



WHITE PAPER

5 Ways to Bring Quality Software Products to Market Faster

Introduction

Documenting and sharing requirements and changes among product development team members can be complex and costly when traditional, manual methods are used.

Requirements management software, however, can deliver an integrated product development solution that automatically manages complex relationships and artifacts, giving your team members the clarity and visibility they need to bring high-quality products to market faster.

When properly implemented, the value of effective traceability can be significant. For example, imagine if every stakeholder on your development team:

- Had the ability to find the origin of each requirement and track every change that was made to the requirement.
- Received information relevant to the context of his or her role in the development process—and could be prompted to act, as needed.
- Could collaborate more effectively, be notified automatically of changes, and reuse approved content to reduce risk.
- Could stay focused on core tasks and requirements, to keep the development process moving efficiently.

Let's take a close look at how an integrated product development solution can link every relationship, every change, and provide instant visibility into your data.

The Challenge: Increasing Time to Market

Product development often requires continuous input from multiple sources, including stakeholders. All information and design control documentation must be managed efficiently to help bring products to market quickly and profitably.

As you design new products, multiple activities must be tracked, documented, and responded to by stakeholders. These artifacts include requirements, specifications, risk analyses, test cases, test records, issues or problems, customer complaints, feature requests, source code, and a variety of other development assets. Tracking artifacts in disparate systems or with isolated tools, like Microsoft Word or Microsoft Excel, is labor-intensive and can bog down the entire development process.

To compound the challenge, it is common for each stakeholder group to store and manage information in different ways using different tools. The requirements team might be using Microsoft Word documents, the testing team using spreadsheets, and the development team using yet another system. This results in an inability to quickly and easily find and analyze data and information.

The Need: Improved Visibility into Data and Information

There is a great need for managing information in a way that simplifies the ability to share and tightly link data in the product development process. For instance, there are times when you only need to capture a bird's eye view of your entire project, or maybe just the contextual meaning of a particular link. Perhaps you'll want to produce quick, high-level status reports for senior managers that show which system requirements do not have test cases associated with them, which requirements are complete, or the costs that will be incurred as the result of a change.

At other times, you may require greater detail. You'll want the ability to quickly drill down into your development project to see how every artifact is linked together, or to view specific information about an individual requirement.

The Benefits of Integrated Traceability

Effective traceability allows you to document the life of the product development process, so that every development artifact can be easily traced all the way back to the originator of the initial request.

By creating relationships and links between development artifacts, a fully integrated product

development solution allows stakeholders, managers, and regulators to quickly review, from a high level, every action and decision within the product development lifecycle—or drill down to detailed information, as needed.

Rather than manually tracking and linking artifact relationships using Microsoft Word, Microsoft Excel, or other disparate systems, an automated product development management solution will trace every relationship and artifact change all the way back to the original requirement, and provide instant visibility into your data.

From a compliance standpoint, an ideal solution tracks, relates, and verifies each step and activity within the development process. It helps organizations better monitor and analyze:

- Product development projects
- Verification and validation activities
- Internally validated IT systems

From a business-value standpoint, an integrated product development solution:

- Improves visibility and collaboration among stakeholders, reducing errors and duplication of effort.
- Provides managers with timely and accurate information they need to make informed business decisions and keep the development process moving.
- More quickly defines and mitigates issues and challenges to speed product development.
- Boosts performance and eliminates wasteful costs by improving efficiency in every area of your development process.

Ultimately, an integrated solution can help you bring quality products to market more quickly, safely, and profitably. However, you need to select the right product development solution—one that offers a mix of flexibility, functionality, and integration.

Five Key Traceability Components

Many vendors offer traceability tools and systems, and there are also many techniques for capturing and recording information. A strong traceability solution must be able to capture information that needs to be traced at different points in the process, share the information with the right people at the right time, and generate useful reports.

How do you decide which solution will help you accomplish those goals? By understanding there are five key traceability components and practices that are essential to driving improved business results.

1. CREATE DYNAMIC LINKS AND APPROPRIATE LINKING PRACTICES

First, you'll want to be able to import requirements into a traceable solution as early in the development process as possible. Even better is the ability to enter your requirements directly into the solution at the project's outset.

Beyond the daily management of requirements, though, it should be easy to link all artifacts. For the most basic links, you want to be able to review them in a backward or forward manner, so you can see related information all the way back to the original request.

But you'll also want the ability to create more robust links that:

- Support future impact analysis
- Provide gap and risk analysis
- Allow multiple requirement document relationships
- Verify associated test cases
- Provide proof that risk is identified and mitigated during the early phases of development

Given the number of links that are typically managed in a development project, an ideal solution should capture the detailed context of an established link along with its stated purpose or meaning. Instead of spending valuable time trying to understand the purpose of a link, stakeholders should be able to quickly understand the relevance of a change in a particular requirement to their area of responsibility.

Common product development link types include:

- Feature Implementation (feature request to a requirement)
- Related Document or Explicit Requirement to Requirement (requirement to specification, usually parent/child)
- Mitigated By or Risk Mitigation (requirement mitigated by risk item, like FMEA)
- Work Item (requirement or user story needs development work)
- Tested By or Requirement Tested By (requirement to test case)
- Work Item (user story needs a work item)
- Shared Test Case Steps (links test cases to share test steps)
- Test Failure (test case failed, need to create an issue for development)
- Needs Verification (issue needs to be retested and verified with test case)

Your solution should be flexible enough to adapt to your vernacular and match the types of links you want or need to report against. You'll also want the ability to enforce appropriate linking practices, which can help with future analysis and reusability of key data between artifacts.

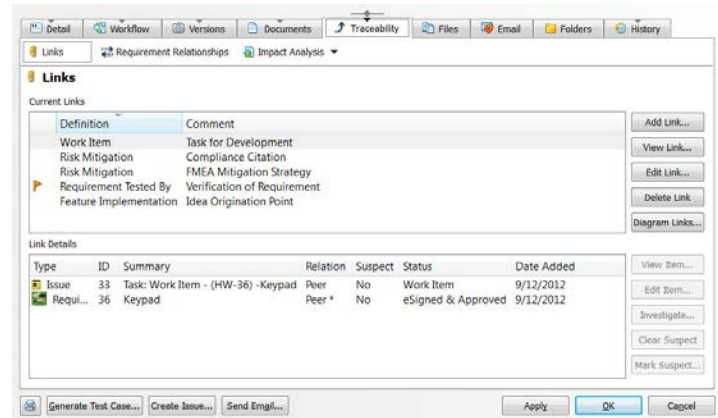


Figure 1: Requirement Links

2. AUTOMATE MANUAL PROCESSES

As product feature requests or ideas evolve into marketing or business requirements, they are usually distilled into product requirements, then to design and other technical specifications. Risk is also assessed during these early documentation stages. Once engineering begins working and conducting unit tests, verification testing generally also begins.

Regardless of the development methodology or process, specific actions usually need to be performed in sequence or in unison. With so many activities happening at once, it's challenging to track them manually—even if you're using a sequential Waterfall method. When changes occur, the risk of human error increases.

By automating tasks and processes, you improve:

- Document and requirement evolution
- Reusability of data downstream
- Traceability linking
- Business logic (workflow) process and compliance options
- Ability to capture objective evidence
- Report generation

Using an automated solution, you'll no longer need to manage the mundane tasks of remembering to trace, share data, capture required information, guide users to the next steps, send notifications, and escalate items so they don't go unnoticed. Most importantly, an automated solution will not forget to notify team members of changes or project failure.

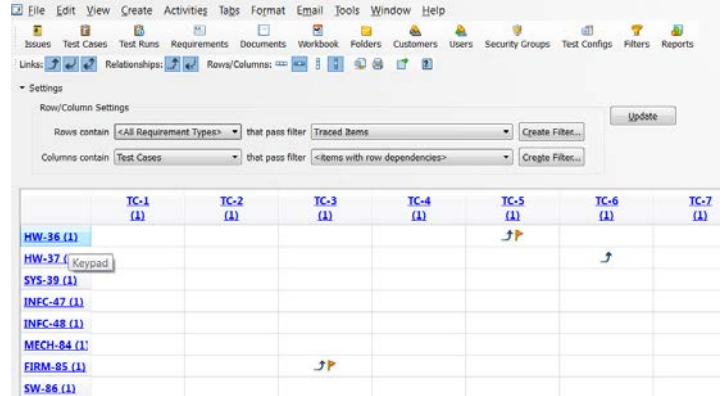


Figure 3: Analyze Traceability

To achieve instant visibility into your data, you should be able to access all your development artifacts from a single platform. This will allow you to quickly access the data and organize, analyze, and display data in multiple ways.

With this level of data visibility, you'll be confident that every team member is kept informed of the project status and that no one is working with stale data. Project stakeholders will no longer wonder what artifacts or other information they might be missing, and everyone will have more confidence when bringing products to market.

4. PROVIDE FLEXIBLE REPORTING

Because reporting needs can change over time, you'll want your solution to provide flexible and highly configurable reporting functionality. Most management and regulatory teams want assurance of good traceability, typically from an impact, gap, or risk analysis perspective. They may also want the ability to dive into the details of specific issues or people.

For external audiences, your reporting may be used for product submissions or to support auditing purposes. You'll want the ability to configure reports that present your data in the most clear and compelling manner.

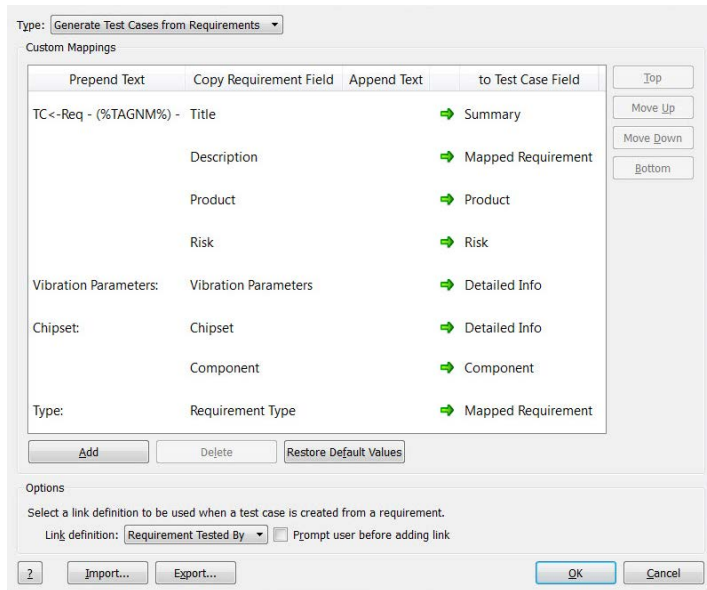


Figure 2: Item Mapping Rules

3. UTILIZE A SINGLE PLATFORM

Lack of visibility into product development data is a challenge faced by many organizations. Sometimes the data is stored multiple places, buried in documents, spreadsheets, or other sources.

For internal audiences, such as your management team, you may want to quickly generate high-level reports that provide daily status updates or analyze the cost of a particular change.



Traceability Matrix for Wysipump 2000. Report generated by HelixTeam. Lints on 11/10/12 at 1:02:23 PM. Table with columns: Marketing Requirements, Product Requirements, System Level Specifications, Test Cases, Test Runs, Issues.

Figure 4: Traceability Matrix Report

5. DEPLOY NEEDS-BASED SECURITY

Ensuring strong security is just good business practice—you want your product development solution to protect your intellectual property.

For example, if you work with consultants or third-party manufacturers, you want them to see only the information they need to complete their work. You'll want easy configuration to establish appropriate view and access rights, so users will only see the data and information they need to complete their work.

To give you total control over who can access data, your solution must include strong field-level security, allowing you to manage records and events and restrict users' ability to view, add, and edit data. You'll also want the ability to include electronic signatures, where needed, within the flow of your processes.

Helix ALM Security Group Report. Command Security, Field Security, Issues, Test Cases, Test Runs, Requirements. Table with columns: Add, Number, Tag, Title, Date Entered, Entered By, Importance, Description, State Abbreviate, Status, Has File Attachments, Has Source Code Files, Document List, Number Of Documents, Lock Reason, Is Shared, Creation Method, Created By, Date Created, Last Modified By, Date Modified, Currently Assigned To, Currently Assigned By, Currently Assigned Date, Closed By, Closed Date, All Test, All Event Notes, All Informational Event Notes.

Figure 5: Helix ALM Security Group Report

Get to Market Faster with Integrated Traceability

An integrated product development solution will introduce control and efficiency into your product development process—saving time, fostering innovation, improving quality, increasing product-to-market times, and reducing costs across the development process. It also removes the time consuming and error-prone task of manual traceability.

By giving your team visibility into your product development information and data, you can quickly and easily conduct precise analyses that allow you to make rapid, highly informed business decisions that will reduce costs and enable you to quickly deliver high-quality products to market.

Contact Perforce to learn how integrated traceability can benefit your specific development process, or for a demo of Helix ALM, our product development solution with strong, end-to-end traceability features.