

Ditch the documents and spreadsheets

*Manage requirements efficiently and more accurately
with IBM Rational DOORS Next Generation*



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Introduction

Did you know that poor requirements management is among the significant contributing factors in the failure of a project? Improper requirements management can lead to disconnected teams, wasted time, out-of-control costs and unhappy customers. If you use documents, spreadsheets, emails, wikis and other tools to keep track of your business, customer or product requirements, you could be putting your project at risk.

Have you ever forgotten to notify all the people that needed to know about an update? Have you ever been in a meeting where the wrong version of a document was given out for review? Have you ever had to merge multiple versions of feedback into a single document or had to take time to listen to people who were giving the same feedback?

Managing requirements is difficult with conventional office and productivity tools because they lack some key capabilities. Successful requirements management includes the ability to capture relationships and manage dependencies. For example, you should be able to show how features that are being built relate to capabilities that customers have requested. Multiple teams must be able to collaborate in real time. And, handling versioning and change management is crucial. When you try to manage requirements without these capabilities, the results can be lost productivity, project delays and higher costs. Using productivity tools for requirements management is like using a hammer to open a bottle. It gets the job done, but at what cost?

By contrast, IBM® Rational® DOORS® Next Generation offers effective requirements management capabilities. These capabilities have helped IBM clients:

- Reduce development costs by 57 percent.
- Accelerate the time to market by 20 percent.
- Reduce cost of quality by 69 percent.¹

This paper identifies five key benefits of the requirements management capabilities provided by Rational DOORS Next Generation that enable you to do what cannot be done with documents, emails and spreadsheets. These capabilities include requirements capture, elaboration and management. Another key capability is collaboration between teams, whether they are local or globally distributed. The benefits are:

- Live collaboration
- Consistency
- Traceability
- Understanding change
- Making your data work for you

Numbers don't lie

IBM clients have used Rational DOORS software to reduce development costs by 57 percent and costs of quality by 69 percent, while accelerating the time to market by 20 percent.

Benefit 1: Live collaboration

Documents, spreadsheets or email can cause no end of headaches when you work with others, even if they are in the same building, and especially if you are part of a globally distributed team. Many tools create “information islands” that make it difficult to find, relate and use this information. Teams spend too much time searching for the latest information, reviewing documents and consolidating changes. And, although they might think they have the most up-to-date information, they often lose time gathering, reviewing and combining it. As a result, requirements might be weeks out of date or missing vital changes.

With productivity tools, multi-user editing is difficult and almost impossible to manage. Consequently, several versions of the document might circulate throughout the team. The owners of these documents must consolidate changes, maintain an updated copy and inform teams about the changes. Rational DOORS Next Generation, by contrast, offers automated requirements locking. Several people can work on the same information at the same time and collaborate wherever they are located. The latest information is available for the team to access when they need it.

With Rational DOORS Next Generation your team can collaborate more easily. After a document is ready for interested parties to review, stakeholders can use Rational DOORS Next Generation to discuss and collaborate by commenting directly in the document. Important decisions and discussions are available to the team. No time or effort is wasted by chasing down emails or making, consolidating and responding to similar comments. With Rational DOORS Next Generation, comments can be directed to team members and classified as major or minor, so the important things can be handled first by the right person. As people make comments, Rational DOORS Next Generation can send email notifications, including a hyperlink that enables users access to just the information they need. Review cycles are shortened and collaboration is improved even when different time zones are involved.

Keeping stakeholders informed and engaged is critical. With Rational DOORS Next Generation, the team is identified and automatically in the loop. Along with email notifications, Rational DOORS Next Generation has dashboards so users can see the most important information as soon as they log in to this web-based application. Dashboards include the team members, project timelines, changes that have been made and any ongoing reviews and comments. Rational DOORS Next Generation acts as a “single source of truth” and enables interested parties to access the latest information automatically.

Benefit 2: Consistency

Project data can get very complex. Teams have a need for relevant information to be organized logically and consistently.

With Rational DOORS Next Generation, a project team can set up templates that outline the basic structure of the information. For example, a system requirements template can include boilerplate text for the introduction and areas for functional and non-functional requirements. In addition, each type of information can be “templated” with the appropriate annotations that must be collected. For example, system requirements are kept in a system requirements specification that includes all the appropriate annotations, such as cost, risk or priority, along with any additional information they might need.

By contrast, document tools cannot annotate requirements specifications without adversely affecting the original structure and context. Even when requirements have been annotated, sorting or filtering documents based on these kinds of information and determining which annotations are missing is not possible. Eventually, someone must clean up the documents and remove the annotations. Word processing users often resort to copying requirements from their documents into spreadsheets and then adding separate columns to annotate them. When the documents are updated, the users must manually synchronize the changes for all documents and spreadsheets. These manual processes are often time consuming, they don't scale and they can introduce errors into the process.

Team members undertake heroic measures to consolidate, understand and monitor status. Then, they make decisions based on this information. Unfortunately, if the data is error prone, it cannot be trusted and the project is put at risk.

With Rational DOORS Next Generation, the team can access the latest information when they need it. The format of the original document is preserved. If required, annotations, such as priority, risk, status and category, can be displayed in columns. The contents and annotations can be sorted and filtered. You can also save views, which enables you to change the perspective of your data quickly and display just the information you need. Analysis is quicker and the information you use is more consistent and accurate.

Benefit 3: Traceability

Spreadsheets are often used to add an additional dimension to requirements documents by storing needed annotations. Teams also use additional spreadsheets to capture relationships between requirements and tests. Verification matrixes, compliance matrixes and traceability matrixes then must be maintained separately. These manual processes do not scale and are prone to user errors.

In Rational DOORS Next Generation, users can “link as they think.” They can create relationships between new requirements and respond to higher level information simply by using a drag-and-drop feature.

DOORS Next Generation supports automation of the creation and maintenance of the relationships throughout the development lifecycle. This includes relationships between requirements, work items, architecture, design and test plans. It removes the “air gaps” between “information islands” that are the result of using different tools. Removing these air gaps reduces user errors.

These relationships can be displayed in columns, along with the requirements and annotations, which increases the visibility of the project status. The result is improved quality outcomes and better project management. Views can be saved, which enables the team to once again quickly change the perspective of the data to fit the needs of the stakeholder.

The real value of traceability provided by Rational DOORS Next Generation is evident when a project team must respond to an audit request or must understand the impact of a change request. Spreadsheet users struggle to maintain and later interpret the connections between different levels of requirements that are found in multiple documents and are related by yet another document in the form of a spreadsheet. Translating the compliance of the project activities to user requirements or assessing the impact of change becomes daunting. With Rational DOORS Next Generation, these challenges are avoided. You can record relationships as you see them and use rich hover to view details about the related information from your current document without having the need to navigate away.

When necessary, the relationships are traversable, which enables teams to quickly navigate from one document to the other. Views that display related information in columns can highlight gaps whereby user requirements were dropped or are not related to lower level requirements or final product. They can help identify scope creep, whereby functionality that does not align with the project goals or business needs is added to the work, which uses up valuable time. Because you can see the requirements and multiple levels of relationships graphically, you can more easily and quickly assess the impact of change. And, when required, you can demonstrate what is needed during an audit without having to search for multiple documents and team members.

Traceability in Rational DOORS Next Generation is dynamic. As soon as someone else makes changes in the tool, an update is immediately created. If a downstream requirement changes, it automatically shows up in traceability columns for the upstream requirements. Users have access to an up-to-date traceability matrix whenever it is needed and can also see what impact the change has.

Benefit 4: Understanding change

A difficult period in a project is after the initial requirements have been written and agreed on. All parties are happy and go on their merry way to work on the initial set of requirements. Inevitably, changes occur. Customers change their minds. A supplier is unable to meet an original target for cost or performance. An engineer or test reveals that what was planned is not possible. Or, more simply, a requirement already acted on is corrected.

Managing changes as effectively as possible is imperative. A change has two main steps:

- Understanding the impact of the change before it is made
- Ensuring that all impacted areas have been changed as necessary

Documents and spreadsheets cannot easily help you understand the relationships between pieces of information. If a test fails and a defect is raised or if a client issues an updated specification, a document or spreadsheet cannot analyze the impact. Instead, the individual responsible for the management of requirements usually spends weeks trying to understand the impact of change.

With Rational DOORS Next Generation, a user can create a perspective or view of their data. That view shows where their requirements have relationships to other requirements or information in other steps of the development process, such as test or design. Users can also explore graphically the complex mesh of information that can be used to understand the impact of change that spans multiple levels and even domains. This information is not static. It can be updated as soon as someone else makes changes in the tool. If a downstream requirement changes, it automatically shows up so users can see what impact the change might have.

With traditional tools, after changes begin, teams spend a lot of effort communicating these changes and ensuring that all impacted areas are addressed. Stakeholders and others want to know what changed, how it changed and if they must act on the change.

With Rational DOORS Next Generation, a full history is maintained every time a requirement changes. The team can access the history and determine what changed, who changed it and when it changed. Rational DOORS Next Generation also takes advantage of the relationships between information. Suspicion profiles alert users of a change, so they can review and act accordingly. After they assess the change, they clear the suspicion. If they make another change, a new suspicion is raised. With a minimum of effort, changes propagate down the levels of linked information in the project.

Rational DOORS Next Generation helps your whole team assess the impact of change before it happens, create a strategy for change and act on a required change.

Benefit 5: Making your data work for you

Documents and spreadsheets can limit the number of ways you can look at your data. For example, your customer might want their requirements structured as a document to simplify the review process. However, the finance team might want annotations in a table layout so they can estimate how much each requirement might cost. With spreadsheets, these alternative perspectives on the data require creating separate versions of documents. You must then maintain them or extract and consolidate them from a variety of sources every time reports are needed.

Rational DOORS Next Generation stores information in a central location and presents it in the format of a document. Users can add attributes to individual statements without changing the original structure, and they can filter and sort information based on the supporting characteristics. Rational DOORS Next Generation automatically maintains cross references and relationships between information so you don't have to. It also tracks change and alerts people of change that they might need to act on.

Best practices for writing clear, unambiguous requirements that can be verified can help alleviate project complexity. To avoid ambiguities caused by overused terms, many projects now include glossaries. With Rational DOORS Next Generation, the glossary is accessed from a document. You can search or update terms and even update the glossary from the document when they are introduced.

With Rational DOORS Next Generation, all this information can be pulled at almost any time. Views can be created that fit the need of the stakeholder, whether he or she is interested in compliance, gap analysis, cost, test outcomes or something else. Views are dynamic and current, and they change as your project changes. Manually pulling and consolidating information from multiple sources and purposing documents for different audiences are eliminated. The views of Rational DOORS Next Generation do that for you. Views are accessible from dashboards or they can be printed.

With Rational DOORS Next Generation, you spend time working on your project, and the tool makes the data work for you.

Migrating from productivity tools

Moving from documents and spreadsheets is easier than you think. You can take your ordinary documents and import them into Rational DOORS Next Generation.

Although Rational DOORS Next Generation is designed to give your documents additional depth, the original overall structure is maintained. Headings are imported and the hierarchy remains the same. Rational DOORS Next Generation provides expandable and collapsible sections to ease navigation. Images and tables are imported. Requirements are identified by keywords or delimited text, and they are associated with specific information types with a predetermined set of attributes.

If you import multiple documents, you can use drag-and-drop linking to relate your information. From that point on, your links are consistent. Turn on suspect profiles to monitor changes to linked information and automatically alert teams that related items have changed and that they should check the validity of their work.

Conclusion

Use the right tool for the job. With Rational DOORS Next Generation you can work smarter rather than harder. The right people can view the right perspectives of the data for their roles at the right time. Spending weeks to manipulate mountains of documents and spreadsheets to see things the way you want can be a thing of the past. You spend time working on the important details of your project, and the tool handles the repetitive and time-consuming tasks.

Rational DOORS Next Generation enables you to control your project. You can focus on important tasks, such as building and designing, without having to worry about your data, errors, silos of information or manually recording every change in multiple documents and spreadsheets. You can work faster and respond more quickly with increased traceability and impact analysis. Updates are automatic and immediate and you can trace your changes and requirements with dashboards and visible relationships. Your whole team, no matter where the individuals are located, can collaborate to assess the impact of change before it happens, to create a strategy for change and to act on a required change.

Open the door to success. IBM Rational DOORS Next Generation is your solution to a smarter project. IBM clients have used Rational DOORS Next Generation to enable effective requirements management that helped them reduce development costs and cost of quality, while accelerating the time to market. You could be next.

For more information

To learn more about IBM Rational DOORS Next Generation, contact your IBM representative or IBM Business Partner, or visit the following website:

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Route 100
Somers, NY 10589

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