A Forrester Total Economic Impact™ Study Prepared For IBM

IBM InfoSphere Optim Solutions For Data Lifecycle Management

A Multicompany Analysis Of Database Archiving And Test Data Management Solutions

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FORRESTER®

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TABLE OF CONTENTS

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Executive Summary

In October 2012, IBM commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by deploying IBM InfoSphere Optim Data Lifecycle Management solutions for database archiving and test data management. With the growth of big data, organizations are reexamining these data life cycle management practices as they tackle the four V's (volume, velocity, variety, veracity) in an increasingly complex data environment. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the InfoSphere Optim as part of an overall data life cycle management strategy.

IBM InfoSphere Optim Delivers Top-Line And Bottom-Line Benefits For Database Archiving And Test Data Management

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

Table 1

Composite Organization Three-Year Risk-Adjusted ROI[1]

ROI	Payback period	Total benefits (present value)	Total costs (present value)	Net present value
128%	12 months	$ 2,254,917	$ (969,928)	$ 1,284,989

Source: Forrester Research, Inc.

- **Benefits.** The representative organization experienced the following benefits that represent those experienced by the interviewed companies for both database archiving and test data management:
    - **Database archiving:**
        1. **Infrastructure cost savings.** Through data archiving, organizations could achieve storage cost-efficiency and delayed server purchases. This resulted in 70% of archived storage freed through archiving.
        2. **Decommissioning cost savings.** Application retirement and modernization allowed organizations to retire either legacy or redundant applications and improve compliance efficiency. This resulted in a reduction of average run costs of decommissioned applications of between 30% and 50%.
        3. **DBA efficiency.** Improved efficiency accessing legacy and nonlegacy applications resulted in improved database administrator (DBA) efficiency within the production environment of 40% through shifting archiving of the decommissioned applications away from the production environment.

4. **Application performance and time-to-market savings.** Having greater control over the growth of data can reduce the time for upgrades, migrations, and disaster recovery, allowing for improved application performance and uptime. This resulted in a 20% improvement in efficiency of customer service personnel.

- **Test data management:**

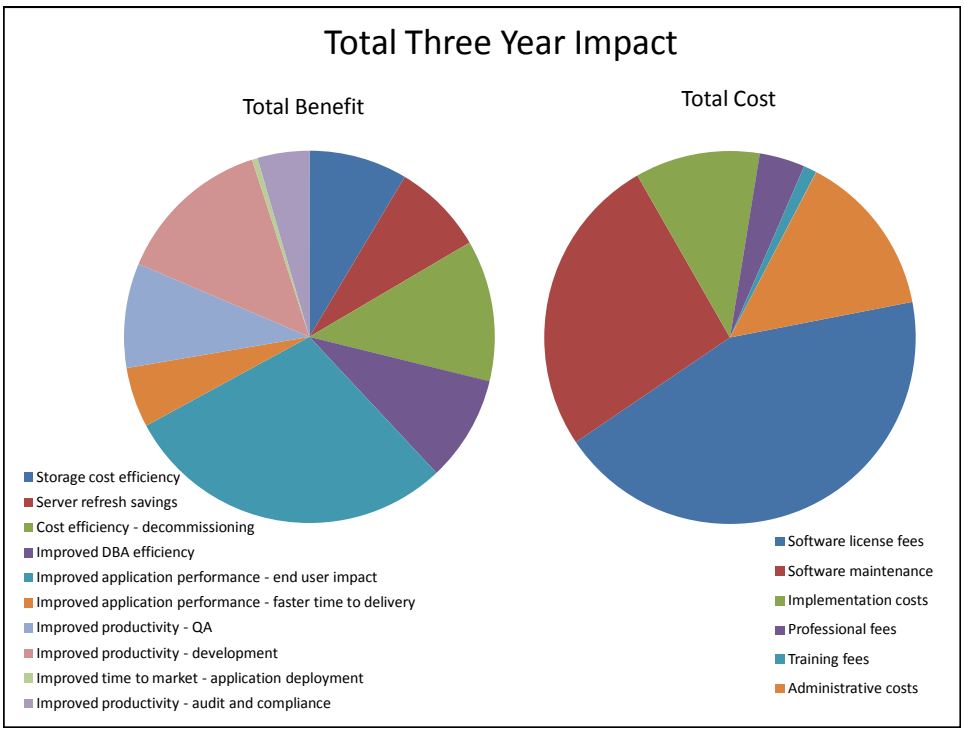
1. **Improved process quality and efficiency — QA and test.** Improved identification of right test data to test all test cases and identify development errors and defects early within the test data environment resulted in a 20% efficiency improvement within the quality assurance (QA) and test environment.

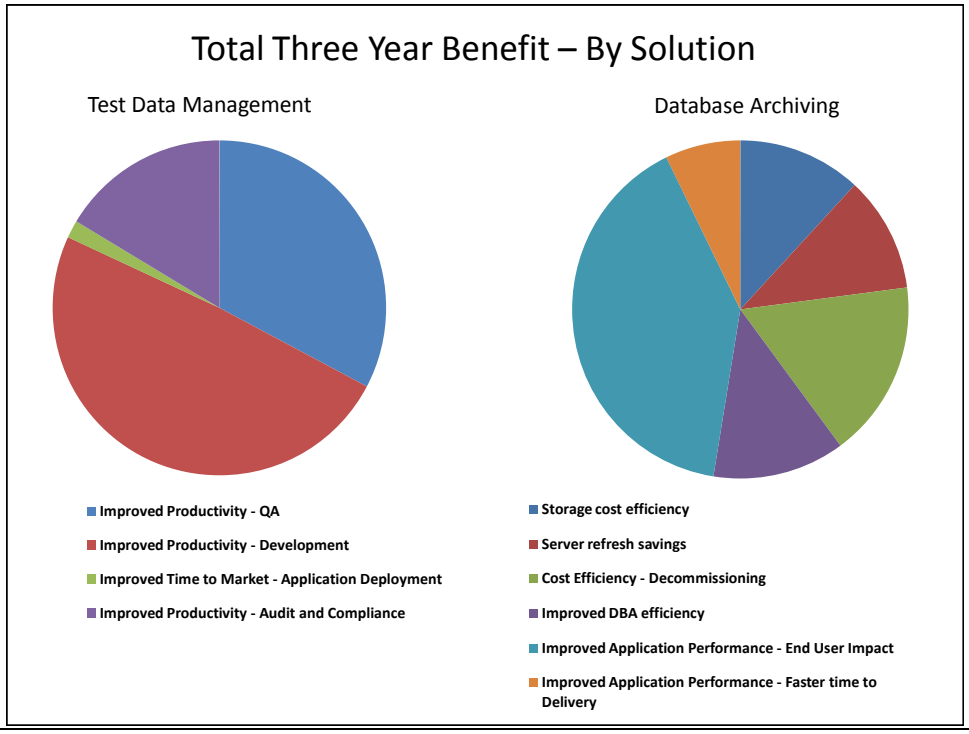
2. **Improved time-to-market — application development and deployment.** Improved time-to-market savings from a standardized test environment resulted in a 67% improvement in time-to-application-deployment.

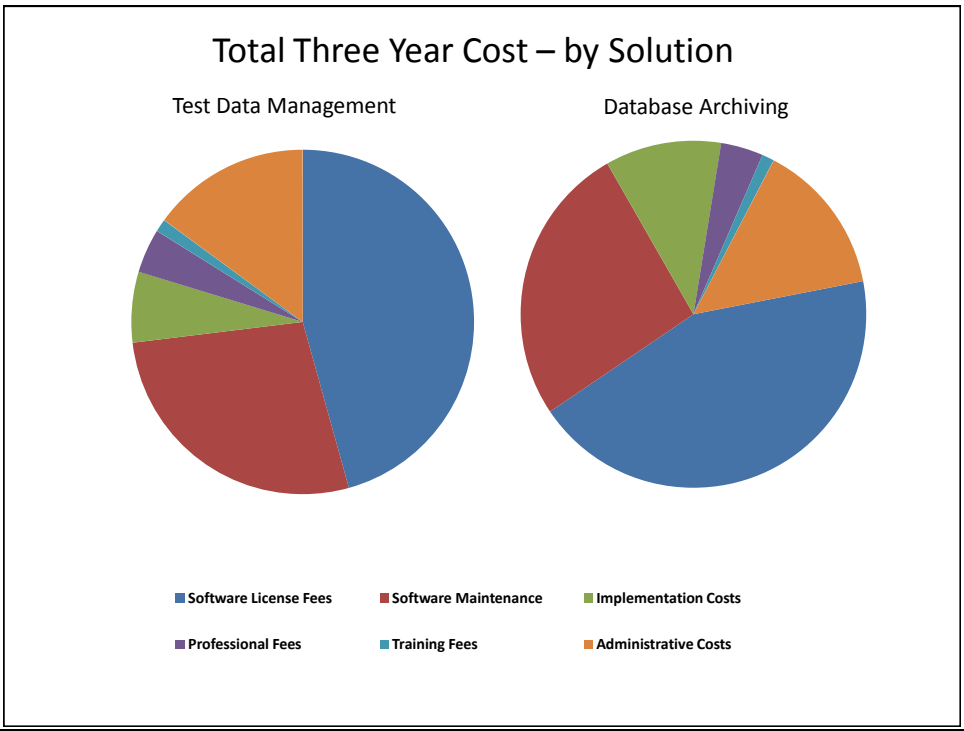
3. **Greater audit and compliance controls.** This improved cost controls with greater transparency within the test data environment.

- **Costs.** The representative organization experienced the following costs: **software**, **hardware**, **maintenance**, **implementation**, and **ongoing administration**.

Figure 1
Total Cost And Benefit Breakdown

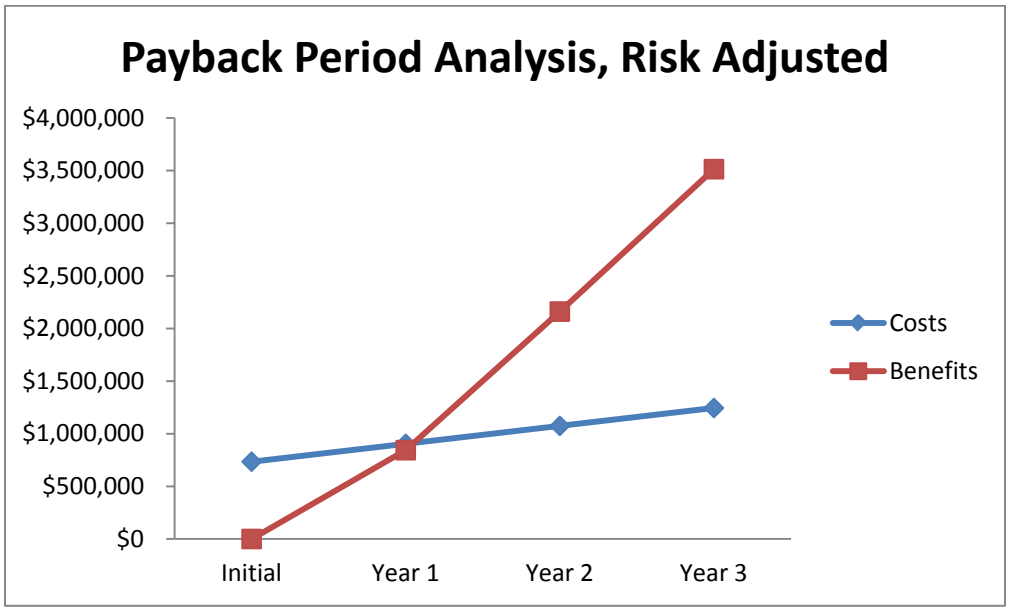



Total Three Year Benefit – By Solution
Test Data Management
Database Archiving
Improved Productivity - QA
Improved Productivity - Development
Improved Time to Market - Application Deployment
Improved Productivity - Audit and Compliance
Storage cost efficiency
Server refresh savings
Cost Efficiency - Decommissioning
Improved DBA efficiency
Improved Application Performance - End User Impact
Improved Application Performance - Faster time to Delivery


Total Three Year Cost – by Solution
Test Data Management
Database Archiving
Software License Fees
Software Maintenance
Implementation Costs
Professional Fees
Training Fees
Administrative Costs

Source: Forrester Research, Inc.

Figure 2
Cash Flow Analysis — Risk-Adjusted



Source: Forrester Research, Inc.

Factors Affecting Benefits And Costs

Table 1 illustrates the risk-adjusted financial results that were achieved by the representative 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:

- Size and complexity of the application environment.
- Level of maturity around test data management.
- Current skill set of DBA and QA staff.

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 InfoSphere Optim.
- 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™ framework for those organizations considering implementing IBM InfoSphere Optim. 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 InfoSphere Optim can have on an organization (see Figure 3). Specifically, we:

- Interviewed IBM marketing/sales/consultants personnel and Forrester analysts to gather data relative to InfoSphere Optim and the marketplace for InfoSphere Optim.
- Interviewed eight organizations currently using IBM InfoSphere Optim to obtain data with respect to costs, benefits, and risks.
- Designed a representative 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 3
TEI Approach

Source: Forrester Research, Inc.

Forrester employed four fundamental elements of TEI in modeling IBM InfoSphere Optim:

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 eight interviews were conducted for this study, involving representatives from the following companies (IBM-customer-based):

1. **A transportation and logistics organization based in North America.** The organization was using InfoSphere Optim for both database archiving and test data management for its legacy enterprise resource planning (ERP) environment.
2. **A global manufacturer of paper-based products based in North America.** The organization was using InfoSphere Optim for database archiving around its existing JD Edwards ERP implementation.
3. **A North American insurance and financial services company using InfoSphere Optim for test data management and database archiving.**
4. **A global manufacturer based in North America.** The organization had been using InfoSphere Optim since 2007 for database archiving activities, legacy payroll, and finance applications.
5. **A global pharmaceutical company based in the Midwestern US using InfoSphere Optim archiving and test data management solutions.**
6. **A US-based direct marketing organization using InfoSphere Optim for data archiving and test data management.**
7. **A financial services organization based in North America using InfoSphere Optim for data archiving and data privacy.**
8. **A global telecommunications provider using InfoSphere Optim for application retirement and consolidation.**

The eight interviews uncovered common themes that drove the analysis:

- **Managing data growth.** Many of the organizations interviewed found that prior to the investment in InfoSphere Optim, they struggled to keep up with the demands of both storage and server resources within the production environment. In addition, database growth affected performance, upgrades, and backups. Organizations did not have an effective way of archiving applications and moving data away from more costly production resources without significantly limiting access.
- **Improving the test data application development environment.** In addition to effectively managing the growth of data, several of the organizations were challenged with improving the cost-efficiency and business effectiveness of their test data environment. Prior to the investment in InfoSphere Optim, test data was performed manually and lacked a standardized and rigorous process for either identifying defects and errors during the QA process or reducing the overall cost of development.

- **Improving internal IT productivity, particularly database administrator productivity.** Managing an increasingly complex production data environment led many of the interviewed customers to see an opportunity to proactively improve IT efficiency in enterprise data management via the automation, simplification, and integration of their core activities.
- **Maintaining effective controls around data privacy.** With the growth in data and applications, organizations also saw a growing threat around loss of protection of customer data, especially in test and development environments, which were often a copy of the production environment.

Composite Organization

Based on the interviews with the eight existing customers provided by IBM, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected.

The composite organization created from the results of the customer interviews represents a US-based global services organization that has deployed InfoSphere Optim solutions for test data management and database archiving. Prior to investing in InfoSphere Optim, the organization used a variety of internally-built legacy solutions to manage the enterprise data life cycle.

The representative organization currently has four primary user applications, including enterprise collaboration, customer relationship management (CRM), supply chain, and human resources (HR)/financials.

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		$48

Source: Forrester Research, Inc.

The discount rate used in the present value (PV) and net present value (NPV) calculations is 10% and the 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.

Benefits

The benefits from InfoSphere Optim were divided across database archiving and test data management.

Database Archiving And Decommissioning

> *"Being able to effectively manage the growth of data impacts so many parts of our business, from operational effectiveness to end user productivity. We would not be able to meet our performance SLAs without an effective database archiving strategy."* (Senior information architect, Fortune 500 transportation and logistics provider)

For several of the interviewed organizations that had purchased InfoSphere Optim Archive, one of the key areas of benefit was controlling the growth of storage costs within their environment by moving data away from the more costly production environment to less costly archived storage and servers as well as compressing archived data. One organization in particular noted that it had achieved storage cost savings of roughly 50% per year through using InfoSphere Optim Archive for archiving, resulting in lower storage costs in production environments and reducing both the capital costs and support costs associated with archiving.

In order to construct the benefits for the composite organization, we conservatively assume that it has a total production storage environment of roughly 7,200 GB in Year 1, increasing to 14,112 GB by Year 3. Several organizations noted faster data growth. However, to keep the model conservative, Forrester assumes a more modest data growth. Based on the interviews with the interviewed organizations, the model assumes that of the total storage in production, roughly 60% of the data can be archived in Year 1 with an additional 70% of storage freed through archive compression. Assuming an average cost per GB of $20 in production and $6 in the archived environment, the storage cost-efficiency savings equate to $78,624 in Year 1, $65,621 in Year 2, and $91,869 by Year 3. Year 1 includes the bulk of storage archiving savings assuming 60% of targeted production storage can be archived, reduced to 30% in Years 2 and 3. Years 2 and 3 also include the cumulative labor cost savings freed with the growth of storage. Table 3 illustrates the calculation used.

Table 3

Storage Cost Efficiency — Non-Risk-Adjusted

Ref.	Metric	Year 1	Year 2	Year 3
A1	Total storage environment (GB)	7,200	10,080	14,112
A2	Percent of data archived	60%	30%	30%
A3	Percent of archived storage freed through compression	70%	70%	70%
A4	Average cost per GB — production environment	20.00	20.00	20.00
A5	Percent recurring labor cost	25%	25%	25%
A6	Average cost per GB — archive environment	6.00	6.00	6.00
Ato	Storage cost-efficiency	78,624	65,621	91,869

Source: Forrester Research, Inc.

Table 4 illustrates the percent breakdown assumptions for the per-GB cost of storage. These estimates are used to provide a breakdown of the staffing versus nonstaffing costs for used in Table 3.

Table 4
Primary Storage Cost Assumptions

Primary storage cost breakdown	Percent of fully loaded costs
Hardware: disks, shelves, etc.	30%
Hardware: networking (cables, routers, etc.)	15%
Software (for storage)	14%
Infrastructure: telecom	8%
Infrastructure: power	5%
Infrastructure: floor space	3%
Staffing (for storage)	25%

Source: Forrester Research, Inc.

In addition to storage cost savings, another area of benefit noted by several of the interviewed organizations included the possible cost avoidance from deferring existing server hardware and software upgrades by archiving applications. With the rapid growth of applications within the environment, organizations were challenged to keep up with the growth of demand for server capacity and performance. Through archiving, organizations could defer the purchase of additional servers while maintaining acceptable levels of performance within the organization.

In order to construct this benefit, we assume that the composite organization had to refresh approximately 40 servers per year prior to the investment in InfoSphere Optim solutions. With the hardware costing $8,000 and the labor for the refresh costing $3,000, it is possible to calculate the baseline refresh cost to the organization. Based on the data received during the customer interview process, the model assumes that the composite organization can reduce the number of server refreshes by an estimated 20% per year. This equates to roughly $88,000 per year as a result of avoiding possible server upgrades. Table 5 illustrates the calculation used.

Table 5
Server/Processor Refresh Savings — Non-Risk-Adjusted

Ref.	Metric	Calculation	Value
B1	Cost of hardware (CPU)		$8,000
B2	Cost of refresh		$3,000
B3	Number of refreshes per year		40
B4	Percent avoided due to archiving		20%
Bt	Server/processor refresh	(B1+B2)*B3*B4	$88,000

Source: Forrester Research, Inc.

In addition to the potential storage cost savings that several of the interviewed organizations noted, those organizations that leveraged the decommissioning component of InfoSphere Optim solutions found another area of benefit in the potential savings resulting from decommissioning legacy applications. Decommissioning through the use of InfoSphere Optim solutions allowed organizations to avoid the cost of supporting and maintaining those legacy applications, while allowing access to the data contained in decommissioned applications independent of the original application.

In order to calculate this benefit, the model assumes that the composite organization can initially decommission small, medium-size, and large applications. The model assumes an average running cost of $60,000, $75,000, and $120,000 per year, respectively, for each of the decommissioned applications prior to decommissioning. Based on data from the interviewed organizations, the model assumes that the average savings for small, medium-size, and large applications are 25%, 30%, and 50%, respectively. Based on this information, we calculate a total cost-efficiency of $135,000. Table 6 illustrates the calculation used.

Table 6

Cost-Efficiency — Decommissioning — Non-Risk-Adjusted

Ref.	Metric	Calculation	Value
C1	Number of applications decommissioned per year — small		2
C2	Number of applications decommissioned per year — medium-size		2
C3	Number of applications decommissioned per year — large		1
C4	Average run cost — nondecommissioned application (small)		$60,000
C5	Average run cost — nondecommissioned application (medium-size)		$75,000
C6	Average run cost — nondecommissioned application (large)		$120,000
C7	Estimated savings — small (two applications)	25%	$30,000
C8	Estimated savings — medium (two applications)	30%	$45,000
C9	Estimated savings — large (one application)	50%	$60,000
Cto	Total (original)	C7+C8+C9	$135,000

Source: Forrester Research, Inc.

While capital cost savings represent the bulk of the return cited by the interviewed customers from investment in archiving and decommissioning solutions from InfoSphere Optim, the additional key benefit realized by the interviewed organizations included the efficiency savings for DBAs. With the rapid growth in both storage and server costs prior to the investment, DBAs were challenged to keep up with the demands on their time in responding to increasing complexity within the environment. InfoSphere Optim allowed organizations to reduce the burden on DBAs, freeing up their time for more proactive planning and configuration activities.

In order to construct this benefit, we assume that the composite organization has six DBAs within its environment prior to the investment in InfoSphere Optim. The model also assumes that without the investment, the number of administrative staff will increase to 7.3 by Year 3, assuming 10% annual growth due to the complexity of the environment. The model also assumes that roughly 30% of the DBAs' time is spent within the production environment. But the resulting shift from archiving the decommissioned applications away from the production environment leads the model to assume a 40% reduction in DBAs' time as a result of the investment. The total annual savings equate to $89,856 in Year 1, increasing to $108,726 by Year 3. Table 7 illustrates the calculation used.

Table 7
Improved DBA Efficiency — Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
D1	Total admin staff		6	6.6	7.3
D2	Hourly cost per admin		$60	$60	$60
D3	Percent allocated to production		30%	30%	30%
D4	Estimated reduction		40%	40%	40%
Dt	Improved DBA management efficiency	D1*D2*D3*D4*2,080	$89,856	$98,842	$108,726

Source: Forrester Research, Inc.

Another benefit mentioned during the interview process was the ability to access data from legacy applications not in the production environment. Several organizations struggled with how to maintain a high degree of access to legacy applications, while controlling the costs associated with running and supporting those applications. Several organizations indicated that they continued to support legacy applications in the production environment and also had applications that they decided to archive using internal manual processes. In most cases, accessing these legacy applications was a cumbersome and time-consuming process, resulting in a tangible and negative impact on those end users who required access to the application data. With the investment in InfoSphere Optim, organizations were able to have a standard process for decommissioning legacy applications and archiving the historical data for data retention needs, improving the time to access the archived data from those decommissioned applications and reducing the impact on end users.

In order to calculate this benefit, the TEI model assumes that, on average, roughly 200 users access legacy applications within the environment. In our composite organization, most of these applications are accessed by call center employees, who interact directly with individual customers for service queries. The model assumes that it takes, on average, roughly 4 hours over the course of a week to access and retrieve data associated with these applications. Through an investment in InfoSphere Optim, the estimated time improvement for call center employees equated to roughly 20%. Assuming an hourly revenue impact per user of $40, the total estimated reduction in revenue loss equates to $320,000. Table 8 illustrates the calculation used.

Table 8
Improved Application Performance — Non-Risk-Adjusted

Ref.	Metric	Calculation	Value
E1	Number of users affected by application		200
E2	Average hourly revenue per employee		$40
E3	Weekly time affected due to data access (hours)		4
E4	Estimated time improvement — call center		20%
Eto	Total (original)	E1*E2*E3*E4*50	$320,000

Source: Forrester Research, Inc.

In addition to the impact on revenue-facing applications, organizations also cited the impact that improved performance can have on the deployment and upgrade of business applications. Being able to effectively control the data growth of applications has a positive impact on the time to perform application upgrades as well as the risk around a successful upgrade.

To calculate this benefit, the TEI model assumes, on average, that the representative organization updates a major data-driven application once per year with a total upgrade cost of $4,000,000. Controlling data growth and having an effective data migration strategy allows the organization to reduce the time it takes to migrate the data into the new upgraded environment, reducing the upgrade time from 12 months to four months. This in turn has the effect of speeding up the benefits resulting from the upgraded application. Table 9 illustrates the calculation used.

Table 9
Improved Application Performance — Non-Risk-Adjusted

Ref.	Metric	Calculation	Value
A1	Application upgrade ROI		30%
A2	Total upgrade cost		$4,000,000
A3	Estimated time to deploy — legacy (months)		12
A4	Estimated time to deploy — InfoSphere Optim (months)		4
A5	Percent time savings		67%
A6	Monthly cost of capital		4%
At	Business impact — faster time-to-delivery	A*@*(A3-A4)*A5	$384,000

Source: Forrester Research, Inc.

Test Data Management

> *"Prior to [InfoSphere] Optim, our test data environment was growing exponentially. We had numerous test environments to manage and support, which resulted in increasing costs and ultimately delays in production. Before [InfoSphere] Optim, it typically took 8 to 12 hours to set up a test environment; after [InfoSphere] Optim, that was reduced to 4 to 6 hours."* (Senior IT data architect, North American manufacturing organization)

In addition to the benefits from archiving and decommissioning, several interviewed organizations saw tangible efficiency improvements through the use of InfoSphere Optim's Test Data Management solution, particularly within their QA and development processes. Prior to the investment in InfoSphere Optim, organizations did not have an efficient way of creating test databases that accurately mirrored end-to-end business processes. In addition, several organizations noted an improvement, through the use of InfoSphere Optim, in identifying defects early in the development process, reducing the amount of rework that might arise later and, as a result, reducing the overall cost of development.

In the case of the QA process, the model assumes that prior to the investment in InfoSphere Optim, the composite organization did not have a standard process for identifying development errors and defects early within the test data environment. Of the 20 developers within the environment, roughly 20% are allocated specifically to the QA process. Through the use of InfoSphere Optim, the model assumes a 20% reduction in time devoted to QA. At a cost for each developer of $60 per hour, the total savings within the environment equate to $99,840. Table 10 illustrates the calculation used.

Table 10
Improved Productivity — QA

Ref.	Metric	Calculation	Value
F1	Total development staff		20
F2	Hourly cost per developer		$60
F3	Percent allocated to QA		20%
F4	Estimated reduction		20%
Fto	Total (original)	F1*F2*F3*F4*2,080	$99,840

Source: Forrester Research, Inc.

In the case of the development environment, the model assumes a similar efficiency saving from the use of test data solutions. In the case of test data management, roughly five DBAs are associated with creating test databases for production environments. By being able to identify defects and errors early in the development process, the composite organization can reduce the time spent on development by roughly 30%. Assuming a fully burdened cost per developer of $60 per hour, this equates to total savings of $149,760 per year. Table 11 illustrates the calculation used.

Table 11
Improved Productivity — Development

Ref.	Metric	Calculation	Value
G1	Total development staff		20
G2	Hourly cost per developer		$60
G3	Percent allocated to TDM — production		20%
G4	Estimated reduction		30%
Gto	Total (original)	G1*G2*G3*G4*2,080	$149,760

Source: Forrester Research, Inc.

Being able to improve the efficiency of the development process also allowed for improved time-to-market for application development projects. In the case of the composite organization, the average development time prior to the investment in test data management solutions equated to roughly four months per project, with roughly five

development projects produced per year. In addition, the average project cost for each of those five development projects equates to $120,000 per year, with an average application ROI of 30%. Through the use of InfoSphere Optim solutions, the estimated time improvement for the application development project equates to roughly 20%, speeding the ROI from four months to three months. Assuming that the organization can achieve benefits one month faster, we can calculate the added benefit of the time improvement by factoring in the cost of capital of 10%. This results in an improved time-to-market benefit of roughly $5,200 per year. Table 12 illustrates the calculation used.

Table 12
Improved Time-To-Market — Application Development

Ref.	Metric	Calculation	Value
H1	Current development time (months)		4
H2	Number of projects delivered yearly		5
H3	Average application ROI		30%
H4	Estimated time improvement		20%
H5	Average project cost		$120,000
H6	Cost of capital		10%
Hto	Total (original)	((H5*(1+H3))/12*(((H1*H4))*H2)*H6)	$5,200

Source: Forrester Research, Inc.

Total Benefits

Total benefits for the representative organization are illustrated in Table 13. Due to time to deploy, Forrester assumes a ramp-up time of six months in the first year to take into account implementation time. As a result, recurring benefits are 50% lower than those in Years 2 and 3.

Table 13
Total Benefits

Benefits	Year 1	Year 2	Year 3	Total	Present value
Database archiving and decommissioning					
Storage cost-efficiency		78,624	65,621	91,869	236,114
Server refresh savings		44,000	88,000	88,000	220,000
Cost-efficiency — decommissioning		67,500	135,000	135,000	337,500
Improved DBA efficiency		44,928	98,842	108,726	252,495
Improved application performance — end user impact		160,000	320,000	320,000	800,000
Test data management					
Improved productivity — QA		49,920	99,840	99,840	249,600
Improved productivity — development		74,880	149,760	149,760	374,400
Improved time-to-market — application deployment		2,600	5,200	5,200	13,000
Improved productivity — audit and compliance		24,960	49,920	49,920	124,800
Improved application performance — faster time-to-delivery		144,000			144,000
Total		$843,772	$1,316,902	$1,353,035	$3,513,709

Source: Forrester Research, Inc.

Costs

Costs around InfoSphere Optim solutions for each of the interviewed organizations include the cost of software, hardware, maintenance, implementation, and ongoing administration. The actual cost of the solution will vary depending on the number of development staff as well as the level of data integration undertaken by the organization.

For organizations considering investing in either test data management or data archiving, investment cost categories were similar for each initiative. While the representative organization invested $1,157,165 over three years for both platforms, the cost could be broken out for either test data management or database archiving and decommissioning.

The total three-year cost for just data archiving equates to $883,080, while the total for test data management equates to $361,320.

License And Maintenance Cost

The cost of licensing represents a portion of the overall investment cost of the solution. License costs are priced according to the number of processor cores, the processor technology, as well as the number of client licenses. Based on interviews with the representative organization, the estimated license cost was $450,000 at the time of purchase. Based on the interviews with the interviewed organizations, we assume that the annual software maintenance cost equates to roughly 20% of the license cost. This would have been enough to cover the cost of the production and development environment. Table 14 illustrates the cost of licensing and maintenance.

Table 14

License And Maintenance Cost — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
A1	License fees		$550,000
A2	Yearly percent		20%
At	Annual maintenance	A1*A2	$110,000
Ato	Software license fees		$550,000

Source: Forrester Research, Inc.

Training Cost

The cost to train the individual stakeholders on the new InfoSphere Optim platform was also cited by the interviewed organizations. Prior to implementing InfoSphere Optim, the majority of the developers had been trained on the legacy platform and databases, and the organization had made an investment to retrain the developers on the InfoSphere Optim platform. For the purpose of this analysis, we assume that each of the administrators will participate in training. The cost per developer includes the formal cost of training, the lost productivity from participating in the training session, as well as the indirect cost of informal training. Table 15 illustrates the total training cost.

Table 15
Training Cost — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
B1	Number of people		12
B2	Cost per person		$1,200
Bt	Training fees	B1*B2	$14,400

Source: Forrester Research, Inc.

Implementation Cost

The cost to implement includes the cost of internal resources to plan and deploy as well as an external third party to aid in planning and implementation of the InfoSphere Optim platform. The representative organization invested roughly $60,000 in internal efforts for the implementation. In addition, the organization invested 100 hours in external efforts, equating to roughly $25,000 for implementation. Of the total implementation costs, roughly 20% was devoted to strategy and planning, while 80% was devoted to the actual implementation and testing of the solution. Tables 16 and 17 illustrate the total implementation cost.

Table 16
Implementation Cost — Internal — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
C1	Number of people		8
C2	Hourly rate per person		$60
C3	Hours		250
Ct	Implementation costs	C1*C2*C3	$120,000

Source: Forrester Research, Inc.

Table 17
Implementation Cost — External — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
D1	Number of people		4
D2	Hourly rate per person		$125
D3	Hours		100
Dt	Professional fees	D1*D2*D3	$50,000

Source: Forrester Research, Inc.

Ongoing Support Cost

In addition to the initial implementation costs, Forrester assumes that there are incremental costs to support the ongoing use of the InfoSphere Optim platform. Ongoing support costs include the IT and business labor necessary to support and manage data integration. For the purpose of this analysis, the composite organization allocates two IT staff members 500 hours in Years 1, 2, and 3 to handle the increasing level of data integration. Assuming a fully burdened cost of $120,000 per year, we can calculate the total yearly cost of administration and support as equating to $60,000. Table 18 illustrates the equation used.

Table 18
Ongoing Support — IT — Non-Risk-Adjusted

Ref.	Metric	Calculation	Per period
E1	Number of people		2
E2	Hourly rate per person		$60
E3	Hours		500
Et	Administrative costs	E1*E2*E3	$60,000

Source: Forrester Research, Inc.

Total Costs

Table 19 illustrates the total incremental costs of the IBM InfoSphere Optim platform for the interviewed organization.

Table 19
Total Cost — Non-Risk-Adjusted

Costs	Initial	Year 1	Year 2	Year 3	Total	Present value
Software license fees	(550,000)				(550,000)	(550,000)
Software maintenance		(110,000)	(110,000)	(110,000)	(330,000)	(273,554)
Implementation costs	(120,000)				(120,000)	(120,000)
Professional fees	(50,000)				(50,000)	(50,000)
Training fees	(14,400)				(14,400)	(14,400)
Administrative costs		(60,000)	(60,000)	(60,000)	(180,000)	(149,211)
Total	($734,400)	($170,000)	($170,000)	($170,000)	($1,244,400)	($1,157,165)

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 InfoSphere Optim 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).

- **Satisfy information governance requirements.** For several of the organizations interviewed, the use of InfoSphere Optim coupled with an effective data management strategy, allowed them to realize flexibility in meeting governance requirements. One feature in particular, the ability to mask or transform data, allowed organizations to set policies once, and the benefits would be realized over time throughout the organization.

- **Simplify IT infrastructure.** Reducing the complexity of the organizations' IT assets was another long-term goal cited by several organizations. Having the flexibility to optimize utilization of resources while being able to provide access to different data stores and applications allowed organizations to better plan and predict their IT resources in the future.

- **Leverage big data opportunities.** In addition to reducing operational costs by better predicting resource demand, organizations noted the ability of InfoSphere Optim to help IT meet existing application service levels.

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 InfoSphere Optim 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 InfoSphere Optim, 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, since they represent the expected values considering risk.

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

- Installation and testing could demand more time than originally anticipated.
- Timeliness of having to provide specific functionality to meet business requirements exists.
- Acquisition costs could be higher than originally anticipated for hardware and software.

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

- The amount of development savings may be lower than originally anticipated due to the time it takes to train and move to an integrated environment.

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 InfoSphere Optim. These are shown in Table 20 below.

Table 20
Cash Flow — Non-Risk-Adjusted

	Cash flow — Original estimates					
	Initial	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present value**
Costs	($734,400)	($170,000)	($170,000)	($170,000)	($1,244,400)	($1,157,165)
Benefits		$843,772	$1,316,902	$1,353,035	$3,513,709	$2,871,970
Net benefits	($734,400)	$673,772	$1,146,902	$1,183,035	$2,269,309	$1,714,805
ROI	148%					
Payback period	12 months					

Source: Forrester Research, Inc.

Table 21 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from the Risk section to the cost and benefits numbers in Tables 13 and 19.

Table 21
Cash Flow — Risk-Adjusted

	Cash flow — risk-adjusted estimates					
	Initial	Year 1	Year 2	Year 3	Total	Present value
Costs	($734,400)	($170,000)	($170,000)	($170,000)	($1,244,400)	($1,157,165)
Benefits		$781,627	$1,209,386	$1,235,655	$3,226,668	$2,638,429
Net benefits	($734,400)	$611,627	$1,039,386	$1,065,655	$1,982,268	$1,481,264
ROI	128%					
Payback period	12 months					

Source: Forrester Research, Inc.

IBM InfoSphere Optim: Overview

According to IBM, IBM InfoSphere Optim solutions help organizations align application data management with critical business objectives, which enables them to improve application efficiency through effective database archiving and test data management. With a single technology, IT departments can manage, retain, and control enterprise application data. InfoSphere Optim helps companies take command throughout the data life cycle while delivering measurable benefits across the enterprise.

Appendix A: Composite Organization Description

The composite organization created from the results of the customer interviews represents a US-based global services organization that has deployed InfoSphere Optim solutions for test data management and database archiving. Prior to investing in InfoSphere Optim, the organization used a variety of internally-built legacy solutions to manage the enterprise data life cycle.

The representative organization currently has four primary user applications, including enterprise collaboration, CRM, supply chain, and HR/financials.

The composite company has the following objectives:

- **Managing database archiving.** Many of the organizations interviewed found that prior to the investment in InfoSphere Optim, they struggled to keep up with the demands of both storage and server resources within the production environment. In addition, database growth affected performance, upgrades, and backups. Organizations did not have an effective way of archiving applications and moving data away from more costly production resources without significantly limiting access.
- **Improving the test data application development environment.** In addition to effectively managing the growth of data, several of the organizations were challenged with improving the cost-efficiency and business effectiveness of their test data environment. Prior to the investment in InfoSphere Optim, test data was performed on an ad hoc basis and lacked a standardized and rigorous process for either identifying defects and errors during the QA process or reducing the overall cost of development.
- **Improving internal IT productivity, particularly database administrator productivity.** Managing an increasingly complex production data environment led many of the interviewed customers to see an opportunity to proactively improve IT efficiency in enterprise data management via the automation, simplification, and integration of their core activities.
- **Maintaining effective controls around data privacy.** With the growth in data and applications, organizations also saw a growing threat around loss of protection of customer data, especially in test and development environments, which were often a copy of the production environment.

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 of 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 PV 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 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 NPV of cash flows.

Payback period: The breakeven point for an investment. This is 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.

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. PV calculations are calculated for each total cost and benefit estimate. 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

[1] Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates. For more information on Risk, please see page 26.