



WHAT'S THE VALUE OF REQUIREMENTS MANAGEMENT IN A DOWN ECONOMY?

OVERVIEW

Good times or bad – a development team can save **\$300,000 in the first year using a requirements management solution.**

Conceptually, requirements management (RM) is about bringing products to market faster, improving team efficiency, and catching requirements defects earlier in the development process. It's these potential benefits that explain why 67% of teams said they will use or plan to use a collaborative requirements management solution in the next year, based on a recent "State of Requirements Management" survey.

These benefits sound nice, but let's dig a little deeper into the return on investment.

What's the tangible cost savings that an RM solution could deliver to your company? What's the risk if you delay the investment in a tool? What's the difference if you just use Word or Excel to manage requirements instead of a specialized tool?

These are the questions that this ROI analysis document will help answer, and it's what Jama is focused on helping companies achieve regardless of the economy.

"67% of teams will use or plan to use a collaborative requirements management solution this year."

The State of Requirements Management Survey, April 2008

>> Read on to learn more about the detailed ROI analysis and the tangible benefits a requirements management tool can provide.

EXECUTIVE SUMMARY

Requirements management is a smart investment.

The following ROI analysis is based on a team of 10 active users and 10 stakeholders using Contour, Jama Software's Web-based requirements management application, and takes into account the total cost of ownership compared to the achievable cost savings.

ROI snapshot:

Annual Total Cost Savings



\$309,981

Benefit to Cost Ratio



4.4 to 1

Cost savings breakdown:

Improved Team Efficiency



\$25,023

Avoiding Lost Requirements



\$50,446

Avoiding Unnecessary Work



\$135,122

Reducing Requirements Defects



\$99,390

Methodology: The analysis uses a ROI model developed for Software Quality Engineering (Stickyminds.com) by Richard Denney, a well-respected software development and process management consultant. To learn more about the detailed analysis behind these metrics, please see the rest of the document.

ROI ANALYSIS DETAIL

Your benefit to cost ratio is estimated at 4.4 to 1 in the first year.

This ROI calculation takes into account the total cost of ownership for requirements management and compares it to the cost savings achieved from the benefits of Contour. The grey fields are variables you can adjust to your company. We took a conservative estimate in the analysis for inputs such as total # of requirements, % implemented in the first year and average salary.

RM Solution Investment	
Contour team package for 10 named users w/ full editing rights	\$12,000
Collaborator licenses for read-only stakeholders (25 free w/ team package)	\$0
Installation & configuration services (free w/ team package)	\$0
Training classes (Most popular 1-day course)	\$2,000
Total investment in RM solution 1st year	\$14,000

Other IT Costs to Consider	
Additional server hardware (applicable only if you host internally)	\$2,000
Additional server software (Contour doesn't require other software)	\$0
Total additional hardware and software costs	\$2,000

Your Team Information	
Your Average Team Member Salary	\$85,000
Number of team members working daily with requirements	10
Number of team members that use requirements for direction in their work to plan, develop, test, create user documentation, & training materials:	10

Project Information	
Total number of requirements entered into Contour in first year	2500
Number of requirements implemented during first year	500

Return on Investment Calculation	
Total Estimated Costs	\$70,692
Total Estimated Cost Savings	\$309,981
Benefit to Cost Ratio	4.4 to 1

Note, the benefit to cost ratio takes into account upfront costs such as training, server and software license costs incurred only in the first year, and thus the ratio will improve over time.



EMPLOYEE COST DETAILS

There are costs to take into account for your team's time & rigor.

This page shows the detail for the incremental costs of your staff's time and rigor using a tool.

Cost of Employees' Time	
Benefits ratio (burden)	1.3
Loaded Salary	\$110,500
Work days per year	230
Employee cost per day	\$480
Per hour	\$60
Per minute	\$1.00
Overhead Costs Associated with Using a RM Solution	
Overhead in minutes per requirement to use tool beyond using Word or Excel	5
Requirements entered in Contour	2500
Staff Minutes	12500
Cost for Overhead	\$12,511

Added Cost for Additional Rigor & Review	
<p>We account for the added rigor in requirements management that we are asking teams to make. For example, requirements that would otherwise not be recorded, or recorded on a white-board in an office, are now entered into a centralized digital record. This increase in easy-to-access requirements leads to additional review, discussion, test planning, and change control. The cost of doing the job right is, nevertheless, a cost, and is captured in the ROI model here.</p>	
Requirements implemented this year	500
Average time to implement a requirement (in minutes)	5
Requirements per hour per person	12
Number of team members that use requirements for direction in their work to plan, develop, test, create user documentation, & training materials:	10
Staff Hours	417
Total Cost	\$25,023
Requirements captured but not Implemented	2000
Requirements per hour per person (requirements not currently being implemented receive 1/10th of the scrutiny)	70
Number of team members that use requirements for direction in their work to plan, develop, test, create user documentation, & training materials:	10
Team Hours	286
Total Cost	\$17,158
Cost for added Rigor and Review	\$42,181



BENEFIT DETAILS

The incremental benefits far outweigh the incremental costs.

The following tables show the detail for the incremental benefits achieved by using an RM tool to improve team efficiency and avoid the costs of missing requirements and unnecessary work.

Team Efficiency Cost Savings	
We begin by calculating the savings realized from staff on projects having a readily available, always-up-to-date, common source of requirements upon which they can base their work. It is a cost reduction from staff working more efficiently to plan, develop, test, document, and develop training materials for a product.	
Note that this part of the model is not about doing a better job; it's about doing the same job more efficiently.	
Requirements Implemented this Year	500
# of team members working daily with requirements	10
Time (in minutes) saved because they have documented requirements readily available in a Web-based, central repository	5
Total Savings in Minutes	25000
Cost Savings in Dollars	\$25,023

Avoiding the Cost of Lost or Missing Requirements	
Total Requirements	2500
Already implemented so loss isn't an issue	500
Pending implementation - subject to possible loss	2000
% Staff Churn (assume % staff churn causes same % requirements churn)	7%
Estimated requirements that fall through cracks	140
Estimated days to re-engineer and document requirement (Can be significant for some requirements)	0.75
Staff Days Lost to Rework	105
Cost Savings in Dollars	\$50,446

Avoiding the Cost of Unnecessary Development Work	
One of the benefits of a companywide requirements management tool is the increased visibility that requirements receive. On Projects employees are able to see what each other is doing; redundancy is spotted; priorities are better managed. The result: requirements get rejected. This leads to cost savings in avoiding unnecessary work.	
Requirements that were rejected	75
Percent of these, which had not been recorded and subsequently rejected, may have gone forward.	25%
Requirements that may have been implemented	18.75
Total team member days spent implementing each requirement - coding, testing, documentation, etc.	15
Total team days for all unstopped features	281.25
Cost Savings in Dollars	\$135,122



BENEFIT DETAILS CONTINUED

Catching requirements defects earlier saves you money in the end.

This last table shows the detail of the incremental cost savings by being more effective in reducing requirements related defects by using an RM tool versus without one.

Reducing the Cost of Requirements Related Defects		
Let's look at the cost savings in terms of fixing requirements-related defects. For this part of the model we'll use a few concepts also used in doing inspection ROI assessments (e.g. Ed Weller's "Calculating the Economics of Inspections").		
	Without RM Tool	With RM Tool
Requirements Implemented	500	500
% of requirements that result in at least 1 defect	50%	55%
Initial number of defects that come from requirements	250	275
Next, we estimate the number of requirements related defects removed prior to commitment to code, and the associated cost. A removal effectiveness of 50% means that of the total population of defects, 50% were caught and fixed. We'll assume that on average a defect at this stage can be found and fixed in 1 staff day. Changes that don't involve code are simply cheaper to make.		
Removal Effectiveness for this stage based on ballpark industry averages	50%	55%
Requirements related defects removed	125	151
Staff days expended to find and fix one defect at this stage	1	1
Cost of defect removal before defects are committed to code	\$60,054	\$72,666
Next, we estimate the number of requirements related defects removed from the code itself (e.g. unit, integration and system test) and the associated cost. The calculation starts with the number of defects that remain undetected and unfixed from the previous stage. Because we are now dealing with code, the cost of finding and fixing a defect rises from 1 staff day per defect to 5.		
Remaining Requirements	125	98.75
Removal effectiveness for this stage based on ballpark industry average	80%	85%
Requirements related defects removed	100	84
Staff days expended to find and fix one defect at this stage	5	5
Cost of defect removal from code, prior to commercial release	\$240,217	\$201,632
Finally, the cost of defects shipped with the product to the customer. At this stage "finding" the bug is not so much a factor in the cost; the customer does that for you! Here, the cost of defects is determined by factors such as customer support calls, loss of sales from unhappy customers, and, of course the increased cost to patch software in the field. The cost of defects at this point will vary greatly depending on the industry, safety-critical products being an example where the cost can be very high.		
Defects remaining that slip through to the customer	25	15
Staff days expended to fix one defect at this stage	15	15
Cost to support and fix remaining defects in the field	\$180,163	\$106,747
Total cost savings from catching defects earlier with RM tool		\$99,390

CONCLUSION

A Web-based RM tool will pay for itself in the first month.

By delaying the implementation of a requirements management solution, you risk losing over \$25,000 in incremental cost savings each month – which means a Web-based requirements management tool like Contour would pay for itself within the first month of use.

For nimble, innovative companies dealing with thousands of requirements, a specialized tool provides a centralized corporate record of all requirements and related items, across projects and throughout any scope changes or staffing changes. As the ROI analysis illustrates, it's simply not as practical to use a traditional document-oriented approach.

For more information about this model or for other RM resources, please contact John Simpson at jsimpson@jamasoftware.com or 503.802.4250

ABOUT JAMA. PEOPLE AGAINST PROJECT FAILURE.

This ROI analysis was done by Jama Software, a team of experienced project management, product development and technology professionals who believe in taking a collaborative, team-based approach to requirements management. Jama is dedicated to building powerful yet easy to use Web-based applications that help companies build great products – delivered on time, on budget and meet customer needs. To learn more, simply call, email or visit us online.

PRODUCT



FORUM



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