



THE VALUE OF RM IN A DOWN ECONOMY:

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

Conceptually, requirements management 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.

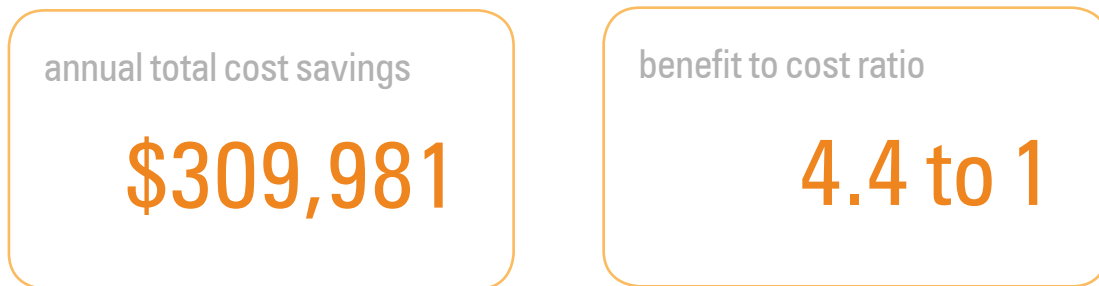
What's the tangible cost savings that an RM solution could deliver to your company? What's the risk if you delay the investment in a tool? What's the difference if you just use Word or Excel to manage requirements instead of a specialized tool?

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.

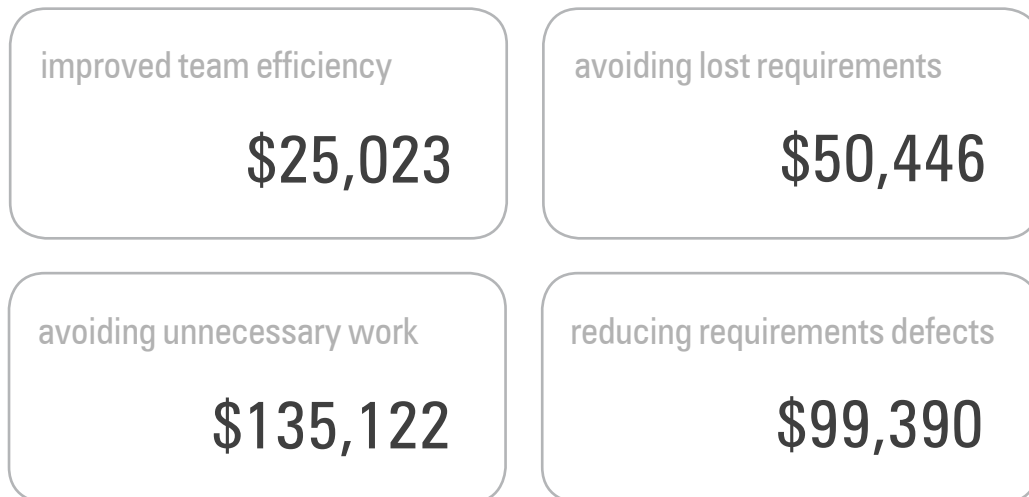
Requirements management is a smart investment.

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



Cost savings breakdown



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



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 fields are variables adjust to accomodate your company. We took a conservative estimate in the analysis for total # of requirements, % implemented in the first year and average salary.

RM Solution Investment	
Contour for 10 named users with full editing rights	\$10,000
Collaborator licenses for read-only stakeholders	\$0
Installation & configuration services	\$2,000
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 & 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 and training materials	10

Project information	
Total number of requirements entered into Contour in first year	2500
Number of requirements implemented in 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 up-front costs such as training, server and software license costs incurred only in the first year, and thus the ratio will improve over time.



There are costs to take into account for your team's time and 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
Overhead costs associated with using an RM solution	
Overhead in minutes per requirement to use tool beyond using Word or Excel	5
Requirements entered in Contour	2500
Staff minutes	125000
Cost for overhead	\$12,511

We account for the added rigor in requirements management that we ask teams to make. For example, requirements that would otherwise not be recorded, or recorded on a whiteboard in an office, are now entered into a centralized digital record. This increase 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 below.

Added cost for additional rigor & review	
Requirements implemented this year	500
Average time to implement a requirement (minutes)	5
Requirements per person	12
Number of team members that use requirements for direction in their work to plan, develop, test, create user documentation and training materials	10
Staff hours	417
Total cost	\$25,023
Requirements captured but not implemented	2000
Requirements per hour per person (not currently being implemented)	60
Number of team members that use requirements for direction in their work to plan, develop, test, create user documentation and training materials	10
Team hours	286
Total cost	\$17,158
Cost for added rigor and review	\$42,181



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. We begin by calculating the savings realized from staff on projects having an 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 & develop training materials for a product.

This part of the model isn't about doing a better job; it's about doing the same job efficiently.

Team efficiency cost savings	
Requirements implemented this year	500
Number of team members working daily with requirements	10
Time (minutes) saved because document requirements are available in a Web-based, central repository	5
Total savings in minutes	25,000
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
Percent 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)	.75
Staff days lost to rework	105
Cost savings in dollars	\$50,446

One of the benefits of a company wide requirements management tool is the increased visibility that requirements receive. On Projects employees can see what one another are doing, spot redundancy and manage priorities. The result: requirements get rejected. This leads to cost savings in avoiding unnecessary work.

Avoiding the cost of unnecessary development work	
Requirements that were rejected	75
Percent of these, which had not been recorded and rejected, may have gone forward	25%
Requirements that may have been implemented	18.75
Team member days spent implementing each requirement (coding, testing, etc)	15
Total team days for all unstopped features	281.25
Cost savings in dollars	\$135,122



Catching requirements defects earlier saves you money in the end.

This last set of tables 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. The first shows 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 inspection of ROI assessments.

Reducing the cost of requirements related defects	Without RM tool	With RM tool
Requirements Implemented	500	500
Percent of requirements that result in at least one 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 industry avg	50%	55%
Requirements related defects removed	125	151
Staff days expanded to find & 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	98.5
Removal effectiveness for this stage based on industry avg	80%	85%
Requirements related defects removed	100	84
staff days expanded to find & fix one defect at this stage	5	5
Cost of defect removal from code, prior to 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! The cost of defects is determined by factors such as customer support calls, loss of sales from unhappy customers and the increased cost to patch software in the field. The cost of defects at this point will vary greatly depending on the industry.

Defects remaining that slip through to 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

About the Author



John Simpson, Director of Customer Outreach & Marketing

John represents the voice of the customer in Jama's product strategy and communications. He has over 14 years experience working at software and Web technology companies including Microsoft, WebTrends, Omniture and ZAAZ. He has contributed to several books, whitepapers and presentations on marketing and technology.

About Jama Software

Thousands of users worldwide. Billions in R&D projects managed within Contour.

Jama Software is the leader in collaborative requirements management solutions for improving enterprise collaboration and managing complex software development projects. Its Web application, Jama Contour, helps organizations manage the entire requirements management lifecycle through an intuitive, easy-to-use interface that brings people, process and data together to ensure software quality is delivered as specified.

Customers, from agile start-ups to the largest and most sophisticated technology and IT organizations in the world, turn to Jama to help drive innovation, improve the decision-making process and harness the collective genius of all stakeholders involved in building great software. For more information please visit: <http://www.jamasoftware.com>.