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Total Economic Impact™ Of Oracle Enterprise Content Management Suite

Project Director: Jonathan Lipsitz

Contributor: Lauren Hughes

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Headquarters

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

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Executive Summary

In September 2007, Oracle commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) that enterprises may realize by deploying Oracle Enterprise Content Management Suite. It provides companies with the ability to easily manage, reuse, and retain content across the organization and to streamline related business processes. This study illustrates the financial impact of moving from ad hoc electronic content management solution to a systematic approach of managing structured and unstructured content using Oracle Enterprise Content Management Suite.

In conducting in-depth interviews with the City of Ottawa and applying their experiences to Forrester's Total Economic Impact™ (TEI) model, Forrester found that the government achieved significant benefits; some were easily measured for this ROI study, and others that were equally valuable but could not be quantified. Specifically, the benefits fall into the following categories: 1) reduced printing costs; 2) reduced cost to transfer, store, and retrieve physical files from off-site storage; 3) avoided future headcount needed to manage content; 4) increased output per worker in specific content-related processes; 5) easier compliance with information retention regulations; 6) improved citizen services; and 7) greater focus on streamlining and using repeatable business processes.

Although the City of Ottawa is early in the process of implementing some aspects of Oracle Enterprise Content Management Suite and has only just begun to realize all likely benefits, it was able to provide metrics to quantify components of the first four benefits. Forrester calculated that Ottawa has an anticipated return on investment (ROI) of between 143% and 152% with Oracle Enterprise Content Management Suite.

Purpose

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Oracle Enterprise Content Management Suite on their organizations. The City of Ottawa was used as an example of how a reader can apply this TEI framework to their own organization. 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 investing in Oracle Enterprise Content Management Suite.

Methodology

Oracle selected Forrester for this project because of its industry expertise in enterprise content management 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 it 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 Oracle Enterprise Content Management Suite:

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

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

Approach

Forrester used a four-step approach for this study:

1. Forrester gathered data from existing Forrester research relative to Oracle Enterprise Content Management Suite and the ECM market in general.
2. Forrester interviewed Oracle marketing and sales personnel to fully understand the potential (or intended) value proposition of Oracle Enterprise Content Management Suite.
3. Forrester conducted a series of in-depth interviews with one organization currently using Oracle Enterprise Content Management Suite.
4. Forrester constructed a financial model representative of the interviews. This model can be found in the TEI Framework section below.

Key Findings

Forrester's study yielded the following key findings (all dollar values in US dollars):

- **ROI.** Based on the interviews with the City of Ottawa, Forrester constructed a TEI framework and the associated ROI analysis illustrating the financial impact areas. As seen in Table 1, the risk-adjusted ROI for this company is 143%, with a breakeven point (payback period) of 25 months after the project start date.
- **Benefits.** As discussed previously, some of the benefits associated with Oracle Enterprise Content Management Suite were difficult to quantify for this study. For the purposes of the ROI analysis, only benefits associated with reduced printing costs, reduced off-site storage costs, avoided headcount additions, and some specifically documented productivity gains were quantified. The risk-adjusted present value of the benefits for the organization amounted to \$31,491,788 over a five-year period.
- **Costs.** The costs described in this study represent the actual costs that the City of Ottawa incurred. The notable exception is license costs that reflect current Oracle pricing. Comparing government spending to private sector spending can be problematic. Nonetheless, these costs represent what readers' organizations may incur, and they provide a model for determining one's own potential costs. The majority of the costs are comprised of license and maintenance fees, hardware, employee costs for implementation and ongoing operations, and professional services. The risk-adjusted present value of the costs for the organization amount to \$12,979,541 over a five-year period.

Table 1 illustrates the original and risk-adjusted financial results for the City of Ottawa 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 estimation, 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.

Table 1: Company ROI, Original And Risk-Adjusted

Summary financial results	Unadjusted	Risk-adjusted
ROI — four-year	152%	143%
Payback	24 months	25 months
Total four-year costs (PV)	\$12,979,541	\$12,979,541
Total four-year benefits (PV)	\$32,755,449	\$31,491,788
Total four-year net savings (NPV)	\$19,775,908	\$18,512,247

Source: Forrester Research, Inc.

Disclosures

The reader should be aware of the following:

- The study is commissioned by Oracle and delivered by Forrester Consulting.
- Oracle 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 contradicted Forrester’s findings or obscured the meaning of the study.
- The customer name for the interviews was provided by Oracle.
- 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 study to determine the appropriateness of an investment in Oracle Enterprise Content Management Suite.
- This study is not meant to be used as a competitive product analysis.

Oracle Enterprise Content Management Suite: Overview

According to Oracle Corporation, Oracle Enterprise Content Management Suite, formerly Stellent technology, helps to eliminate content risk and turns content into assets by making unstructured content easier to find, access, and reuse within an organization. Oracle Enterprise Content Management Suite supports the content life cycle, applying the appropriate amount of control and providing additional support for users during each life cycle phase. Content is managed during creation, capture, and storage stages of the content life cycle. Additional features are applied, such as version control, indexing for search, and metadata management and security. Services can be added to help process, distribute, publish, classify and retain, expire, and delete content.

Oracle Enterprise Content Management Suite enables organizations to implement Web Content Management, Document and Imaging Management, Digital Asset Management and Conversion, Retention Management and Electronic and Physical Records Management — on a single unified

platform. This architecture allows customers to leverage content management investments across the organization and throughout various applications.

Additionally, the records and retention management capabilities of Oracle Enterprise Content Management Suite enables organizations to apply policies and practices enterprise-wide. This federated approach to retention management provides organizations with a true retention management strategy that can scale across the organization to content in multiple remote repositories and applications, including file systems, content management systems and email archives.

Analysis

As stated in the Executive Summary, Forrester took this multistep approach to evaluate the effect that implementing Oracle Enterprise Content Management Suite can have on an organization:

- Interviews with Oracle marketing and sales personnel.
- In-depth interviews with one organization currently using Oracle Enterprise Content Management Suite.
- Construction of a financial framework for the implementation of Oracle Enterprise Content Management Suite.

The City of Ottawa's implementation began in 2004 with an external facing Web content management (WCM) initiative for its www.ottawa.ca website. This was followed in 2007 by what the City terms "electronic records management (eRM)" to address internal content management needs. To make this study easier to read, seven years of effort and projections have been condensed into a five-year time frame. This time-condensed model accurately reflects the City of Ottawa's approach to implementation of the overall financial results.

Interview Highlights: City Of Ottawa

The customer interviewed for the TEI study was the City of Ottawa. The City of Ottawa is the area's municipal government, providing the majority of the services that its 900,000 residents and businesses count on each day. Ottawa operates more than 100 different business lines — everything from police, fire, and paramedic services to public transit; from planning city growth to stimulating the economy; from recreational programs to public health; from building roads, bridges, and sewers to collecting garbage and recycling or delivering clean water. Ottawa has approximately 13,000 municipal employees, of which approximately 8,000 are office-based computer users, and 4,000 of those are classified as knowledge workers.

The interviews uncovered the following relevant points:

- Ottawa's Oracle Enterprise Content Management Suite licenses cover 3,000 of the government's 8,000 computer users.
- The initial reasons cited for implementing an ECM solution were to make information filing and searching more efficient, reduce the time to publish information in a distributed model, implement common content creation and governance processes, make more information available over the Internet, and more effectively adhere to records retention regulations.
- The overall solution is owned by different organizations across the City.

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- The business owners of Web content management are split between two organizations. Client Service Public Information (CSPI) liaises with business units to place content on Ottawa.ca for public consumption. Strategic Initiatives and Business Planning, a division under the executive director's office of Business Transformation Services, is the business owner of the City's intranet, known as the Ozone.
- Information Technology Services (ITS) is the technology owner of WCM, electronic document management (eDM), electronic records management (eRM), and the intranet.
- Information Management (ITS-IM) is the business owner of eRM and eDM. It liaises with business units to get their official business records on eRM.
- Ottawa's initial implementation of Oracle Enterprise Content Management Suite focused on getting content on to their external website, www.ottawa.ca.
- Most of the areas using the electronic records management solution are in the Business Transformation Services (BTS) department. These include:
 - Real Property Asset Management (RPAM) for facility plans and drawings.
 - Revenue for tax certificates.
 - Supply management for purchasing records.
 - Information Management for agendas, minutes, and planning records.
 - Client Relationship Management for project intake documents.
 - Legal currently for subdivision records but expanding in 2008.
 - French Language Services beginning to place translated versions of records.
 - Archives is beginning to place document in the system.
- Additional business units currently in the process of being rolled out include Surveys and Mapping, Public Works Services, and Public Health.
- A pilot with the ITS SAP support center is currently underway. This center was chosen as the pilot because it needed to improve its document management processes.
- According to Steve Murray, manager, Information Management within ITS, "proper governance is critical to the successful implementation and use of Oracle Enterprise Content Management Suite. This will result in lower implementation and ongoing costs."
- According to Murray, "Oracle can provide the technology but can't change the culture. Oracle Enterprise Content Management Suite customers need to get their own house sorted out" to fully realize the benefits. The City of Ottawa content management team has been working extensively with internal users to understand their needs and educate them on the potential benefits.

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- A major contributing factor to Ottawa's successful implementation was that it used its standard robust project management methodology and because of committed effort from the project team.
- Customization to COTS (commercial off-the-shelf) products greatly increased implementation complexity and should be avoided in the future unless a business case demonstrates that the benefits outweigh the costs.
- Prior to implementing Oracle Enterprise Content Management Suite, content management processes were manually intensive with a lot of duplicate effort across the organization. Various applications were used, all of which should eventually be replaced with the new solution.
- The benefits and costs described in this study are at the enterprise level. It is not feasible to attribute any specific dollar costs or savings to a specific city department or group.

TEI Framework

Introduction

From the information provided in the in-depth interviews, Forrester has constructed a TEI framework for those organizations considering implementation of Oracle Enterprise Content Management Suite. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that impact the investment decision. Most displayed monetary values are rounded to the nearest dollar. The spreadsheet calculations may use more decimal points resulting in the displayed math in this study being off by a few dollars.

Framework Assumptions

Table 2 lists the discount rate used in the present value (PV) and net present value (NPV) calculations and the time horizon used for the financial modeling.

Table 2: General Assumptions

Ref.	General assumptions	Value
A1	Discount rate	4.55%
A2	Length of analysis	Five years

Source: Forrester Research, Inc.

Organizations typically use discount rates between 8% and 16% based on their current environment. As a government, the City of Ottawa can issue bonds and has other sources of "cheap money". Readers are urged to consult with their finance departments to determine the most appropriate discount rate to use within their own organizations.

All costs, benefits, and financial calculations shown in this study are in US dollars. Table 3 shows the exchange rates used to convert Canadian dollar values provided by the City of Ottawa into US dollars. For example, in Year 1, 1 Canadian dollar is equal to 85 US cents.

Table 3: Exchange Rate Assumptions

Ref.	General assumptions	Value
B1	Year 1 (average) exchange rate	\$0.85
B2	Year 2 (average) exchange rate	\$0.95
B3	Year 3 (average) exchange rate	\$1.00
B4	Year 4 (average) exchange rate	\$1.03
B5	Year 5 (average) exchange rate	\$1.03

Source: Forrester Research, Inc.

In addition to the financial and currency assumptions used to construct the cash flow analysis, Table 4 provides Year 1 salary assumptions used within this study. Subsequent year values are affected by growth rates and changes in currency valuations.

Table 4: Salary Assumptions

Ref.	Metric	Calculation	Value
C1	Work days per year		221
C2	Hours per work day		7
C3	Fully burdened salary* per "technical" level employee (Year 1)	[Increases yearly by 3%]	\$56,148
C4	Fully burdened salary* per "analyst" level employee (Year 1)	[Increases yearly by 3%]	\$72,191
C5	Daily fully burdened salary per "analyst" level employee (Year 1)	C4 / C1	\$326.66
C6	Hourly cost per contractor (Year 1)	[Increases yearly by 3%]	\$42.50

*Includes salary, variable compensation, and all direct benefits (e.g., health insurance)

Source: Forrester Research, Inc.

Costs

This section describes the overall costs to initially implement Oracle Enterprise Content Management Suite, costs to further roll out Oracle Enterprise Content Management Suite, and the costs to maintain the solution.

Evaluation And Selection Costs

The City of Ottawa undertook an extensive effort to evaluate potential content management solutions and to select the one that best met its needs. This effort continued in Year 2 as it evaluated additional modules for later implementation.

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A total of 2.5 full-time equivalents (FTE) worked on evaluating and selecting Oracle Enterprise Content Management Suite as the appropriate solution. The fully burdened salary for this type of employee in Year 1 of the study was \$72,191. The resulting Year 1 evaluation and selection cost is equal to 2.5 FTEs x \$72,191 per year x 1 year, or \$180,477.

Table 5: Evaluation And Selection Costs, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
D1	Number of FTEs		2.5	2.5			
D2	Annual fully burdened cost		\$72,191	\$74,356			
Dt	Evaluation and selection costs	D1 * D2	\$180,477	\$185,891			

Note: The calculations in this and all tables may be off by several dollars because of number rounding

Source: Forrester Research, Inc.

Internal Implementation Costs

Ottawa continued to implement new Oracle Enterprise Content Management Suite modules and to roll out the solution to additional parts of the organization over the first four years of the study. The maximum number of FTEs involved occurred in Year 3, when the eRM solution was implemented for more internal use, as well as the continued implementation of WCM that began in Year 1.

Table 6: Internal Implementation Costs, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
E1	Number of FTEs		5.5	6.5	17.5	9.0	
E2	Annual fully burdened cost	=C4	\$72,191	\$83,104	\$90,103	\$95,590	
Et	Internal implementation costs	E1 * E2	\$397,094	\$540,178	\$1,576,795	\$860,308	

Source: Forrester Research, Inc.

Implementation Professional Service Fees

Ottawa has used professional services to implement Oracle Enterprise Content Management Suite. It has used these services to supplement its in-house development capacity. It has also used professional services as a way of transferring skills to city employees who can continue to implement and maintain the solution.

Table 7: Implementation Professional Service Fees, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
F1	Hourly rate		\$148.75	\$166.25	\$175.00	\$180.25	
F2	Number of hours		1,029	2,718	5,805	2,355	
Ft	Implementation of professional service fees	F1 * F2	\$153,064	\$451,868	\$1,015,875	\$424,489	

Source: Forrester Research, Inc.

Software Licenses And Maintenance

The license costs included here reflect what an organization similar to the City of Ottawa might expect to pay now. These licenses do not reflect what Ottawa actually paid. In Year 1, Ottawa had a development license. It then paid the full license fee as the solution was rolled out to users.

Table 8: Software Licenses and Maintenance, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
G1	Licenses		\$85,000	\$1,187,500	\$1,150,000		
G2	Maintenance percentage		22%	22%	22%	22%	22%
G3	Maintenance fees	G1[sum to current year] * G2	\$18,700	\$279,950	\$532,950	\$548,939	\$548,939
Gt	Software licenses and maintenance	G1 + G3	\$103,700	\$1,467,450	\$1,682,950	\$548,939	\$548,939

Source: Forrester Research, Inc.

Hardware Costs

Ottawa installed Windows and Unix servers to host Oracle Enterprise Content Management Suite. To simplify the model, an average cost per server was used (differences in the model reflect currency fluctuation). Ottawa specified high-end equipment that would have a longer lifetime than a typical three-year replacement. In Year 3 of the study, eight servers were added because Ottawa implemented the solution for eRM, as well as the continued rollout of WCM.

Ottawa already had a Storage Area Network (SAN) in place and planned upgrades to support its previous, multiple content management solutions. Therefore, there were no incremental SAN costs associated with the implementation of Oracle Enterprise Content Management Suite that needed to be captured in the ROI analysis. If a reader's organization does not have a SAN in place to support an earlier content storage solution, the organization will most likely incur additional hardware costs.

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Table 9: Hardware Costs, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
H1	Number of servers		5	5	8	1	
H2	Cost per server		\$36,975	\$41,325	\$43,500	\$44,805	
H3	Hosting and maintenance		\$52,084	\$57,526	\$57,526	\$57,526	\$57,526
Ht	Hardware costs	$(H1 * H2) + H3$	\$236,959	\$264,151	\$405,526	\$102,331	\$57,526

Source: Forrester Research, Inc.

Ongoing Operation Costs

The number of FTEs maintaining the Oracle Enterprise Content Management Suite solution has grown over the years as the breadth and depth of the solution has grown. The employees who manage the solution are responsible for the technology as well as for managing the rollout process. This process includes educating additional lines of business as to how they can benefit from using Oracle Enterprise Content Management Suite, documenting requirements, and working with new users to ensure proper training and usage.

In addition to internal resources, Ottawa used professional services as part of ongoing operations. These services were used when the needed skills did not exist in-house and as a way to acquire these new, needed skills.

Table 10: Ongoing Operation Costs, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
I1	Number of technical FTEs			1.0	2.0	7.0	10.0
I2	Number of business FTEs			0.0	3.0	4.0	4.0
I3	Number of trainers				2.0	2.0	2.0
I4	Annual fully burdened cost	=C4		\$83,104	\$90,103	\$95,590	\$98,457
I5	Total employee costs	$(I1+I2+I3)*I4$		\$83,104	\$630,718	\$1,242,667	\$1,575,320
I6	Professional services					\$50,000	\$150,000
It	Ongoing operation costs	$I5 + I6$		\$83,104	\$630,718	\$1,292,667	\$1,725,320

Source: Forrester Research, Inc.

Total Costs

Table 11 summarizes the City of Ottawa's costs associated with its implementation of Oracle Enterprise Content Management Suite.

Table 11: Total Costs Of Oracle Enterprise Content Management Suite, Non-Risk-Adjusted

Ref.	Costs	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Present value
Dt	Evaluation and selection costs	\$180,477	\$185,891				\$366,368	\$342,686
Et	Internal implementation costs	\$397,049	\$540,178	\$1,576,795	\$860,308		\$3,374,330	\$2,973,754
Ft	Professional service fees	\$153,064	\$451,868	\$1,015,875	\$424,489		\$2,045,295	\$1,804,006
Gt	Software licenses and maintenance	\$103,700	\$1,467,450	\$1,682,950	\$548,939	\$548,939	\$4,351,977	\$3,813,221
Ht	Hardware costs	\$236,959	\$264,151	\$405,526	\$102,331	\$57,526	\$1,066,493	\$954,856
It	Ongoing operation costs		\$83,104	\$630,718	\$1,292,667	\$1,725,320	\$3,731,810	\$3,091,018
	Total	\$1,071,249	\$2,992,642	\$5,311,864	\$3,228,734	\$2,331,784	\$14,936,273	\$12,979,541

Source: Forrester Research, Inc.

Benefits

Not all the benefits that the City of Ottawa realized are easily quantified in this ROI analysis, partly because some of its initiatives are in the early stages and partly because it does not track all the metrics that would be needed to calculate the benefits. Therefore, the first half of this section details the benefit calculations that go into the ROI analysis, and the second half describes qualitative benefits that are not included in the ROI analysis. In many respects, the qualitative benefits are as valuable as the quantitative ones and should be taken into consideration when analyzing the total return on investment offered by Oracle Enterprise Content Management Suite.

Printing Savings

The City of Ottawa has reduced the amount of pages internally printed because information can now be easily stored and retrieved in electronic format. This benefit calculation includes reports that would have otherwise been printed and filed as an Official Business Record (OBR), emails not printed as OBRs, and other information that would have been printed for future reference in administrative reference binders. It is strongly believed that there are additional internal print savings, but it was not possible to calculate them.

No savings were calculated for reduced printing/publishing of documents and forms sent to citizens and other external parties. It is believed that there are current savings in this area, but it was not possible to calculate the benefit.

The “cost per page to print” includes toner/ink and paper.

Table 12: Printing Savings, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
J1	Number of reports not printed			107,500	177,500	247,500	317,500
J2	Average number of pages per report			4	5	5	5
J3	Number of emails not printed				300,000	330,000	363,000
J4	Average number of pages per email				5	6	6
J5	Number of administrative reference binders not printed			8,000	8,000	8,000	8,000
J6	Number of pages per binder			250	250	250	250
J7	Cost per page to print			\$0.05	\$0.06	\$0.07	\$0.07
Jt	Printing savings	$((J1 * J2) + (J3 * J4) + (J5 * J6)) * J7$		\$115,425	\$263,250	\$376,182	\$415,693

Source: Forrester Research, Inc.

Physical Storage Savings

The City of Ottawa makes use of off-site storage for long-term records retention. Some records are stored in their own facilities, which has resulted in “storage space savings,” and others are stored in third-party facilities. Costs incurred for third-party storage include those to initially put boxes into storage, retrieve files from storage, and the annual cost to store a box. This benefit is realized beginning in the second half of Year 2.

Table 13: Physical Storage Savings, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
K1	Storage space (square feet) saved			2,000	2,250	2,500	2,750
K2	Annual cost per square foot	[Only half in Year 2]		\$16.63	\$35.00	\$36.05	\$36.05
K3	Storage space savings	K1 * K2		\$33,250	\$78,750	\$90,125	\$99,138
K4	Number of boxes not put in storage			100	300	600	900
K5	Cost to transfer box			\$22.16	\$24.50	\$26.49	\$27.82
K6	Transfer cost savings	K4 * K5		\$2,216	\$7,350	\$15,895	\$25,038
K7	Number of boxes not in storage	sum K4 [through previous year]			100	400	1,000
K8	Annual cost to store a box				\$1.56	\$1.61	\$1.61
K9	Annual storage costs avoided	K7 * K8			\$156	\$803	\$2,410
K10	Number of boxes not retrieved			510	1,071	1,125	1,181
K11	Cost to retrieve a box			\$16.26	\$17.97	\$19.44	\$20.40
K12	Retrieval costs avoided	K10 * K11		\$8,295	\$19,246	\$21,866	\$24,097
Kt	Physical storage savings	K3 + K6 + K9 + K12		\$43,761	\$105,502	\$128,689	\$150,683

Source: Forrester Research, Inc.

Avoided Additional Hires

The City of Ottawa has made significantly more information available exclusively via the Internet, for both internal and external use. According to Steve Murray, “The old way of doing this would not have worked. We never could have managed the workload no matter how many people we added.” Others within Ottawa described the potential costs as “prohibitive,” and that they “can’t even think about what it would cost.”

Nonetheless, Ottawa made an assumption as to how many additional Webmasters and Records Management staff would have been needed to support the growth, even though the old way of working would not have delivered the same overall quality of solution.

Table 14: Avoided Additional Hires, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
L1	Number of FTE hires avoided			3.5	10.5	19.0	24.0
L2	Annual fully burdened cost	= C3		\$64,637	\$70,080	\$74,348	\$76,578
Lt	Avoided additional hires	L1 * L2		\$226,228	\$735,838	\$1,412,605	\$1,837,873

Source: Forrester Research, Inc.

Productivity Gain – Document Filing

Prior to implementing Oracle Enterprise Content Management Suite, content creators would print and file documents as Official Business Records (OBRs). Once an employee began using the new, electronic solution, he longer needed to print and file paper copies. This resulted in a time savings that can be used to complete additional work. Enough time savings eventually translates into avoided additional hires, but this benefit (and the following two benefits) is calculated as a productivity gain. Discussions with the City of Ottawa indicate that it believes that 90% or more of the time saved is used to complete other work-related activities.

This benefits grows as the number of users grow. Through Year 5 of the study, the solution has only been rolled out to 2,000 of the potential users. Therefore there is the potential for additional benefits, which are discussed in the Flexibility section.

Table 15: Productivity Gain — Document Filing, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
M1	Number of content creators			350	650	1,000	2,000
M2	Number of documents created per worker			55	61	67	74
M3	Minutes to print and file (previously)			20	20	20	20
M4	Percent time reduction			90%	90%	90%	90%
M5	Total work days saved	$(M1 * M2 * M3 * M4) / (C1 * C2 * 60 \text{ min})$		825.0	1,699.3	2,871.4	6,342.9
M6	Daily fully burdened salary	= C5		\$376.04	\$407.70	\$432.53	\$445.51
M7	Percent captured			90%	90%	90%	90%
Mt	Productivity gain — document filing	M5 * M6 * M7		\$279,208	\$623,525	\$1,117,789	\$2,543,220

Source: Forrester Research, Inc.

Productivity Gain — Document Retrieval

Office-based knowledge workers spent a lot of time retrieving physical files for use in their daily activities. This typically took 20 minutes per retrieval. Employees using Oracle Enterprise Content Management Suite can easily retrieve electronic versions of these files in 1 minute or less.

This benefit began to be realized halfway through Year 2 of the study.

Table 16: Productivity Gain — Document Retrieval, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
N1	Number of retrievals avoided			100,000	220,000	242,000	266,200
N2	Minutes saved per retrieval			19	19	19	19
N3	Total work days saved	$(N1 * N2) / (C1 * C2 * 60 \text{ min})$		4,523.8	9,952.4	10,947.6	12,042.4
N4	Daily fully burdened salary	= C5		\$376.04	\$407.70	\$432.53	\$445.51
N5	Percent captured			90%	90%	90%	90%
Nt	Productivity gain - document retrieval	$N3 * N4 * N5$		\$1,531,010	\$3,651,862	\$4,261,686	\$4,828,490

Source: Forrester Research, Inc.

Productivity Gain — General Search

Each employee keeps an administrative reference binder on their desk that contains information relevant to their job, such as an internal telephone directory and procedures manuals. A good deal of this information is now available via the intranet and accessed by all computer users beginning in the second half of Year 2. Obtaining information by using intranet search tools is more efficient than manually searching printed materials, reducing the average search time from five to three minutes.

Table 17: Productivity Gain — General Search, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
O1	Number of workers			8,000	8,000	8,000	8,000
O2	Yearly searches per user			120	240	240	240
O3	Minutes saved per search			2	2	2	2
O4	Total work days saved	$(O1 * O2 * O3) / (C1 * C2 * 60 \text{ min})$		4,571.4	9,142.9	9,143	9,142.9
O5	Daily fully burdened salary	= C5		\$376.04	\$407.70	\$432.53	\$445.51
O6	Percent captured			90%	90%	90%	90%
Ot	Productivity gain - general search	$O4 * O5 * O6$		\$1,547,126	\$3,354,820	\$3,559,129	\$3,665,903

Source: Forrester Research, Inc.

The three benefits calculated in Tables 15, 16 and 17 total 27,528 workdays saved in Year 5 through increased productivity. The combined savings in Tables 15 and 16 represents only 4.1% of the available workdays (221 days * 2,000 workers), and the savings in Table 17 represents only 0.5% of the available workdays (221 days * 8,000 workers). Therefore, these productivity benefits are judged to be very achievable by other organizations.

Productivity Gain — RPAM Search

Real Property Asset Management (RPAM) searches were very complicated and time consuming. It could take days or even weeks to find the needed blueprints and other diagrams of city facilities and buildings. Now they are all easily available in Oracle Enterprise Content Management Suite. These searches are typically completed by contractors working for the City of Ottawa. Therefore, 100% of the time savings is captured as a benefit. This savings was realized beginning in the second half of Year 2.

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Table 18: Productivity Gain — RPAM Search, Non-Risk-Adjusted

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
P1	Number of searches			500	1,100	1,155	1,213
P2	Hours per search			10	10	10	10
P3	Hourly contractor cost	= C6		\$48.93	\$53.05	\$56.28	\$57.96
P4	Percent captured			100%	100%	100%	100%
Pt	Productivity gain – RPAM	P1*P2*P3*P4		\$244,650	\$583,550	\$650,034	\$703,055

Source: Forrester Research, Inc.

Total Quantified Benefits

Table 19 summarizes the total quantified benefits the City of Ottawa realized by implementing Oracle Enterprise Content Management Suite.

Table 19: Total Quantified Benefits, Non-Risk-Adjusted

Ref	Benefits	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Present value
Jt	Printing savings		\$115,425	\$263,250	\$376,182	\$415,693	\$1,170,549	\$983,576
Kt	Physical storage savings			\$43,761	\$105,502	\$128,689	\$150,683	\$428,635
Lt	Avoided additional hires		\$226,228	\$735,838	\$1,412,605	\$1,837,873	\$4,212,544	\$3,504,425
Mt	Productivity gain – doc. filing		\$279,208	\$623,525	\$1,117,789	\$2,543,220	\$4,563,742	\$3,772,521
Nt	Productivity gain – doc. retrieval		\$1,531,010	\$3,651,862	\$4,261,686	\$4,828,490	\$14,273,049	\$12,028,401
Ot	Productivity gain- general search		\$1,547,126	\$3,354,820	\$3,559,129	\$3,665,903	\$12,126,978	\$10,264,520
Pt	Productivity gain- RPAM		\$244,650	\$583,550	\$650,034	\$703,055	\$2,181,289	\$1,841,319
	Total		\$3,987,408	\$9,318,346	\$11,506,114	\$14,144,917	\$38,956,786	\$32,755,449

Source: Forrester Research, Inc.

Improved Information Retention Regulatory Compliance

The City of Ottawa must comply with 186 laws and regulations regarding information retention. Ensuring that information is held for the correct period of time and then disposed of properly was extremely complicated prior to the implementation of Oracle Enterprise Content Management Suite. Now, when a document is entered into the system, it can be flagged with the appropriate retention policy, automating the retention and destruction processes. Auditing regulatory compliance is also significantly easier.

Improved Citizen Services

Citizens of Ottawa now have greater access to information 24x7. It is also faster for them to find the needed information since they no longer need to call in to the appropriate department for help. The City can now ensure that the most accurate information is provided, since the latest version of a document is automatically posted to all internal and external websites. Additionally, Ottawa can easily maintain consistent branding across all websites and document publishing.

This has been a top priority for city managers. They believe that making the most timely and accurate information available improves citizens' perception of the City of Ottawa, improves its reputation with other city governments, helps achieve regulatory compliance, and aids in attracting new business to open in Ottawa. According to Steve Murray, city managers have said, "We have to be a professional, modern organization if we are going to be the silicon valley of the north".

Streamlined And Repeatable Business Processes

Prior to implementing Oracle Enterprise Content Management Suite, different departments had their own ways of managing content. These processes were typically very manually intensive and involved a lot of duplicate effort. Using Oracle Enterprise Content Management Suite has given employees the impetus to streamline business processes and to deploy common, documented processes across the organization. This has resulted in greater productivity and inspired some departments to think about how they can improve other business processes.

Risk

Risk is the third component within the TEI model. It is used as a filter to capture the uncertainty surrounding different cost and benefit estimates. If a risk-adjusted ROI still demonstrates a compelling business case, it raises confidence that the investment is likely to succeed because the risks that threaten the project have been taken into consideration and quantified. The risk-adjusted numbers should be taken as "realistic" expectations, since they represent the expected values considering risk. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. Because the costs incurred by Ottawa are believed to reflect the high end of the range and because current licensing fees were used, risk was not used to further increase costs.

Each benefit and cost is assigned either a "low," "medium," "high," or "none" risk rating. The following benefits were rated as either low, medium, or high risk:

- **Physical storage savings, low risk.** The City of Ottawa is subject to 186 retention regulations, which results in a significant need for long-term storage. Other organizations may not have as great a need for record retention, thereby reducing the amount of storage savings.
- **Avoided additional hires, medium risk.** Since its previous solution could not scale, Ottawa avoided hiring a lot of additional Webmasters when it implemented Oracle

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Enterprise Content Management Suite. Other organizations may not realize the same level of savings if their previous solution could more easily scale.

- **Productivity gain: document filing, medium risk.** The productivity gains that Ottawa realized are generally in line with what other organizations can expect to realize; however, other organizations may not be able to realize the same level of benefits if their previous content-related business processes were more efficient.
- **Productivity gain: general search, medium risk.** *Same as above.*
- **Productivity gain: RPAM search, medium risk.** *Same as above.*

For the purpose of this analysis, Forrester risk-adjusts cost and benefit estimates to better reflect the level of uncertainty that exists for each estimate. 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.

For example, the risk associated with the “avoided additional hires” benefit is dependent on the number of additional Webmasters that would be needed. A “medium” likelihood exists that readers’ organizations would have required fewer additional hires, had they not implemented Oracle Enterprise Content Management Suite. The original estimated cost is \$517,093 in Year 2. To calculate the Year 2 risk-adjusted benefit, the “most likely” scenario was set at 100%, the “high” scenario was set at 103%, and the “low” scenario was set at 85%. The rounded mean of these three values is 96%. The resulting cost used in the risk-adjusted tables is \$496,410, or (1.83 FTEs) * (a fully burdened cost of \$64,637 per FTE).

The following tables show the values used to adjust for uncertainty in cost and benefit estimates. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Table 20: Risk Adjustments To Costs

Ref.	Risk adjustments to costs	Risk scoring	Low	Most likely	High	Risk-adjusted
Q1	Evaluation and selection costs	None	100%	100%	100%	100%
Q2	Internal implementation costs	None	100%	100%	100%	100%
Q3	Professional service fees	None	100%	100%	100%	100%
Q4	Software licenses and maintenance	None	100%	100%	100%	100%
Q5	Hardware costs	None	100%	100%	100%	100%
Q6	Ongoing operation costs	None	100%	100%	100%	100%

Source: Forrester Research, Inc.

Table 21: Risk Adjustments To Benefits

Ref.	Risk adjustments to benefits	Risk scoring			High	Risk-adjusted
		Low	Most likely	High		
R1	Printing savings	None	100%	100%	100%	100%
R2	Physical storage savings	Low	90%	100%	105%	98%
R3	Avoided additional hires	Medium	85%	100%	103%	96%
R4	Productivity gain — document filing	Medium	85%	100%	103%	96%
R5	Productivity gain — document retrieval	Medium	85%	100%	103%	96%
R6	Productivity gain — general search	Medium	85%	100%	103%	96%
R7	Productivity gain — RPAM search	Medium	85%	100%	103%	96%

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined by Forrester’s TEI methodology, represents an investment in additional capacity or capability today that could be turned into future business benefits for some future 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.

The City of Ottawa believes there are multiple ways in which they might gain additional flexibility benefits from a further rollout of Oracle Enterprise Content Management Suite. Some examples include increasing the number of users, integrating additional document repositories, and implementing the solution for enterprise document management (currently under consideration). Therefore, there is a flexibility benefit because an incremental investment in further rolling out the solution to additional users or incorporating additional repositories can result in significant benefits. For this study, these benefits were not quantified in the ROI analysis.

TEI Framework: Summary

Considering the financial framework constructed above, the results of the costs, benefits, and risk sections can be used to determine a return on investment, net present value, and payback period. Table 26 and Table 27, below, show the risk-adjusted cost and benefit values, applying the risk-adjustment method indicated in the Risks section and the values from Table 20 and Table 21 to the numbers in Table 11 and Table 19, respectively.

Table 26: Risk-Adjusted Costs

Costs	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Present value
Evaluation and selection costs	\$180,477	\$185,891				\$366,368	\$342,686
Internal implementation costs	\$397,049	\$540,178	\$1,576,795	\$860,308		\$3,374,330	\$2,973,754
Professional service fees	\$153,064	\$451,868	\$1,015,875	\$424,489		\$2,045,295	\$1,804,006
Software licenses and maintenance fees	\$103,700	\$1,467,450	\$1,682,950	\$548,939	\$548,939	\$4,351,977	\$3,813,221
Hardware costs	\$236,959	\$264,151	\$405,526	\$102,331	\$57,526	\$1,066,493	\$954,856
Ongoing operation costs			\$83,104	\$630,718	\$1,292,667	\$1,725,320	\$3,731,810
Total	\$1,071,249	\$2,992,642	\$5,311,864	\$3,228,734	\$2,331,784	\$14,936,273	\$12,979,541

Source: Forrester Research, Inc.

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Table 27: Risk-Adjusted Benefits

Benefits	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Present value
Printing savings		\$115,425	\$263,250	\$376,182	\$415,693	\$1,170,549	\$983,576
Physical storage savings		\$42,886	\$103,392	\$126,115	\$147,670	\$420,063	\$353,474
Avoided additional hires		\$217,179	\$706,404	\$1,356,101	\$1,764,358	\$4,044,042	\$3,364,248
Productivity gain — doc. filing		\$268,040	\$598,584	\$1,073,077	\$2,441,491	\$4,381,192	\$3,621,620
Productivity gain — doc. retrieval		\$1,469,770	\$3,505,787	\$4,091,219	\$4,635,351	\$13,702,127	\$11,547,265
Productivity gain — general search		\$1,485,241	\$3,220,628	\$3,416,764	\$3,519,267	\$11,641,899	\$9,853,939
Productivity gain — RPAM search		\$234,864	\$560,208	\$624,033	\$674,933	\$2,094,037	\$1,767,667
Total		\$3,833,404	\$8,958,253	\$11,063,490	\$13,598,762	\$37,453,909	\$31,491,788

Source: Forrester Research, Inc.

The values used throughout the TEI Framework are based on in-depth interviews with one organization. Forrester makes no assumptions as to the potential return that other organizations will receive within their own environment. Forrester strongly advises that readers use their own estimates within the framework provided in this study to determine the expected financial impact of implementing Oracle Enterprise Content Management Suite.

Study Conclusions

Forrester's in-depth interviews with the City Of Ottawa yielded several important observations:

- The City of Ottawa realized benefits in four general ways: 1) reduced printing, filing, and storing costs; 2) greatly improved user productivity in content creation and use; 3) great overall focus on streamlining business processes — both content-related and other; and 4) greater quality of service to the citizens of Ottawa.
- The City completed a successful implementation of Oracle Enterprise Content Management Suite by adhering to its internal rigorous program implementation methodology and by clearly articulating to users the benefits they should expect from the solution and how to use it.
- Ottawa will continue to realize more benefits as the use of Oracle Enterprise Content Management Suite grows and as the City becomes more adept at tracking usage and the metrics necessary to calculate benefits.

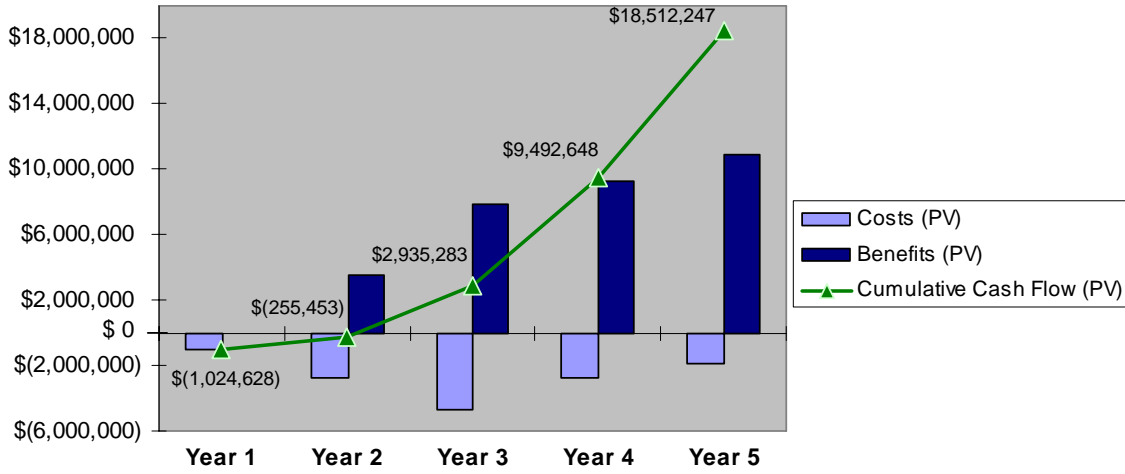
The financial analysis provided in this study illustrates the potential way in which an organization can evaluate the value proposition of Oracle's enterprise content management solution. Based on information collected in in-depth interviews with the City of Ottawa, Forrester calculated a five-year risk-adjusted ROI of 143% with a payback period of 25 months. All final estimates are risk-adjusted to incorporate potential uncertainty in the calculation of costs and benefits.

Table 28: ROI, Original And Risk-Adjusted

Summary financial results	Unadjusted	Risk-adjusted
ROI — four-year	152%	143%
Payback	24 months	25 months
Total four-year costs (PV)	\$12,979,541	\$12,979,541
Total four-year benefits (PV)	\$32,755,449	\$31,491,788
Total four-year net savings (NPV)	\$19,775,908	\$18,512,247

Source: Forrester Research, Inc.

Figure 1: Summary Financial Results, Risk-Adjusted



Source: Forrester Research, Inc.

Appendix A: 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 enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point in time. However, having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix B: 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 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 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 payback period is the breakeven point for an investment — the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

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

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.