

A Forrester Total Economic Impact™ Study Prepared For FileMaker

The Total Economic Impact Of The FileMaker Platform

The Advantages Of A Platform To Develop Custom iOS Applications For iPad And iPhone

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FORRESTER

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TABLE OF CONTENTS

Executive Summary.....	2
Use Of FileMaker Significantly Reduces Application Development Costs.....	2
Factors That Affect Benefits And Costs.....	3
Disclosures.....	4
TEI Framework And Methodology.....	5
Analysis.....	7
Interview Highlights.....	7
Costs.....	8
Benefits.....	15
Flexibility.....	19
Risk.....	20
Financial Summary.....	22
The FileMaker Platform To Create Custom iOS Applications: Overview.....	23
Appendix A: Total Economic Impact™ Overview.....	24
Appendix B: Glossary.....	25
Appendix C: Endnotes.....	25

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Executive Summary

In June 2012, FileMaker, Inc. commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) that enterprises may realize by using the FileMaker Platform to develop custom iOS applications for iPad and iPhone.

Forrester held a series of in-depth interviews with the application development team at a large event and convention organization firm in the United States. The purpose of the interviews was to determine the organization's prior environment and challenges in managing its work orders — and how the firm addressed those challenges using a custom mobile application. In addition, the effort required to create and manage those applications internally versus the option to outsource the development.

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the FileMaker Platform to create iOS applications compared with an alternative method to develop iOS applications for their organizations.

Use Of FileMaker Significantly Reduces Application Development Costs

Our interviews with an existing customer and a subsequent financial analysis found that the organization we interviewed experienced the risk-adjusted ROI, costs, and benefits shown in Table 1. (All numbers have been rounded.)

Table 1

Two-Year Risk-Adjusted Financial Summary¹

ROI	Payback period	Total benefits (PV)	Total costs (PV)	Net present value
289%	3 months	\$455,743	(\$117,284)	\$338,459

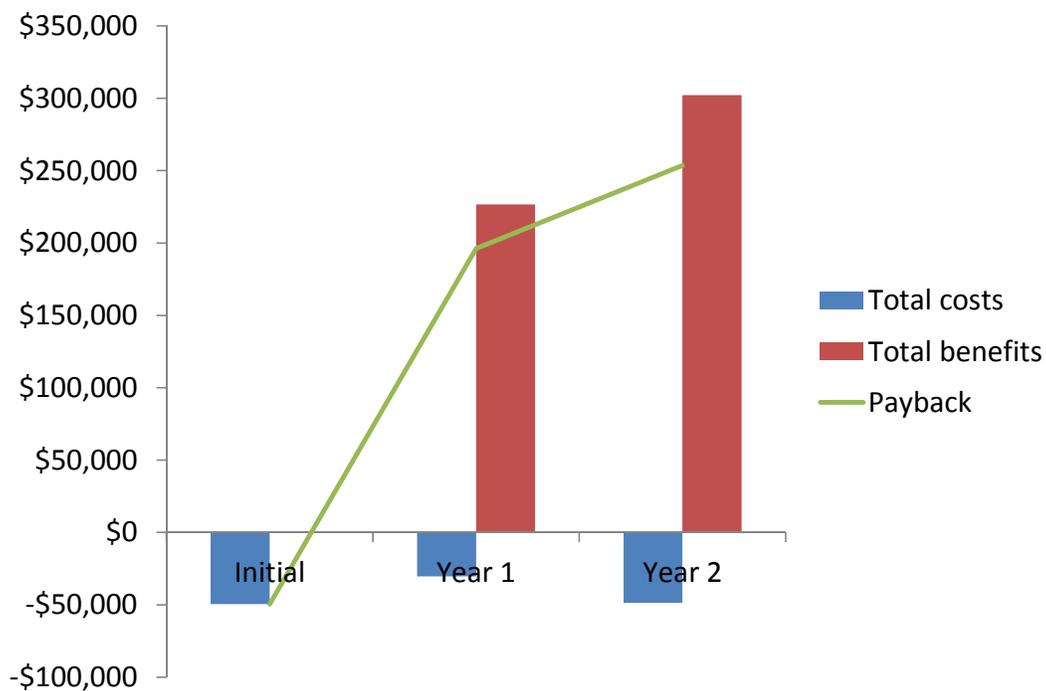
Source: Forrester Research, Inc.

- **Benefits.** The organization we interviewed experienced the following benefits:
 - **Application development was faster than using an alternative approach.** This category represents the cost avoidance associated with outsourcing application development.
 - **Worker productivity increased by improving communication and reducing errors.** This category represents the improvement in productivity for staff using the applications on their iPads.
- **Costs.** The organization we interviewed experienced the following costs:
 - **License costs associated with total deployment.** The investment in the FileMaker Platform for end users.

- **Software license fees for application development.** The investment in the FileMaker Platform for IT to develop iOS applications.
- **Hardware costs.** The costs for hardware needed to store the server and iPads for end users.
- **Internal effort associated with planning, development, and testing for initial and subsequent application.** The internal resources allocated to plan and develop iOS applications in-house.

Figure 1

Two-Year Risk-Adjusted Financial Summary



Source: Forrester Research, Inc.

Factors That Affect Benefits And Costs

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

- The operational savings associated with end user productivity gain after eliminating paper-based work orders could heavily affect the ROI for the organization interviewed.
- The labor cost for resources needed to develop iOS applications in house could vary due to geography, the complexity of the environment, and the skill set of the developer.

- Hardware costs, specifically to purchase additional iPads, could increase. In the future, this could increase the user productivity associated with this business benefit, as new users will receive mobile devices.

Disclosures

The reader should be aware of the following:

- The study is commissioned by FileMaker and delivered by the Forrester Consulting group.
- Forrester makes no assumptions as to the potential return on investment that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in the FileMaker Platform to develop iOS applications.
- FileMaker 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 contacts interviewed for this study were provided by FileMaker.

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 the FileMaker Platform to create iOS solutions. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

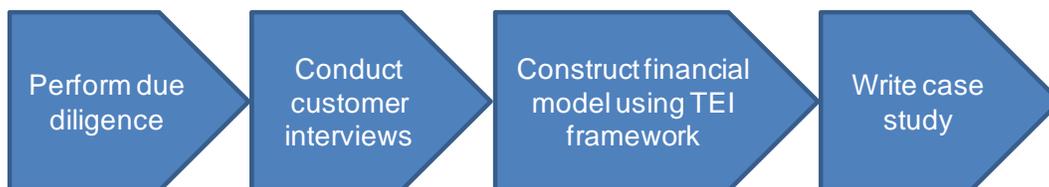
Approach And Methodology

Forrester took a multistep approach to evaluate the impact that the FileMaker Platform to develop custom iOS applications can have on an organization (see Figure 2). Specifically, we:

- Interviewed FileMaker marketing and sales management and Forrester analysts to gather data relative to the FileMaker Platform to create iOS applications and the marketplace for creating custom iOS applications.
- Interviewed an organization currently using the FileMaker Platform to obtain data with respect to the costs, benefits, and risks associated with creating iOS applications.
- Estimated the costs associated with an alternative approach to develop the application.
- 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.

Figure 2

TEI Approach



Source: Forrester Research, Inc.

Forrester employed four fundamental elements of TEI in modeling the FileMaker Platform to develop iOS applications:

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

Given the sophistication that enterprises have regarding ROI 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.

Analysis

Interview Highlights

Company Background

Forrester conducted a series of in-depth interviews for this study with the application development team at a large event and convention organization firm in the United States. The organization hosts 127 conferences and exhibitions annually. 35% of these events have fewer than 1,000 attendees; 55% have between 1,000 and 9,999 attendees; and the remaining 10% have more than 10,000 attendees.

Prior to the development of the FileMaker iOS application, exhibitor booth work orders were based on faxes and other paper-based media. The convention center would receive work orders from exhibitors for booth services like electricity and signage. These work orders were recorded and compiled into a “blue folder” to be used by event managers when setting up exhibitors’ booths. Further, during the preparation phase, exhibitors would come to the service desk or approach service personnel on the show floor to order additional services for their booths — electricity, power strips, Internet, water and drainage — or to adjust existing orders. This was all done on paper. The orders were input into the system, printed out, and placed in a binder with diagrams and other paperwork, including revisions, to start deployment or make changes.

Reasons For Using The FileMaker Platform

The organization’s primary reasons for using the FileMaker Platform to develop iOS applications in-house:

- To eliminate manual paper-and-pencil processes and create a real-time knowledge-sharing venue.
- The organization had considered using FileMaker Pro on Windows-based tablets or using web publishing to create a web interface to be used in a browser. However, an operating system that needed a mouse and a keyboard to point and click wasn’t considered usable enough.
- The release of FileMaker Go in July 2010 allowed the organization to use FileMaker to create iOS applications using the same skill set.

Key Solution Attributes

The organization considered that the key attributes of the solution were its ability to:

- Instantaneously update and revise applications. The organization interviewed hosts FileMaker applications on central servers, not on iPads. Therefore, changes to an application or its data on the server are instantly pushed to all connected users. An internal staff who created the solution also implements updates for the application, rather than outsourcing any needed updates.
- Extend the investment in the original work order system to field employees. Workers who currently use manual processes to complete their task can improve their productivity by reducing data entry errors and can speed up the communication of task completion to other workers.

- Create iOS applications in a fraction of the time and with a fraction of the resources by using in-house IT developers or business knowledge workers with solid command of the application they are aiming to produce.

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)	$A1 * A2$	2,080
A4	Average fully loaded salary of database administrator		\$110,240
A5	Fully loaded hourly rate of database administrator	$A4 / A3$	\$53
A6	Average fully loaded salary of event service personnel		\$62,400
A7	Fully loaded hourly rate of event service personnel	$A6 / A3$	\$30

Source: Forrester Research, Inc.

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

Costs

The organization interviewed was a long-time user of FileMaker software for workgroup solutions spanning more than 100 users. The organization leveraged this experience when they used the FileMaker Platform to create and deploy iPad applications. For example, internal staff was experienced in designing and integrating FileMaker with other business systems.

The framework provided here is also valid for readers with no previous FileMaker deployment but who want to create applications using FileMaker. In this case use only the part designed to provide to measure specific costs for iOS application design and hosting.

We have estimated the costs of using the FileMaker Platform to develop iOS solutions for iPad and iPhone in the following categories:

- Software license costs to deploy FileMaker
- Software license costs for application development
- Hardware costs for computers on which to host the FileMaker Server Advanced software and to purchase iPads
- Internal labor to plan, develop, and test iOS applications.

Based on the interview with an existing FileMaker customer, Forrester estimates that application development period was approximately three weeks per application. The customer has used FileMaker in its desktop environment for years. Two years ago, the firm decided to use the FileMaker Platform for building iOS applications.

For this study, we estimated the license costs associated with a full deployment of FileMaker on desktops. We included this estimate to illustrate the level of investment that the organization made prior to purchasing additional FileMaker licenses exclusively for application development. Readers should base their own licensing requirements on their existing FileMaker deployment footprint. As noted, we also estimated the incremental FileMaker license costs associated with application development.

We did include system administrator expenses in this analysis, because the organization has migrated to an open source server environment from its legacy server environment.

We did not include back-end integration costs in this analysis. The original desktop deployment of the FileMaker Platform required back-end integration. For this incremental investment, the organization was able to integrate with the existing infrastructure.

Software License Costs Associated With Total Deployment

This category represents the original investment in FileMaker solution for desktop usage. This investment is not directly relevant to the TEI of the FileMaker Platform to develop iOS applications for an organization that has been a long-time user of FileMaker. However, it represents increased experience deploying and integrating with the Platform. We have elected to represent this cost so readers, if they currently use FileMaker solutions, can compare the level of investment.

Organizations that currently use a FileMaker solution for their desktop environment and are not planning to expand its footprint can eliminate this investment from the ROI calculation. Organizations that are hoping to expand their existing footprint can use the following framework and estimate the incremental costs when purchasing additional software to expand their desktop usages (see Table 3).

Table 3
Software License Costs To Deploy FileMaker

Ref.	Metric	Calculation	Initial
B1	Number of FileMaker Pro seats		130
B2	Cost per FileMaker Pro seat		\$219
B3	Number of FileMaker Pro Advanced seats		6
B4	Cost per FileMaker Pro Advanced seat		\$439
B5	Number of FileMaker Server seats		1
B6	Cost per FileMaker Server seat		\$879
B7	Number of FileMaker Server Advanced seats		2
B8	Cost per FileMaker Server Advanced seat		\$2,640
B9	Number of FileMaker Go for iPad and iPhone seats		20
B10	Cost per FileMaker Go seat		\$0
Bt	Software license costs to deploy FileMaker	$B1*B2+B3*B4+B5*B6+B7*B8+B9*B10$	\$37,263

Source: Forrester Research, Inc.

Software License Fees For Application Development

The next component of investment in FileMaker software is associated with the total licenses needed to develop iOS applications. The organization interviewed used these licenses to create four custom iOS applications for:

- **Event documents.** A list of all events with associated document diagrams and preplanning specific to an entire event.
- **Technical work orders.** A list of all work orders for technical services such as Internet, switches, and telephones, along with exhibitors' booth diagrams.
- **Utility work orders.** A list of all work orders for utility services, such as power, water, drainage, and natural gas, along with exhibitors' booth diagrams.
- **Floor audit.** A combined list of all work orders, both utility and technical, with the ability to verify installations and take notes regarding new orders required and changes to existing orders.

Table 4 illustrates this calculation.

Table 4
Software License Fees For Application Development

Ref.	Metric	Calculation	Initial
C1	Number of FileMaker Pro seats		12
C2	Cost per FileMaker Pro seat		\$285
C3	Number of FileMaker Pro Advanced seats		2
C4	Cost per FileMaker Pro Advanced seat		\$439
C5	Number of FileMaker Server Advanced seats		1
C6	Cost per FileMaker Server Advanced seat		\$2,640
C7	Number of FileMaker Go for iPad and iPhone seats		20
C8	Cost per FileMaker Go seat		\$0
Ct	Software license fees for application development	$C1*C2+C3*C4+C5*C6+C7*C8$	\$6,938

Source: Forrester Research, Inc.

Hardware Costs

The hardware needed for this investment includes an Apple Mac mini with FileMaker Server to host the applications and data used by the iPads.

The organization deployed FileMaker for its desktop environment over a decade ago. At that time, it had integrated its local servers with the storage devices in the main data center. For security, it has a virtual server that it uses locally for data replication. Forrester has not included any additional integration costs, because the organization acquired new licenses for iOS development and didn't incur any further integration costs. Readers with greenfield environments should consider factoring integration costs into their investment analysis.

Table 5
Hardware Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2
D1	Number of Apple Mac minis		1		
D2	Cost per Apple Mac mini		\$799		
D3	Number of iPads		8	32	70
D4	Cost per iPad		\$499	\$499	\$499
Dt	Hardware costs	$D1*D2+D3*D4$	\$4,791	\$15,968	\$34,930

Source: Forrester Research, Inc.

Internal Effort Associated With Application Planning, Development, And Testing

The final cost component for the interviewed organization involves the internal resources allocated to requirements analysis, design, development, and testing. The organization has produced a total of four applications for iPad to date.

Our interviewee estimated that each application was developed in three phases: requirements analysis; design; and development, integration, and testing. When the organization developed the initial application, it allocated 12 hours to requirements analysis, 26 hours to design, and 96 hours (48 hours for each of two developers) to development, integration, and testing.

The organization was able to realize some savings for subsequent applications. The time allocated to initial-phase requirements analysis did not change. However, the organization saved time during the design phase and the development, integration, and testing phase. In the design phase, the developers were able to incorporate the framework that was defined during initial application development. They could reuse UI standards, cut and paste the approved font, and use an already created security model.² For the final phase of development, integration, and testing, the organization was able to save a total of 10 hours (5 hours for each of two developers) on server installation and integration.

Our interviewee mentioned that application updates often happened instantaneously and the organization has not measured the incremental resources allocated to ongoing application upgrades (see Table 6).

Table 6

Internal Resources Associated With Planning, Development, And Testing For Initial And Subsequent Applications

Application development phases for initial and subsequent applications		Number of staff	Number of hours	Fully loaded hourly wage	Associated labor cost
Phase 1: requirements analysis	Initial	1	12	\$53	\$636
	Subsequent	1	12	\$53	\$636
Phase 2: design	Initial	1	26	\$53	\$1,378
	Subsequent	1	18	\$53	\$954
Phase 3: development, integration, and testing	Initial	2	48	\$53	\$5,088
	Subsequent	2	43	\$53	\$4,558

Source: Forrester Research, Inc.

Table 7 presents the overall estimate for these costs based on the number of applications developed to date.

Table 7

Internal Effort Associated With Planning, Development, And Testing For Initial And Subsequent Applications

Ref.	Metric	Calculation	Initial	Year 1	Year 2
E1	Number of initial applications being created			1	0
E2	Number of subsequent applications being created			1	2
E3	Phase 1 cost per initial application developed			\$636	\$636
E4	Phase 1 cost per subsequent application developed			\$636	\$636
E5	Phase 2 cost per initial application developed			\$1,378	\$1,378
E6	Phase 2 cost per subsequent applications developed			\$954	\$954
E7	Phase 3 cost per initial application developed			\$5,088	\$5,088
E8	Phase 3 cost per subsequent application developed			\$4,558	\$4,558
Et	Internal effort associated with planning, development, and testing for initial and subsequent application	$E1*(E3+E5+E7)+E2*(E4+E6+E8)$	\$0	\$13,250	\$12,296

Source: Forrester Research, Inc.

Total Costs

The total two-year costs that the interviewed organization faced are \$125,436 (see Table 8).

Table 8

Total Costs: Non-Risk-Adjusted

Ref.	Cost category	Initial	Year 1	Year 2	Total	PV
Bt	Software license costs to deploy FileMaker	(\$37,263)	\$0	\$0	(\$37,263)	(\$37,263)
Ct	Software license fees for application development	(\$6,938)	\$0	\$0	(\$6,938)	(\$6,938)
Dt	Hardware costs	(\$4,791)	(\$15,968)	(\$34,930)	(\$55,689)	(\$48,175)
Et	Internal effort associated with planning, development, and testing for initial and subsequent application	\$0	(\$13,250)	(\$12,296)	(\$25,546)	(\$22,207)
	Total costs	(\$48,992)	(\$29,218)	(\$47,226)	(\$125,436)	(\$114,584)

Source: Forrester Research, Inc.

Benefits

After a series of in-depth interviews with the customer that used the FileMaker Platform to create custom iOS applications in house, we identified two quantifiable benefits: the cost savings associated with creating an iOS application internally (compared with outsourcing the development to a third party) and the productivity gains resulting from automating a series of internal work orders and processes. To remain conservative, we are estimating that 75% of the benefit is captured in Year 1. We estimate that there is a learning curve associated with learning and fully utilizing the solution.

Cost Of Outsourcing For Creating Custom iOS Applications

Customers today have various methods of creating custom iOS applications in addition to using the FileMaker Platform. Some organizations choose to outsource application development to a third party because they may not have the internal skills or competencies to ensure successful development. They also have the option of developing iOS applications using programming language Objective-C and Apple's Xcode development tool. There are also several cross-platform mobile application development tools like HTML5; mobile enterprise application development (MEAP) vendors also offer development tools.

The interviewed organization explained that the development team was able to bring the development in house (by using the FileMaker Platform with which they were experienced) and save on outsourcing fees. Based on the interviews, we can estimate the effort to outsource the application development using other methods (see Table 9).

Table 9

Cost Breakdown Of Outsourcing A Custom iOS Application Development

Application development phases for initial and subsequent applications		Number of staff	Number of hours	Fully loaded hourly wage	Calculation	Total
Phase 1: requirements analysis		1	16	\$150	1*16*\$150	\$2,400
Phase 2: design		1	12	\$150	1*12*\$150	\$1,800
Phase 3: development		2	120	\$150	2*120*\$150	\$36,000
Phase 4: services		1	80	\$150	1*80*\$150	\$12,000
Phase 5: testing	Functional	1	24	\$150	1*24*\$150	\$3,600
	Integration	1	24	\$150	1*24*\$150	\$3,600
	Performance	1	4	\$150	1*4*\$150	\$600
	Load	1	4	\$150	1*4*\$150	\$600
	Field	1	8	\$150	1*8*\$150	\$1,200

Source: Forrester Research, Inc.

Table 10 presents the overall estimate for this cost savings based on the number of applications developed to date.

Table 10

Outsourcing Effort Associated With Requirement Analysis, Design, Development And Testing For Four Applications

Ref.	Metric	Calculation	Year 1	Year 2
F1	Number of iOS application built per year		2	2
F2	Phase 1: requirement analysis		\$2,400	2,400
F3	Phase 2: design		\$1,800	\$1,800
F4	Phase 3: development		\$36,000	\$36,000
F5	Phase 4: service		\$12,000	\$12,000
F6	Phase 5: testing		\$9,600	\$9,600
F7	Portion of the total benefit realized		75%	100%
Ft	Outsourcing effort associated with requirement analysis, design, development and testing for four application	$F1*(F2+F3+F4+F5+F6)*F7$	\$92,700	\$123,600

Source: Forrester Research, Inc.

End User Productivity Gains

The next benefit is the end user productivity gains realized by automating manual work order processes; improving communication between order entries, exhibitors' change requests and event field workers and eliminating errors due to manual data entry.

The customer, a convention organizer, hosts approximately 127 events annually. 35% of these events have fewer than 1,000 attendees; 55% have 1,000 to 9,999 attendees; and the remaining 10% have more than 10,000 attendees. Therefore, the organization manages approximately 13 large, 70 medium-size, 44 small events. The organization uses 80 full-time field staff for large events, 25 for medium-size events, and six for small events. For large events, each worker allocates 36 hours to event execution. For medium-size events, each worker allocates 10 hours; for small events, each allocates 6 hours to event execution. In total, the organization allocates approximately 55,105 man-hours annually to execute all 127 events. We estimate that each convention center employee saves about 25% of the fully loaded hourly rate of \$30 by eliminating travel time to the service desk to pick up work orders for new or existing exhibitor changes. Our interviewee explained that, when staff stays on the show floor to help exhibitors, the work follows smoothly and the next group of workers can immediately receive notification of when they are expected on the next task. This improves efficiencies across all event works and results in a reduced time per worker per event. Forrester captures user productivity at 50% (see Table 11).

Table 11
End User Productivity Gains

Ref.	Metric	Calculation	Year 1	Year 2
G1	Number of jobs annually		127	127
G2	Large jobs		10%	10%
G3	Medium-size jobs		55%	55%
G4	Small jobs		35%	35%
G5	Number of staff per large job		80	80
G6	Number of staff per medium-size job		25	25
G7	Number of staff per small job		6	6
G8	Hours per staff member allocated to large jobs		36	36
G9	Hours per staff member allocated to medium jobs		10	10
G10	Hours per staff member allocated to small jobs		4	4
G11	Total man-hours per year for all jobs	$G1*((G2*G5*G8)+(G3*G6*G9)+(G4*G7*G10))$	55,105	55,105
G12	Fully loaded hourly rate per person		\$30	\$30
G13	Percentage of time saved		25%	25%
G14	Percentage of productivity benefit captured		50%	50%
G15	Percentage of the total benefit realized		75%	100%
Gt	End user productivity gains	$G11*G12*G13*G14*G15$	\$154,983	\$206,645

Source: Forrester Research, Inc.

Total Benefits

The total two-year benefits that the interviewed organization realized are \$498,097 (see Table 12).

Table 12

Total Benefits: Non-Risk-Adjusted

Ref.	Benefit category	Year 1	Year 2	Total	PV
Ft	Cost savings compared with other methods of creating custom iOS applications	\$92,700	\$123,600	\$216,300	\$186,421
Gt	End user productivity gains	\$154,984	\$206,645	\$361,629	\$311,675
	Total benefits (original)	\$247,684	\$330,245	\$577,929	\$498,097

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. This provides an organization with the “right” or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement the FileMaker Platform to create iOS applications 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 A).

The organization interviewed could continue to expand its custom iOS application development using its existing FileMaker licenses. Additional applications could lead to an increase in end user productivity, increase the number of events being managed resulting from event staff efficiencies, and reduce any alternative third-party consulting fees. The cost for this future flexibility includes the incremental resources needed to develop applications and purchase additional hardware for the users.

Table 13
Flexibility Benefit Framework

Metric	Measurement
Asset value (benefit)	IT or business costs avoided, increase in end user productivity, and revenue generated
Cost to acquire option	Planning, development, and testing costs to produce new iOS applications or costs to procure additional hardware (i.e., iPads)
Expiration	Time-to-expire (in years)
Flexibility	Black-Scholes option pricing model

Source: Forrester Research, Inc.

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 the FileMaker Platform to create iOS applications 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 the FileMaker Platform to create iOS applications, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

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

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

- Planning, development, and testing costs could vary based on the internal skill set and competencies.

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

- The outsourcing development cost could vary resulting from the complexity in integration and the requirement analysis needed to ensure the custom application meets users’ needs.
- The end user productivity could vary based on the number of task being automated that could lead to instant or ongoing productivity gains.

Table 14 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates. 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.

Table 14
Cost And Benefit Risk Adjustments

Costs	Low	Most likely	High	Mean
Software license costs to deploy FileMaker	98%	100%	105%	101%
Software license fees for application development	98%	100%	105%	101%
Hardware costs	98%	100%	105%	101%
Internal effort associated with planning, development, and testing for initial and subsequent application	100%	100%	125%	108%
Benefits	Low	Most likely	High	Mean
Outsourcing effort associated with requirement analysis, design, development and testing for four application	80%	100%	103%	94%
End user productivity gains	50%	100%	120%	90%

Source: Forrester Research, Inc.

Financial Summary

The financial results calculated in the Costs and Benefits sections can be used to determine the return on investment, net present value, and payback period for the organization's investment in the FileMaker Platform to develop custom iOS applications (see Table 15).

Table 15

Cash Flow: Non-Risk-Adjusted

Categories	Initial	Year 1	Year 2	Total	PV
Costs	(\$48,992)	(\$29,218)	(\$47,226)	(\$125,436)	(\$114,584)
Benefits		\$247,683	\$330,244	\$577,927	\$498,095
Net benefits	(\$48,992)	\$218,465	\$283,018	\$452,491	\$383,512
ROI	335%				
Payback period	2.7 months				

Source: Forrester Research, Inc.

Table 16 shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 12 in the Risk section to the cost and benefits numbers in Tables 8 and 12.

Table 16

Cash Flow: Risk-Adjusted

Categories	Initial	Year 1	Year 2	Total	PV
Costs	(\$49,482)	(\$30,438)	(\$48,559)	(\$128,479)	(\$117,284)
Benefits		\$226,623	\$302,164	\$528,786	\$455,743
Net benefits	(\$49,482)	\$196,185	\$253,605	\$400,308	\$338,459
ROI	289%				
Payback period	3.0 months				

Source: Forrester Research, Inc.

The FileMaker Platform To Create Custom iOS Applications: Overview

According to FileMaker, the FileMaker Platform is a software product line used to create, deploy, and manage data-driven business solutions for iPad, iPhone, Windows, Mac and web browsers.

This comprehensive development environment meets developers' needs for every step of the mobile solution life cycle:

1. Design and build iOS solutions (and for other platforms).
2. Integrate mobile solutions into existing enterprise and departmental systems.
3. Easily deploy and instantly update solutions.
4. Secure and manage solutions using industry-standard authentication.

Users expect iPad and iPhone business applications to be simple, appealing, and extremely easy to use. The FileMaker Platform provides flexible design tools to create stunning, professional custom applications.

Based on a full-featured relational database model, the platform has integrated workflow, scripted business logic, and flexible reporting capabilities.

It also includes a powerful application development framework, offering a wide range of data views along with searching, sorting, and data validation, on-device charting, and more. The framework takes advantage of essential iOS APIs such as location awareness, camera support, audio capture, and Apple AirPlay.

And applications built using the FileMaker Platform not only run on iOS, they also automatically run on the Windows and Mac operating systems and in web browsers.

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.

Benefits

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

Costs

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the form of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

Risk

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

Flexibility

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

having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix 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 respective organization to determine the most appropriate discount rate to use in their own environment.

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

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

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

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

A Note On Cash Flow Tables

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

Appendix C: 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 20.

² The interviewed organization used the following processes to ensure the data that was accessed and moved through the systems were secure. This framework was replicated when the developers created new applications:

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1. Use the iOS passcode.
 2. Use an “opener file” that contains a script signed specifically for the user to whom the device has been issued.
 3. FileMaker Go opens the opener file and opens the hosted application using the user’s account.
 4. The data hosted on the external wireless FileMaker Server is a pared-down set of data that contains no personal or otherwise sensitive data.
 5. The external FileMaker Server cannot connect in any way to the FileMaker Server that hosts the main work order application inside of the parent’s organization’s network.
 6. Data is transferred between the internal and external server when a script on the internal server calls a process that connects to tables from the external server (using a specified port) and runs transfers between those external tables and the internal ones.