviews. Each organization has different cost estimates depending on its existing environment and familiarity with MOF and ITIL practices. However, this analysis should be used as a starting point for organizations to determine actual costs within their own environments. In discussions with the interviewed organizations, the incremental costs around adopting selected change and incident management guidance found in MOF were primarily focused on internal labor costs to implement change in process given that the guidance and best practices found in MOF are freely available on the Microsoft website. All organizations explained that they had to devote costs to train and educate their staff on MOF as well as to identify areas where implementation of MOF best practices derived the greatest amount of value within their organization.

Training

The cost of training includes the cost to train and educate key operations staff on the different aspects of MOF adoption. The staff that receives formal training upfront will in turn train the rest of the operations staff and act as change agents for adoption of specific guidance found in MOF. Interviewed organizations noted that they tended to have a key group of operations staff that had been familiar with ITIL processes and who received core training in different aspects of MOF.

This analysis assumes that the core team of three individuals trains on MOF during the early adoption. Each individual will spend roughly 20 hours in training at average hourly training cost of \$100. The total training cost of \$6,000 is calculated by multiplying the number of individuals by the hours each individual spends in training by the total training cost (3*20*\$100). Table 4 illustrates the total training cost.

Table 4: Training Cost – Non-Risk Adjusted

Ref.	Metric	Calculation	Initial Cost	Total	Present Value
A1	Number of staff trained		3		
A2	Number of training hours per staff		20		
A3	Cost per hour		\$100		
A4	Internal training	A1*A2*A3	\$6,000	\$6,000	\$6,000

Source: Forrester Research, Inc.

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Process/Change Management

Change management costs include the costs to implement specific guidance found in MOF into the existing change and incident management processes within the composite organization. Included in these costs are the costs to realign staff according to new change and incident processes as well as to build documentation around the movement to re-engineered processes. These costs also include the costs to identify and track existing baseline and change-management requests to identify targeted efficiency improvements within the individual operations areas.

This analysis assumes that the organization will allocate a certain percentage of staff time to improving existing change and incident management processes within the organization. Over a three-year period, the level of effort will be higher in the first year of adoption and then decline in year 2 and 3 due to the amount of change management required. In Year 1, the organization devotes 1.5 FTEs to implementing MOF adoption, while in Years 2 and 3 the level of effort required goes to one FTE in Year 2 and 0.5 FTE in Year 3. Assuming that on average the hourly fully burdened rate of operations staff is \$80 and the annual time commitment per FTE devoted to MOF implementation is 200 hours, the total cost in Year 1 is \$24,000 (1.5*80*200), \$16,000 (1*80*200) in Year 2 and \$8,000 (0.5*80*200) in Year 3. Table 5 illustrates the process/change management costs over the three years of analysis.

Table 5: Process/Change Management Cost — Non-Risk Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Total	Present Value
B1	Number of people		1.5	1.0	0.5		
B2	Hourly rate per person		\$80	\$80	\$80		
B3	Hours		200.0	200.0	200.0		
B4	Project management/change management	B1*B2*B3	\$24,000	\$16,000	\$8,000	\$48,000	\$41,052

Source: Forrester Research, Inc.

Professional Services

The cost of professional services includes the cost of external MOF consultants to help facilitate the introduction of MOF best practices within the organization. For each organization interviewed, the cost of external resources varied depending in part on the extent of the MOF adoption and the familiarity of the organization to existing process improvement methodologies such as ITIL. While some organizations chose to adopt MOF by using primarily internal resources, others relied upon either Microsoft Consulting Services (MCS) or an external partner trained in MOF and ITIL implementation. Adding external resources to act as change agents has the potential for ensuring that the organization can increase the likelihood that best practices are identified and adopted throughout the organization.

This analysis assumes that the organization will bring in external consultants to aid in implementing selected guidance around MOF. This includes the cost of four staff at an hourly billable cost of \$150. Assuming that each consultant devotes 200 hours to this project, the total cost for the representative organization is \$120,000 (4*\$150*200). Table 6 illustrates the total professional services cost.

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Table 6: Professional Services Cost — Non-Risk Adjusted

Ref.	Metric	Calculation	Initial Cost	Total	Present Value
C1	Number of people		4		
C2	Hourly rate per person		\$150		
C3	Hours		200.0		
C4	Professional fees	$C1 * C2 * C3$	\$120,000	\$120,000	\$120,000

Source: Forrester Research, Inc.

Additional Technology Spend

While the cost of labor makes up the bulk of the costs to adopt and implement best practices found in MOF, it's important to note that several organizations did have to incur additional technology costs in order to fully realize the benefits resulting from adopting MOF guidance. For example, in one case this meant additional software to further build out the organization's service desk software as well as its configuration management database (CMBD). Another organization, after doing a MOF assessment, was able to reconfigure its existing Microsoft servers, but at same time it needed to purchase an additional server to further maximize availability and reliability. As a result, Forrester assumes that for the representative organization there will be an incremental additional hardware and software spend to fully implement the benefits around MOF guidance.

This analysis assumes that the organization will have to purchase additional software licenses around its change management software, as well as an additional server to maximize the benefits around reliability. For the purpose of this analysis, Forrester assumes that the organization will spend roughly \$15,000 on additional hardware and \$10,000 on additional software license spending. Table 7 illustrates the incremental technology spending cost.

Table 7: Additional Technology Spend — Non-Risk Adjusted

Ref.	Metric	Calculation	Initial Cost	Total	Present Value
D1	Additional hardware spend		\$15,000		
D2	Additional software spend		\$10,000		
D3	Incremental technology spend	$D1 + D2$	\$25,000	\$25,000	\$25,000

Source: Forrester Research, Inc.

Total Costs

Table 8 illustrates the total incremental cost for the representative organization to implement selected change and incident management best practices for the representative organization. Costs are incurred over a three-year analysis, with the bulk of the costs incurred around initial adoption. Readers are urged to examine the cost categories and metrics contained within this document as a starting point to determine the specific costs to their own environments.

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Table 8: Total Costs — Non-Risk Adjusted

Costs	Initial	Year 1	Year 2	Year 3	Total	Present Value
Internal training	(\$6,000)				(\$6,000)	(\$6,000)
Project management/change management		(\$24,000)	(\$16,000)	(\$8,000)	(\$48,000)	(\$41,052)
Professional fees	(\$120,000)				(\$120,000)	(\$120,000)
Incremental technology spend	(\$25,000)				(\$25,000)	(\$25,000)
Total	(\$151,000)	(\$24,000)	(\$16,000)	(\$8,000)	(\$199,000)	(\$192,052)

Source: Forrester Research, Inc.

Benefits

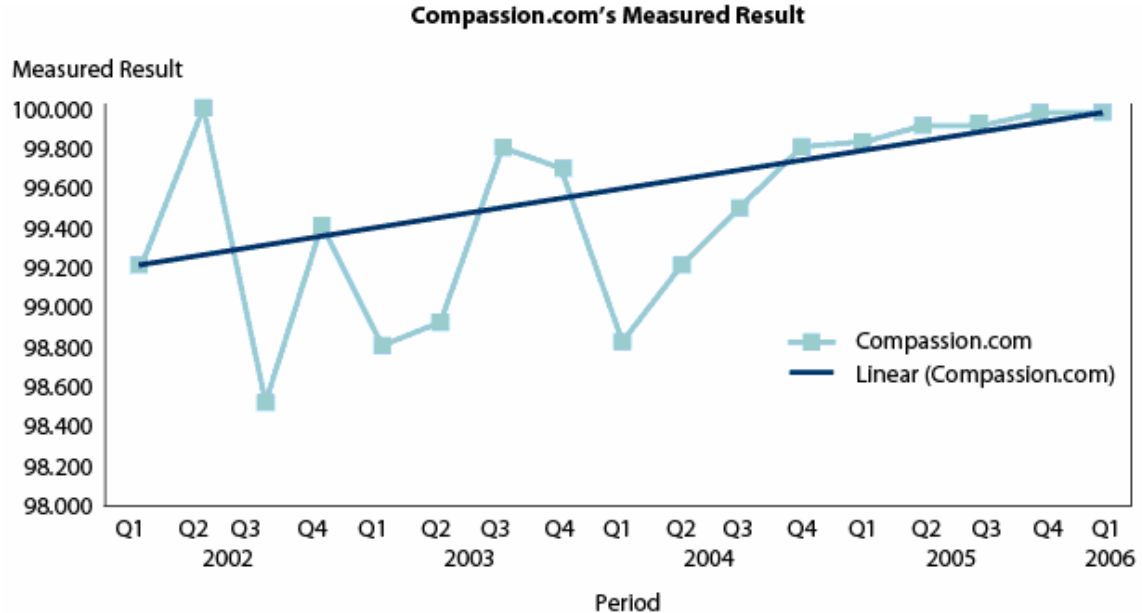
Incremental benefits around MOF adoption are seen in two broad areas. First, improving the incident and change management process within the organization can improve the efficiency of the organizations directly and indirectly. Directly, identifying inefficiencies in the incident, change, and configuration management processes can improve the overall efficiency of operations staff through a reduction in the number of unforeseen incidents as well as the time for incident resolution. Operations staff can spend less time being reactive and more time proactively reducing the number of incidents. Indirectly, reducing the impact of unforeseen change management requests on the organization can benefit the support staff through lower support requirements as well as improved efficiency to the end user organization as a result of higher system availability.

The second broad area is the relationship between improved operational efficiency and higher system availability. Several organizations specifically noted the tie between specific improvements resulting from MOF best practices and being able to maintain high levels of system availability.

Several organizations cited examples where implementing specific guidance found in MOF improved the reliability and improved the availability of these external systems. In one case, Compassion International noted a reduction in variability around system availability with adoption of processes and procedures around the changing and supporting quadrants found in MOF. Figure 1 illustrates the change in availability of the organization's external Web site as the organization refocused their existing change management and support management processes to incorporate MOF best practices.

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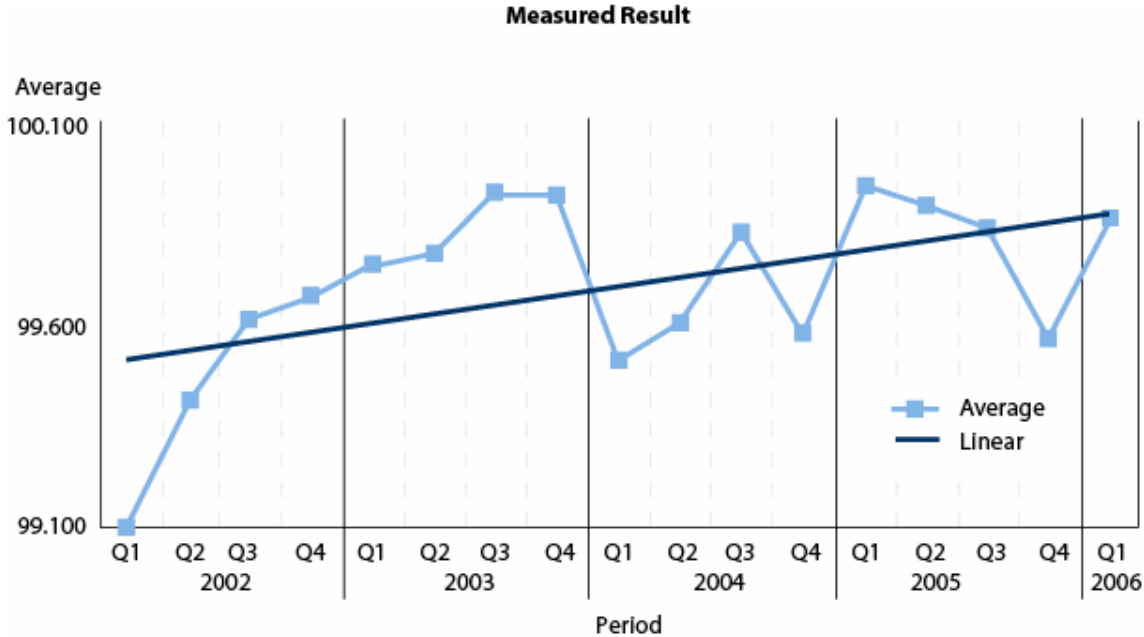
Figure 1: Average Availability — Compassion.com



Source: Compassion International

Figure 2 illustrates the availability of internal services and the impact MOF best practices have on improving the availability of the organization's internal email, financials, and general services technologies.

Figure 2: Average Availability — Internal Services



Source: Compassion International

Operational Staff Efficiency

A recurring theme among interviewed organizations was the need to enhance system reliability and availability while at the same time keeping operational costs maintained in an environment of constant or shrinking IT budgets. For many of the organizations interviewed, the challenge was helping operations staff work smarter and more efficiently, rather than accelerating investment in new staff and technology with the growth in the organization.

For those organizations that had adopted specific incident and change management guidance found in MOF, there was evidence of improvements in efficiency and effectiveness of operations staff. Operations could now be made more productive through proactive identification of the root causes of incidents and being able to minimize the number of incidents as well as the time to resolve incidents within the environment. In addition, standardizing activities and service requests allows the organization to minimize the time and effort of incident resolution. For example, Banque Saudi Fransi indicated an annual 20% operational efficiency saving among its staff resulting from implementing change management guidance found in MOF. This allowed the organization to improve operational efficiency without additional staff.

Improving the efficiency of the operations staff gave several organizations the ability to control the growth of new hires through the use of process changes around MOF. In the case of the representative organization, Forrester assumes that at the start of the analysis there are 15 operations staff within the organization. Historically, employee growth was measured at 5% per year. As a result, the growth of the number of FTEs devoted to operations was expected to grow by 5% per year to 15.8 in Year 2 and 16.5 FTEs in Year 3. Based on discussions with the interviewed organizations, Forrester assumes that the representative organization can reduce the growth of employee staff by 50% per year as a result of improved operational efficiency, resulting in the growth of operations staff to shrink to 2.5% per year. Assuming that the average salary of operations staff is \$80,000, the resulting net savings to the organization is \$30,000 $((5\% - 2.5\%) * 15 * 80,000)$ in Year 2 and \$31,500 $((5\% - 2.5\%) * 15.8 * 80,000)$ in Year 3. Table 9 illustrates the yearly savings.

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Table 9: Operational Staff Efficiency — Non-Risk Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Total	Present Value
E1	Existing operations staff		15	15.8	16.5		
E2	Estimated yearly growth rate of staff — pre-MOF		5%	5%	5%		
E3	Estimated reduction of staff growth			50%	50%		
E4	Estimated yearly growth rate of staff — pre-MOF			2.5%	2.5%		
E5	Average salary — operations			\$80,000	\$80,000		
E6	Operational staff efficiency	$(E2-E4)*(E1*E5)$	—	\$30,000	\$31,500	\$61,500	\$48,460

Source: Forrester Research, Inc.

Reduced Support Costs

Improving the control over the incident management process has several secondary benefits aside from operational efficiency savings. Controlling the number of severe and repeatable incidents has an effect on frontline IT support through reduced disruption to the end user organization. In addition, improving the change management process allows the support staff to become more efficient in identifying root causes of incidents, further driving the efficiency of the support organization. Bouwfonds cited one example where support costs were kept under control even though the volume of calls increased with the growth of end users. The number of staff stayed the same but the organization and overall operation has expanded. As a result, the organization was able to improve the efficiency of its existing support staff as a result of accomplishing more with the same resources.

This analysis assumes that the representative organization has a total of six IT support staff that is directly impacted by adoption of MOF best practices. For the purpose of this analysis, Forrester assumes that the organization can improve the efficiency of the support organization by 5% in the first year of analysis, 10% in the second year, and 15% in the third year as the organization fully implements incident and change guidance found in MOF. Assuming the average salary of frontline support is \$60,000, the resulting net savings to the organization is \$18,000 ($6*5%*\$60,000$) in Year 1, \$36,000 ($6*10%*\$60,000$) in Year 2, and \$54,000 ($6*15%*\$60,000$) in Year 3. Table 10 illustrates the yearly savings.

Table 10: Reduced Support Costs — Non-Risk Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Total	Present Value
B1	Number of support staff		6	6	6		
B2	Estimated efficiency improvement		5%	10%	15%		
B3	Average salary — support		\$60,000	\$60,000	\$60,000		
B4	Support efficiency	$B1*B2*B3$	\$18,000	\$36,000	\$54,000	\$108,000	\$86,687

Source: Forrester Research, Inc.

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End User Impact

A corollary to reduced support costs is being able to maintain high levels of productivity to the end user organization. As MOF guidance is implemented, there is a direct correlation to a reduction in the number of recurring incidents resulting in higher system availability for the end user organization. Customer satisfaction can be seen as an indicator of the ability of the organization to grow the level of efficiency among the end user population. Compassion International, for example, noted that implementing incident management was a strong driver in raising availability and driving customer satisfaction consistently higher than 90% in monthly surveys.

This analysis assumes that there are 1,200 end users within the organization that could potentially be impacted by higher system availability through improved operations. Assuming that on average, each user spends roughly 20 hours without system availability per year prior to the adoption of MOF best practices, Forrester estimates that the organization can improve the level of downtime by 10% in the first year, increasing to 15% in Year 2 and 30% in Year 3. As system availability increases, Forrester assumes conservatively that end user employees will translate 30% of that time back to actual productive time. Forrester can then calculate the benefits from end user efficiency gains across the three years assuming that an average end user salary is \$80,000 and the number of hours worked per year is 2,080. Year 1 savings equate to \$28,800 ($1,200 * 20 * 10\% * 30\% * (\$80,000 / 2,000)$) with savings in Year 2 and Year 3 at \$43,200 and \$86,400, respectively. Table 11 illustrates the yearly savings.

Table 11: End User Impact — Non-Risk Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Total	Present Value
G1	Number of end users		1,200	1,200	1,200		
G2	Average time spent down due to IT incident issues (hours)		20	20	20		
G3	Estimated improvement		10%	15%	30%		
G4	Percent of time translated to productive time		30%	30%	30%		
G5	Average salary — end user		\$80,000	\$80,000	\$80,000		
G6	Hours per year		2,000	2,000	2,000		
G7	End user support efficiency	$G1 * G2 * G3 * G4 * (G5 / G6)$	28,800	43,200	86,400	\$158,400	\$126,798

Source: Forrester Research, Inc.

Savings in Reliability and Availability

Improving operations benefits the organization internally. Discussions with interviewed organizations yielded a positive impact outside the organization, as well. Improving system availability and reliability can reduce the downtime associated with externally facing systems and applications. In the case of the interviewed organizations, improving the process to identify and uncover incidents and potential issues before they arise leads to higher availability and reduced downtime for those external facing systems. Organizations are able to plan and anticipate the level of support required for those systems, reducing the likelihood of inadequate levels of support leaving those systems exposed to unforeseen spikes in capacity and demand.

For this analysis, Forrester assumes that the organization has an external transactional Web site that prior to MOF had been exposed to downtime from unforeseen incidents. Prior to MOF adoption,

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Forrester assumes that the average system availability is 97.9%, or 44 hours of downtime per year. With the adoption of MOF, identification of the root causes of system downtime are identified, and recurring incidents can be targeted and their impact reduced. As a result, Forrester assumes that availability increases to 98% in Year 2 and 98.5% in Year 3 resulting from operational process improvements. Assuming the average cost of downtime is \$4,000, Forrester can calculate the annual savings in the second and third year from the improvement in availability. In Year 2, savings equate to \$49,920, and in Year 3, \$41,600. Table 12 illustrates the yearly savings.

Table 12: Savings in Reliability and Availability — Non-Risk Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Total	Present Value
H1	Average site availability		97.90%	98.5%	99%		
H2	Hours per year		2,080	2,080	2,080		
H3	Hours down per year		44	31	21		
H4	Savings in availability		0	12	10		
H5	Unrecoverable cost of downtime		\$4,000	\$4,000	\$4,000		
H6	Improved system reliability/availability	H4*H5	\$0	\$49,920	\$41,600	\$91,520	\$72,511

Source: Forrester Research, Inc.

Total Benefits

Table 13 illustrates the total incremental benefit for the representative organization to implement selected change and incident management best practices for the representative organization.

Table 13: Total Benefits — Non-Risk Adjusted

Benefits	Year 1	Year 2	Year 3	Total	Present Value
Operational staff efficiency		\$30,000	\$31,500	\$61,500	\$48,460
Support efficiency	\$18,000	\$36,000	\$54,000	\$108,000	\$86,687
End user support efficiency	\$28,800	\$43,200	\$86,400	\$158,400	\$126,798
Improved system reliability/availability		\$49,920	\$41,600	\$91,520	\$72,511
Total	\$46,800	\$159,120	\$213,500	\$419,420	\$334,455

Source: Forrester Research, Inc.

Risk

Forrester defines two types of investment risk associated with this analysis: implementation risk and impact risk. Implementation risk is the risk that a proposed technology investment that may deviate from original resource requirements is needed to implement and integrate the investment, 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 technology investment 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 risk by directly adjusting the financial estimates results in more meaningful and accurate estimates and a more accurate projection of the return on an investment.

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The following implementation risks are identified as part of this analysis:

- The number of hours spent on internal training is higher than originally anticipated.
- The length of time to implement standardized processes is longer than expected.
- The cost of professional services is higher than originally anticipated.
- The cost of additional hardware and software is higher than originally anticipated.

The following impact risks are identified as part of the analysis:

- The impact of MOF adoption on the growth rate of operations staff is lower than anticipated.
- The percent savings related to support is lower than originally anticipated.
- The amount of time translated to productive time is less than originally anticipated.
- The dollar savings from reduced variability around system availability is less than originally anticipated.

Steps for Measuring Investment Risk

In order to calculate the final risk-adjusted estimates, Forrester applies a multistep process examining the impact of bias and variance on cost and benefit estimates.

- **Step 1: Calculate original cost and benefit estimates.** This is the initial calculation of the cost and benefit estimates without accounting for the impact of investment risk.
- **Step 2: Calculate the impact of bias for cost and benefit estimates.** To account for the impact of bias (most organizations overestimate benefits and underestimate cost estimates) this step recalculates the original cost and benefit estimates by using the average of the original estimate (calculated in Step 1) and a low and a high estimate.
- **Step 3: Calculate variance for cost and benefit estimates.** This step measures the impact of variance on cost and benefit estimates. Variance is a measure of the possible range of outcomes for cost and benefit estimates. Higher variance implies a wider range of possible outcomes, increasing the uncertainty in cost and benefit estimates.

The three steps are used to identify and incorporate the full impact of risk as part of a technology decision. The tables below illustrate the impact of implementation and impact risk on cost and benefit estimates. For more information on the application of risk, please see Appendix B.

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Table 14: Risk Adjustment — Costs

Costs	Step 1			Step 2		Step 3	
	Original Estimate	High	Low	Bias Adjustment		Risk-Adjusted	
				%	Value	%	Value
Internal training	\$6,000	\$5,400	\$9,000	113%	\$6,800	105%	\$7,140
Project management/change management	\$48,000	\$43,200	\$54,000	101%	\$48,400	102%	\$49,368
Professional fees	\$120,000	\$108,000	\$135,000	101%	\$121,000	102%	\$123,420
Incremental technology spend	\$25,000	\$16,000	\$35,000	101%	\$25,333	108%	\$27,360

Source: Forrester Research, Inc.

Table 15: Risk Adjustment — Benefits

Benefit	Step 1			Step 2		Step 3	
	Original Estimate	High	Low	Bias Adjustment		Risk Adjusted	
				%	Value	%	Value
Operational staff efficiency	\$61,500	\$67,650	\$24,600	83%	\$51,250	91%	\$46,638
Support efficiency	\$108,000	\$108,000	\$86,400	93%	\$100,800	98%	\$98,784
End user support efficiency	\$158,400	\$158,400	\$129,600	94%	\$148,800	98%	\$145,824
Improved system reliability/availability	\$91,520	\$91,520	\$45,760	83%	\$76,267	94%	\$71,691

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined by Forrester’s TEI methodology, represents an investment in additional capacity or agility today that can be turned into future business benefits at some additional cost. Flexibility benefits typically increase with the scalability of the technology investment. This provides an organization with the “right” or the ability to engage in future initiatives but not the obligation to do so. In the case of increased notebook adoption, there are multiple scenarios in which a customer might choose to purchase notebooks with the intention of building applications that provide their employees with even higher levels of mobility.

While Forrester believes organizations that further adopt MOF best practices can take advantage of these flexibility options, quantification (using the financial industry standard Black-Scholes or the binomial option pricing models) of the additional value associated with these options for this customer would require scenario development and forward-looking analysis that is not available at this time.

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The value of flexibility is 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).

TEI Framework: Summary

Considering the financial framework constructed above, the results of the costs, benefits, flexibility, and risk sections using the representative numbers can be used to determine a return on investment, net present value, and payback period. Table 16 shows the consolidation of the numbers for the composite organization.

Table 16: Composite Company ROI, Non-Risk-Adjusted

Cash Flow Analysis (Estimates)						
	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$151,000)	(\$24,000)	(\$16,000)	(\$8,000)	(\$199,000)	(\$192,052)
Total benefits		\$46,800	\$159,120	\$213,500	\$419,420	\$334,455
Net present value (NPV)						\$142,403
ROI						74%
Payback (years)						1.9

Table 17 below shows the risk-adjusted values, applying the risk adjustment method indicated in the “Risks” section and the values from Tables 14 and 15 to the numbers in Tables 8 and 13.

Table 17: Composite Company ROI, Risk-Adjusted

Cash Flow Analysis (Risk Adjusted Estimates)						
	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$157,920)	(\$24,684)	(\$16,456)	(\$8,228)	(\$207,288)	(\$200,142)
Total benefits		\$42,806	\$134,296	\$185,834	\$362,936	\$289,523
Net present value (NPV)						\$89,381
ROI						45%
Payback (years)						2.1

It is important to note that values used throughout the TEI Framework are based on in-depth interviews with five organizations and the resulting composite organization built by Forrester. Forrester makes no assumptions as to the potential return that other organizations will receive within their own environments. Forrester strongly advises that readers use their own estimates within the framework provided in this study to determine the expected financial impact of adopting MOF guidance.

Study Conclusions

Forrester's in-depth interviews with Microsoft customers yielded several important observations:

- Based on information collected in interviews that had adopted selected MOF guidance within their environments, Forrester found that organizations can realize benefits in the form of higher overall availability and reliability, improved operational efficiency, and reduced support costs.
- Of the customers interviewed, several factors contributed to the difference in ROIs. These factors included the level of organizational will to force process change as a first step in enhancing the efficiency and effectiveness of the IT organization, the level of familiarity of ITIL and other process improvement methodologies, as well as the existing change and incident management processes within the organization.

The financial analysis provided in this study illustrates the potential way an organization can evaluate the value proposition of adopting guidance found in MOF. Based on information collected in five customer interviews, Forrester calculated a three-year risk-adjusted ROI of 45% for the composite organization with a payback period of 2.1 years. All final estimates are risk-adjusted to incorporate potential uncertainty in the calculation of costs and benefits.

Based on these findings, companies that want to adopt selected guidance found in MOF can see improvements in operational and support efficiency, as well as increased reliability of Microsoft-centric systems. Using the TEI framework, many companies may find the potential for a compelling business case to make such an investment.

Appendix A: Composite Organization Description

In this TEI study, Forrester has created a composite organization to illustrate the quantifiable costs and benefits of change, incident, and configuration management process improvements found within MOF. The composite company is intended to represent a financial institution with 1,200 total employees and is based on characteristics of the interviewed customers.

By adopting best practices around change management, configuration management, and incident management, the composite company has the following objectives:

- To maximize the value of IT spend by driving efficiency into existing management processes through the reduction of human process errors.
- To improve the process with which to identify root causes of change management failures allowing IT to become more proactive in reducing the number of unplanned system outages and the mean time to system restore.
- To reduce the number of undocumented change management requests, lowering the likelihood that a change management request will lead to an IT incident.

For the purpose of the analysis, Forrester assumes that the organization currently uses ITIL as the basis of process improvement within the organization but has realized the need to overlay that experience with Microsoft-centric guidance that could be found within the MOF framework. In conjunction with ITIL, Forrester assumes that the organization was using service management software to monitor and track current services within the IT organization.

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. For the purpose of this analysis, the impact of flexibility was not quantified.

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 forms 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: the likelihood that the cost and benefit estimates will meet the original projections and 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 a 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 enterprise-wide 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 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 organizations to determine the most appropriate discount rate to use in their own environments.

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 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 expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

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 Table 2 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.

Example Table

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

Source: Forrester Research, Inc.