Optimal Trace

Enterprise User Guide

Release 5.3

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CHAPTER 1

Introduction

This guide provides usage instructions for Optimal Trace Enterprise. To become familiar with Optimal Trace Enterprise, you should first review the glossary for product-related concepts and all of this Introduction chapter.

Optimal Trace Overview

Optimal Trace is a collaborative team-oriented requirements capture and management tool. It allows structured requirements capture, establishing a system's scope. It facilitates all aspects of requirements capture from drafting initial notes at a customer site through generating final requirements documents. It is designed for teams with the following roles Business Analysts, Systems Analysts, Project Managers, Test/QA engineers, Software Architects/Designers, providing:

- A user-friendly work environment
- An intuitive interface for capturing, viewing and managing customer requirements
- A sophisticated project collaboration tool - multiple analysts can work concurrently
- An ability to create projects from predefined or custom project templates
- An ability to generate requirements in a document format that is both comprehensible to the customer and unambiguous to Analysts, Project Managers and Developers working on a project
- A comprehensive report generation to HTML, commas-delimited and other formats
- A managed, concurrent working environment that is virtually transparent
- An access control for projects and project packages
- An automatic test generator for QA
- A baseline creation and management tool
- An automatic e-mail notification tool on project changes
- A comprehensive traceability tree with automatic detection of suspect links

- A powerful query and filtering mechanism
- A flexible document and text file import mechanism

At the fundamental level, the requirements-gathering paradigm is focused on two core constructs: structured requirements and simple requirements. Structured requirements directly and comprehensibly capture detailed functional requirements. This provides unambiguous specifications driven by business need for all project stakeholders. A single structured requirement is a strand of functionality proposed for a system. A collection of structured requirements can express the entire functional behavior of a system. For example, when writing the specifications for an online ordering system, formulate an individual structured requirement to satisfy each goal for the set of expected users. Typical structured requirements might be Browse Orders, Create/Edit Orders, and Login to System.

Structured requirements borrow much from the world of use cases, agile, and iterative concepts while still allowing the capture of non-functional operational and other requirement types as simple requirements. Optimal Trace is also designed to capture less-structured or simple requirements. For example, it is critical to express the number of concurrent users for the structured requirement Browse Orders, i.e. Must support 200 concurrent users. These non-structured or non-functional requirements generally fall into two categories:

- Qualities: expressing aspects that the system must satisfy such as number of concurrent users, security etc.
- Constraints: expressing hard realities such as type of infrastructure the system must run on, coding language required, browser versions to be supported etc.

These can be captured in Optimal Trace, either by associating them with individual structured requirements or by defining them system-wide as part of the over all project. Using refinement relationships allows for full traceability. As important as structured requirements are for defining functional needs, it would be a mistake to omit non-functional requirements such as scalability or throughput. Optimal Trace, by using refinement relationships for such requirements, allows complete traceability from functional to non-functional and vice versa. This traceability reduces the risk of incomplete requirement specifications.

Project and Functionality Overview

Each organized set of related requirements is contained in a project. Each project can have project level links to related resources. Additionally, each project has access to memoranda in the form of project level notes. You can also define a glossary and a list of actors (people or things involved) for each project. Each project contains a default requirement package, which cannot be removed but can be renamed. It is possible to create subordinate packages. These packages can be named, renamed, tagged, given a unique description, copied, moved, and removed.

The core business facing unit of Optimal Trace is the requirement. Requirements exist within the context of a package. Two types of requirements can be created in a project, simple requirements and structured requirements. Simple requirements are specifications you would like the system to support. A simple requirement can optionally contain one or more items. An item is information that supplements the simple requirement. For example, an item may contain a data type name and definition. Items may contain links to related resources, and custom

properties. Simple requirements also may contain links to related resources, custom properties, and notes. Each structured requirement can have links to related resources and its own set of notes, custom properties, and non-functional requirements associated with it.

The core unit of a structured requirement is the step, and a requirement can be comprised of none or many steps. Steps mimic the actions that you take to realize the goal or objective of a requirement. The series of steps, which realize the successful completion of the main function of the requirement, are collectively referred to as the Main Success Scenario. This could be your structured requirement's critical path. Any series of steps within the same requirement that provides an alternative path or solution to the main success scenario is collectively referred to as an Alternate Scenario. This is a contingency plan for when behavior may need to address exceptional situations. You may have any number of alternative scenarios in a requirement. Optimal Trace Enterprise allows you to branch from one step to another step either in the same scenario or another scenario. You can also branch from a step to an existing or new requirement, optionally creating the requirement in the branching process.

Optimal Trace allows you to refine a step or an item to an existing or new requirement, creating it in the process. This effectively links high to low-level requirements. This can be especially useful when comparing as is/to be requirements that are linked to a given step at a higher level. Optimal Trace allows you to link a requirement and all elements to an existing requirement or other artifacts either within or across projects. Optimal Trace provides you with a document profiles facility containing requirements document templates. Additionally, you can create your own profiles and templates. Use document profiles to tailor generated documents to your branding needs. Additionally, use the document profiles output to accept certain elements of the project. Optimal Trace allows you to perform the following additional functions:

- Move a requirement or sets of requirements to another package or project and move a package or sets of packages to another package or project.
- Copy and paste actors, glossary items, requirements, and steps among projects.
- Search and filter within and across projects.
- Use customized and Windows shortcut keys.
- Work collaboratively on a single set of requirements, always aware of the latest changes made by your colleagues.
- Work offline at a customer site and merge changes safely into the master requirements document when you return to the office.
- Use local and remote projects.
- Upload your local projects to the central repository.
- Version projects or apply baselines to projects.
- Generate test cases from business requirements.
- Spell check a project or part of a project.
- View project version history.
- Publish requirements to the web.
- Visually merge projects.
- Merge two versions of the same project.

- Merge a document into a project.
- Integrate with external test and design tools.
- Add non-Optimal Trace elements into the document.
- Reverse a document back into a project.
- Perform full round-trip engineering of Microsoft Word documents.
- Security enable projects.
- Import the contents of a text file or a Microsoft Word document into a project.

Screen Layout

When editing a project, a screen similar to the following appears. It demonstrates general project components that exist in the product.

Figure 1. Optimal Trace Main Screen
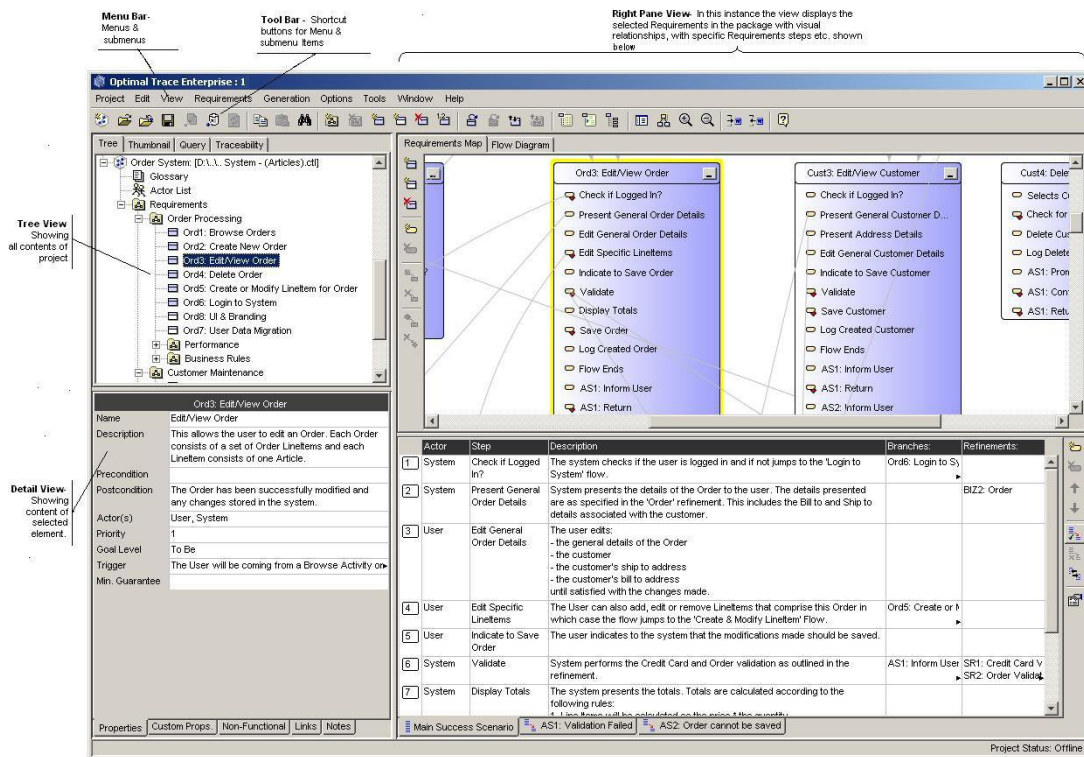
Optimal Trace is comprised of the following sections:

Table 1. Main Sections

Section	Description
Menu bar	Contains menus, submenus, and options that can be used when running Optimal Trace Enterprise. Click the options and sub-options as required. For many of the options in the submenus you will see icons, text, and

Section	Description
	shortcut keys. For example, to create a new requirement under Requirements in the Menu, you will see: • Icon. • Text - New Requirement. When the Requirements menu is extended, click [Alt+C]. This functionality is available on other options, too. • Shortcut key: [Ctrl+Shift+C].
Tool bar	Contains a list of frequently used items that can be used when running Optimal Trace.
Tree view	Contains a list of currently opened projects or project templates and their respective contents. A project contained in the tree is comprised of actors, glossary entries, packages collections, and structured requirements. Each entry in the tree is referred to as a node.
Thumbnail view	Contains a miniature of the requirement map view or flow diagram view.
Query View	Contains the list of queries and offers an ability to perform simple searches. Additionally, provides the ability to create, edit, and run queries.
Traceability view	Contains the **Traceability** tree. This shows relationships between projects and elements as well as flagging suspect links and relationships.
Details view	Contains details associated with the specific node selected in the tree view. For example, projects or requirements.
Right Pane View	Contains specific detail relevant to the node selected in the tree view. In instances where requirements or packages are selected, this area displays a map of related nodes (either the requirement map or flow diagram) and text associated with requirements.

NOTE

Click the edge of a column to adjust the width. Optimal Trace retains the width for all requirements in the package. There are two possible scenarios for column width retention:

- Example 1: open Requirement 1 in Package 1 and adjust the column widths. Open Requirement 2 in Package 2, and return to Requirement 1 in Package 2. Optimal Trace kept the changed width.

- Example 2, open Requirement 1 in Package 1 and adjust the column widths. Open Requirement 2 in Package 1, the widths set for Requirement 1 have been retained.

Optimal Trace Documentation

The Optimal Trace documentation set includes the following:

- Optimal Trace Release Notes (Enterprise, Enterprise Server, Professional)
- Optimal Trace Installation Guide

- Optimal Trace Enterprise Help

- Optimal Trace Enterprise Server Help

- Optimal Trace Professional Help

- Optimal Trace Administrator Help

- Customizing Exports and Reports Using Velocity Script

- Integration documents and Release Notes for each supported integration. Refer to *SupportLine* for Optimal Trace integrations.

Getting Help

If ever you have any problems or you would like additional technical information or advice, there are several sources. In some countries, product support from Micro Focus may be available only to customers who have maintenance agreements.

If you obtained this product directly from Micro Focus, contact us as described below. If you obtained it from another source, such as an authorized distributor, contact them for help first. If they are unable to help, contact us as described below.

However you contact us, please try to include the information below, if you have it. The more information you can give, the better Product Support can help you. But if you don't know all the answers, or you think some are irrelevant to your problem, please give whatever information you have.

- The name, release (version), and build number of the product.

- Installation information, including installed options, whether the product uses local or network databases, whether it is installed in the default directories, whether it is a standalone or network installation, and whether it is a client or server installation.

- Environment information, such as the operating system and release on which the product is installed, memory, hardware/network specifications, and the names and releases of other applications that were running.

- The location of the problem in the product software, and the actions taken before the problem occurred.

- The exact product error message, if any.

- The exact application, licensing, or operating system error messages, if any.

- Your Micro Focus client, office, or site number, if available.

Contact

Our web site gives up-to-date details of contact numbers and addresses. To connect, enter *www.microfocus.com* in your browser to go to the Micro Focus home page, or go to *http://supportline.microfocus.com*.

Licensing

Table 2. Licensing Options

This table describes licensing options for both Optimal Trace Enterprise and Optimal Trace Professional.

Option	Description
Evaluate Optimal Trace	Optimal Trace can be evaluated for a specific period of time without a license key. When you first run the product, you do not require a license. The evaluation period is calculated from the time of first usage, in other words from the initial running. Once this period of time elapses you must either purchase a full license or else apply for an extension key.
License the application fully or use an extended evaluation license key	Aside from the initial evaluation period as outlined in the previous section, Optimal Trace requires a license to run. It ships with a License Administration utility called the LAU (License Administration Utility). For full details on how to license Optimal Trace, please run the LAU and refer to the LAU help file under the **Help**.
Upgrading from a previous release	If upgrading from a previous release of Optimal Trace, you will need to install a new license.

References

- [1] Writing Effective Use Cases, Alistair Cockburn. 2001.
- [2] Unified Modeling Language (UML), `http://www.omg.org/uml/`

CHAPTER 2
Project Menu

Project Menu Overview

Use the Project menu to create, open, close, save, save as, upload, and download your projects. Additionally, the Project menu allows you open project templates, save projects as templates, and apply templates. You can create project baselines and be notified of changes to specific project elements. You can also save images of certain views of your project and you can export your project contents to structured text-based (CSV) outputs.

The Project menu also allows you to import project data from a Microsoft Office Word document or a text file into your project. If you are logged in you can change your password from the Project menu. Everything associated with a particular set of requirements is contained within a project. Each project consists of collections of packages, simple requirements, structured requirements, actors, glossaries, and a number of additional entities such as notes and links.

All projects are created initially from project templates. Using these in conjunction with custom properties allows you to provide sets of pre-configured properties that can be used for all your projects. Corporate standards can be encouraged and sets of useful information introduced from project inception across the enterprise.

NOTE

Beside containing sets of custom properties, project templates can contain specific pre-built project elements such as glossary items, packages, simple and structured Requirements, etc. You may want to consider creating templates of common flows that tend to recur across your projects. For example, login is a common repetitive flow.

Projects

To create remote projects, you need to configure Optimal Trace to communicate with an Optimal Trace Enterprise Server host. A local project is stored on your computer's hard drive. Only one user at a time can edit the local project. Local projects are stored as XML formatted text files. A

remote project is stored in the repository (an Optimal Trace Enterprise Server) and can be viewed and edited by multiple users concurrently.

Table 3. Project Types

Use the following table to decide which type of project you need:

Project Type	Description
Local	Create a local project if: • You do not wish to use any collaboration facilities within the project. • You want to quickly get up and running on the very early stages of a project and you are the only person modifying it. • You are working offsite or away from your office and have no access to your repository server.
Remote	Create a remote project if: • You want to use collaboration facilities within the project. • You have access to your repository server. • You want to secure the project using access control.

NOTE

It is common for users to initially create a local project and at a later point upload the project to the server. For example, if working to capture the business information in a JAD (Joint Application Development) workshop, initially capture the requirements directly into a local project. Using a projector to show the graphical flows and textual detail with the business stakeholders facilitates stakeholder agreement. When you have returned onsite or when you are connected with the server, upload the captured information and make it your baseline.

Project Templates

When creating a new project, specify a project template. Optimal Trace ships with the following project templates:

Table 4. Project Templates

Template	Description
Empty	This is an empty template meaning it does not have any predefined custom properties or project structure. This is the default when running Optimal Trace for the first time.
Business Process Template	Use this template when defining higher level business processes. This template contains the following custom properties: • Project: project scope, business stakeholders

Template	Description
	• Requirement: business priority (Bound and one of high, medium, or low) and business level (Bound and one of high, medium, or low), time, resources • Requirement Step: time, inputs (Bound and empty), outputs (Bound and empty) Note: Bound inputs and outputs are typically a set of predefined items. For example, PO, invoice, etc.
Feature Driven Development	Use this template as one approach when relating product/project features to detailed requirements. This template structures a project into two packages. The first package is Features with the tag FR denoting Feature Requests or Feature Requirements. The second Detailed Requirements with tag SR denoting Software Requirements. Capture your specific features in the features package as Simple Requirements and the related detailed functional flows as structured requirements in the second package. Use refinements to connect features to detailed requirements.
Optimal Trace - QADirector Integration Manual Risk Model Template	Use this template to integrate with *QA*Director projects based on a Manual Risk Model. This template contains custom properties that correspond to the Manual Risk Model custom attributes.
Optimal Trace - QADirector Integration QualityPoint Risk Model Template	Use this template to integrate with *QA*Director projects based on a QualityPoint Risk Model. This template contains custom properties that correspond to the QualityPoint Risk Model custom attributes.
Optimal Trace - QADirector Integration Standard Model Template	Use this template to integrate with *QA*Director projects based on a Standard Risk Model. This template contains custom properties that correspond to the Standard Risk Model custom attributes.
QA Template	Use this template when defining test requirements. Typically these requirements will link or trace back to business requirements. This template contains the following custom properties • Project: scope, out of scope, QA team, test schedule, test hardware, test software • Requirement: tester • Requirement Step: expected result, result
Standard Software Development	Use this template when defining requirements for typical software projects. This template contains the following custom properties: • Project: project scope, business case, project team, project schedule and risk/mitigation • Requirement: delivery increment (bound and one of increment 1, 2, or 3), business priority (bound and one of High, Medium, or Low), and tech risk (bound and one of High, Medium, or Low)

NOTE

You may want to change the default project template when creating new projects. Click **Options>General Options** to adjust the project template settings.

Creating Projects

Use this option to set up a new project. This is the first step in gathering requirements. Click **Project>New Project**.

Figure 2. New Project Dialog box
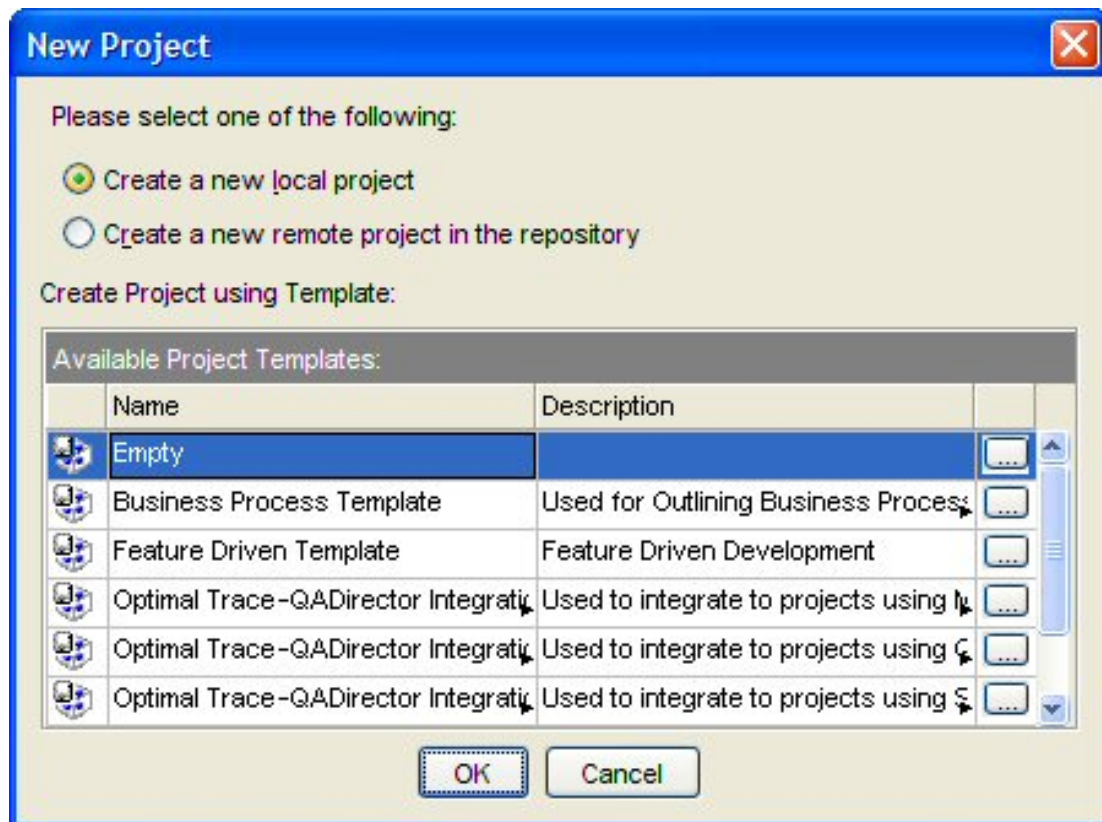
Opening a Project

To open a project:

1. Click **Project>Open Project**.
2. Check the **Open a remote project in the repository** for remote projects or **Open a local project** for offline (file based) projects.
3. Select the project you wish to open. To facilitate project selection, the dialog box displays the project name, project creator, project created on date, and project last modified date. You can sort these columns or hover over the project to view a description.
4. Click **Open**.

Optimal Trace allows multiple remote projects, local projects, or a mixture of both project types to load at any one time. If you open multiple projects, you can copy, cut, and paste artifacts such as requirements and actors between the various projects. After creating a Project, configure the details associated with the project, and specify properties, links, notes, and non-functional requirements. It is also possible to customize some project settings. Projects can be configured as security enabled meaning that permissions are applied to the project. Security enabled projects appear in the list of projects with a key icon next to them.

If attempting to open a security enabled project, the system prompts you to login. Enter your user name and password in the fields provided.

NOTE

- User IDs and passwords are case sensitive. Ensure that you are using the correct case if you are having difficulty when logging in.

- When new users are created, they are assigned the default password of password. Contact your Optimal Trace Administrator for more details. Refer to the *Optimal Trace Administrator Help* for more information on users.

Working with Remote Projects

Once created, a new remote project behaves exactly like a local project. The difference is that when you save changes, the changes are written to the repository rather that to a local disk.

About Deleting Remote Projects

You can delete remote projects in an Optimal Trace repository from the Optimal Trace Enterprise client provided that delete permissions have been granted. For more information, see Deleting Remote Projects [p. 21]. Additionally, you can delete remote projects from Optimal Trace Administrator. Refer to the Optimal Trace Administrator Help for more information about deleting remote projects and setting permissions.

Prior to deleting a project, consider doing the following:

- Taking the project offline as a precautionary measure in case you wish to recover that project at a later time.

- Making a backup copy in the repository.

Deleting Remote Projects

To delete a remote project from the Optimal Trace client, you must have delete permission set for the specific project to delete. Additionally, you can delete remote projects from the Optimal Trace Administrator. For more information, refer to the *Setting Project and Package Permissions* topic in the *Optimal Trace Administrator Help*.

1. Click **Project>Delete Project**.

   The **Delete Remote Project** dialog box appears.

2. Select the project to delete, and then click **Delete**.

A message box appears asking you to confirm the deletion. Click **Yes** to dismiss the message box and delete the project.

Closing a Project

Use this option to close your local or remote project. It will no longer appear in the tree view, but the project will remain in the repository or file folder. To close a project:

1. Click **Project>Close Project**. Prior to closing, if Optimal Trace detects that you do have unsaved changes, it will prompt you to save before proceeding.
2. Click either **Yes** or **No** to close.

Project Baselines

Project baselines are archived snapshots of a project. Every Baseline is associated with the originating project. Baselines are typically created when you are at a meaningful point in the project lifecycle. Subsequent changes in the project can be reviewed and monitored by using baselines.

Examples of key milestones where project baselines might be created are:

*   After completing the first or subsequent iteration of requirements with a customer
*   Before and after a review session with technical stakeholders
*   Before and after a group review session with the QA Team
*   After entry into the build phase
*   After final project delivery
*   For maintenance of delivered systems where there is alteration of behavior

The baseline feature supports review sessions and allows focus on changes that have occurred since the last or any other baseline. When creating a baseline, specify a baseline name and description. This enables tracking of specific baseline events.

Projects baselines can be created, can be compared, can be merged, can be deleted and can acquire permissions. If permissions are set, project baselines can be opened, edited, and manipulated in the same way as normal projects.

NOTE

All repository projects are baselined with a tag called *Latest*. This allows the current or latest project to be compared with any previous baseline.

Creating Baselines

To create a baseline:

1. Open a project. Since baselines are associated with repository based projects, ensure that you have a project open.
2. Click **Project>Baselines>Create Baselines**. The **Create Baseline** dialog box appears.

3. Type a name and description in the appropriate fields.
4. Click **Create**. You have created a baseline that is associated with this project and can be opened.

> **NOTE**
>
> If you need to baseline for a session where you will be working offline, there are two approaches you can take. You can first create the baseline when online, then take the project offline using Download. When merging changes into the repository, you can compare the before and after state using Compare Baselines... option. Alternatively, you can take the project offline, make any offline changes without having created an initial baseline. Before merging, create a Pre-merge labeled baseline. This allows you to compare all changes before and after the merge.

Opening Baselines

Use the procedure below to open a baseline. After the baseline is open, it can be used in exactly the same way as any project.

1. Click **Project>Baselines>Open Baseline…**. The current list of baselines appear. For each Baseline, the system presents the date the baseline was created along with the person who created it. If no baselines have been created to date, the list is empty.
2. Chose a baseline and click **Open**.

Deleting Baselines

You can delete project baselines in an Optimal Trace repository from the Optimal Trace client provided that delete permissions have been granted. Additionally, you can delete project baselines from the Optimal Trace Administrator. For more information, refer to the *Setting Project and Package Permissions* topic in the *Optimal Trace Administrator*.

To delete a baseline from the Optimal Trace Enterprise client, follow these steps:

1. Click **Project**>**Baselines**>**Delete Baselines**.

   The **Delete Project Baseline** dialog box appears.
2. Select the baseline to delete.
3. Click **Delete**.

   A message box appears asking you to confirm the deletion. Click **Yes** to dismiss the message box and delete the project baseline.

Comparing Baselines

Individual baselines can be compared to access the changes from one baseline to another. To compare baselines:

1. Click **Project>Baselines>Compare Baselines....** The **Compare Baselines** dialog box appears.
2. Select the baselines to be compared.

3. Click **OK**. The **Baseline Comparison** screen appears. For more information, see Baseline Comparison Dialog Box [p. 24].

Baseline Comparison Dialog Box

The **Baseline Comparison Dialog Box** consists of three panes. The **Compare** panes display two baselines of the same project labeled **From** and **To** and shows the differences between them in the **Differences** pane, which is located below the two **Compare** panes.

Any objects that exist in both the **From** and the **To** projects that have different attributes trigger a visual conflict. For example, two actors both called "User", that have different descriptions are flagged in the **Compare** panes and an explicit description of the difference is displayed in the **Differences** pane.

The following differences can occur between baselines:

- Objects can reside in the **From baseline** but not in the **To baseline**
- Objects can reside in the **To baseline** but not in the **From baseline**
- Objects can be common to both the **From** and the **To baseline** but can have different attributes

Figure 3. Baseline Comparison Dialog Box
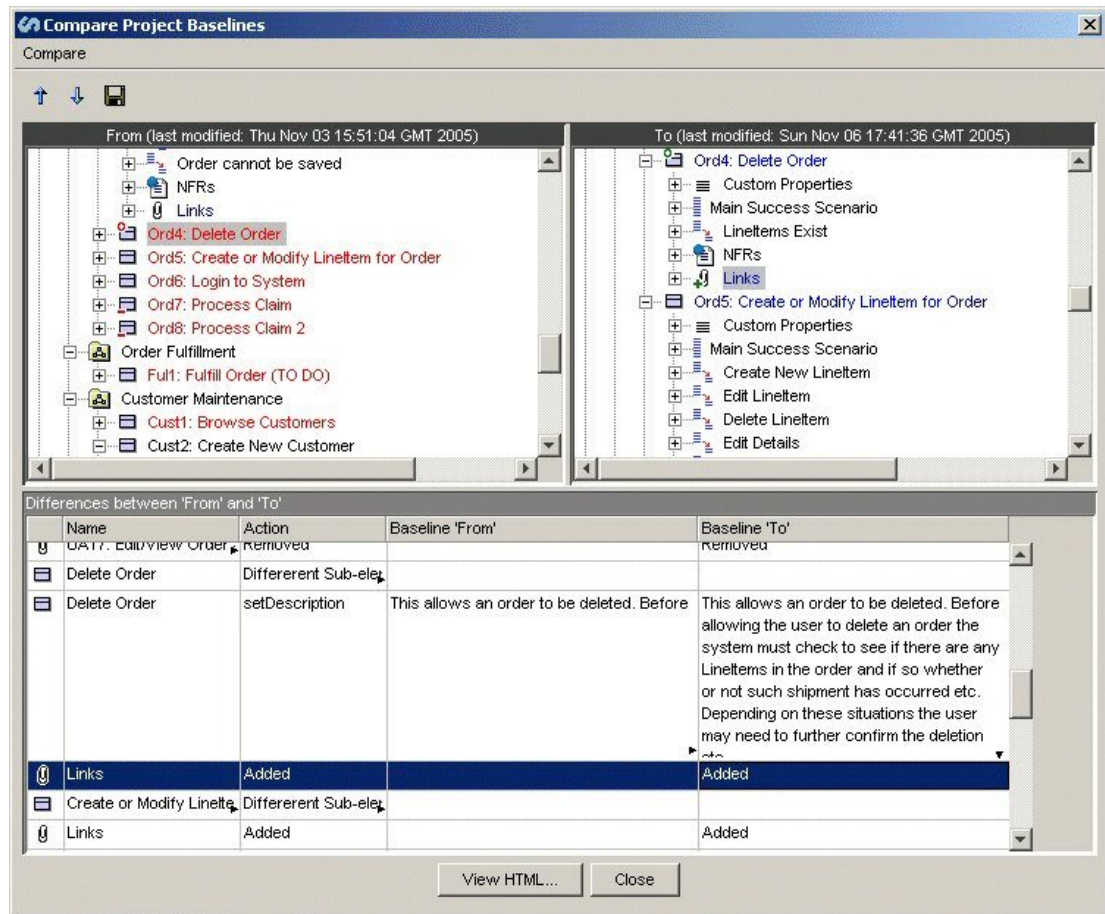
To move up or down between differences, use the **Up** and **Down** arrows. Selecting an entry in the **Differences** pane selects the associated entry in the **Compare** panes. Conversely, selecting an entry in the **Compare Baselines** panes selects the associated entry in the **Differences** pane.

When differences occur in the **Differences** screen, there can be a number of reasons. The following table lists the icons and their definitions. Additionally, it provides a description of Difference States when a specific button is enabled. Icons can appear in the From and To baselines in the normal tree view, without any adornments such as pluses or circles. In this instance, this signifies that an object of this type was found in each baseline and these were found to be identical, hence there is no difference between the two baselines.

Table 5. Baseline Comparison Differences Markers

The following markers appear in **Compare** panes to denote the type of difference between the two baselines.

Marker	Action	Description
	Removed	The selected element was removed from the baseline.
	Added	The selected element was added to the baseline.
or	Different sub-element(s) or a property difference	There are two scenarios when this icon appears: • The first scenario is that the change occurred when a sub-element was added or removed. For instance adding a new link to a requirement. • The second scenario is that the changes are at the property level. For example, a name or description changed in a package. In this scenario, the exact text of the change displays in the appropriate column. Additionally, the property that changed is reflected in the **Action** column.
or	Associated element has changed	Another element that is associated with this element has changed. For example, a step element is associated with an actor element.
or	Positional change	The position of the selected element has changed. Positional changes happen when elements are added or removed to an area where there are more elements after the specific element. For example, if step 4 were removed from of a total of 6 steps, a step positional change results. Positional changes also occur if an element is moved up or down.

It is possible to save the results in the third pane to a text file as well as generating a HTML view of the results. Click **View>HTML**... and then click **Open**.

The differences in the third pane display as a single HTML file.

NOTE

The HTML report can easily be mailed to colleagues for review. This allows you to mail a concise view of the differences. To access the HTML file, go to your Optimal Trace installation directory and find the file called `BaseLineCompareOutput.html.` The default installation directory is <Optimal Trace Install Root>\projects\reports.

To save the differences to a text file:

- Click **Compare > Save as...**
- Type a file name.
- Click **Save**.

Merging Baselines

To resolve the following issues, you can merge the differences appearing in one baseline into another baseline:

- There was information in a previous baseline that may have been subsequently altered or deleted but has become relevant again. For example, functional flows. In this case, the specific functional flows could be merged forward into the latest baseline.

- You want to adjust a previous baseline without having to re-baseline.

To merge baselines:

1. Choose **Project>Baselines>Merge Baselines**.

2. In the **Baseline From** list, select the baseline that you want to merge or include in another baseline. This is the source baseline and will not be updated with any differences appearing in the target baseline.

3. In the **Baseline To** list, select the target baseline in which to update with differences appearing in the source baseline.

4. Click **OK**. The **Project Merge** dialog box appears in which you can select elements to merge into the target baseline.

Notifications

Optimal Trace provides email notification of changes applied to any part of a given project. If changes are made, an e-mail is issued automatically from the Optimal Trace Enterprise Server.

NOTE

Projects must be secure before registering for notifications. For more about making projects secure, see the Optimal Trace Administrator Help.

Table 6. Change Notification Elements

Register for change notifications on the following project elements:

Element	Description
Project Level	Change to project attributes or constituent elements such as notes, etc.
Glossary	Change to any glossary entry, addition of glossary entries, or removal of glossary entries.
Actor List	Change to any actor entry, addition of actors, or removal of actors
Package	Change to the package attributes, addition of entries, or removal of entries.
Structured Requirement	Change to any level of the requirement.
Simple Requirement	Change to any level of the requirement.

For more information, see Registering for Notifications [p. 27].

Registering for Notifications

To register for notifications:

1. Select the element in the tree. If you select a package you can also have the option of registering for all the package sub-elements.
2. Click **Project>Notifications>Register for Notification**. You can alternatively right-click in the tree to access the shortcut menu.
3. Click **Yes**.
   A message appears confirming the registration.

- If registering for a package and if the package contains sub-packages and requirements, Optimal Trace prompts for a confirmation to register for these elements.

- If the server side SMTP mail settings have not been configured, a message appears. Contact your Optimal Trace administrator to have these set correctly. See the Optimal Trace Enterprise Server Help for more information on configuring SMTP mail settings.

Viewing and Unsubscribing from Notifications

It is possible to view the list of element(s) that have been configured for notifications. Additionally, it is possible to unsubscribe from notifications on any elements. To view or unsubscribe from notifications:

1. Click **Project>Notifications>View/Unsubscribe Notifications**. The screen displays the current subscribed project elements.
2. Uncheck one or more elements to unsubscribed from mail notifications on that element.

Saving Projects

Because the undo and redo memory is cleared after a save, you cannot undo or redo any actions you made before saving; however, any new actions perfomed after saving a project can be undone or redone.

To save a project:

1. Click **Project>Save Project**. If a project was previously saved, any changes made to the project are automatically saved without a confirmational message appearing. For new projects, however, the **Save** dialog box appears.
2. Type a name for the project in the **Name** field.
3. Click **Save**.

Saving a Project As a Different Name

Use this option to save a project as a different name. If a project is repository-based, Optimal Trace prompts you to enter only the name of the project.

NOTE

*   Use the save as option to archive repository projects. This creates a complete copy of the project in the repository.

*   The undo and redo memory is cleared after a save. Consequently, once a Project is saved you cannot undo or redo any actions you made before saving. Any new actions since saving can be undone or redone.

If the project is a local project (file-based project) Optimal Trace prompts you to enter the file name of the project.

To use the Save As option for both repository and local projects:

Click **Project>Save Project As**.

*   For repository projects, the **Save Project As** dialog box appears. Type a new name in the box, and then click **OK**.

*   For local projects, the **Save** dialog box appears. Type a new name, and then click **Save**.

Saving Projects as Templates

Create new templates either from existing projects or existing templates.

Using this option saves the currently loaded and selected project or template as a new template. Optimal Trace prompts for the template name and description.

Any custom properties and structural elements are saved forming the new template. The template is saved in the location specified in the **General Options** >**Default Directories**>**Project Templates Directory** option. For more information, see General Options [p. 103].To modify The next time a new project is created, the template appears as a template selection.

Applying Templates to Projects

Templates can be applied to existing projects or to other templates.

Applying a template to a project layers the custom properties and structural elements of the template on top of the destination project.

Consider applying templates if you have initially created the project from one template and at a later point you wish to layer custom properties and/or structural elements from a different template onto the same project.

NOTE

When applying a template, the custom properties in the destination project and any associated data is preserved if custom properties having the same name are encountered in both the template and the destination project. Additionally a message regarding the duplication appears.

Figure 4. Apply Project Template Dialog Box
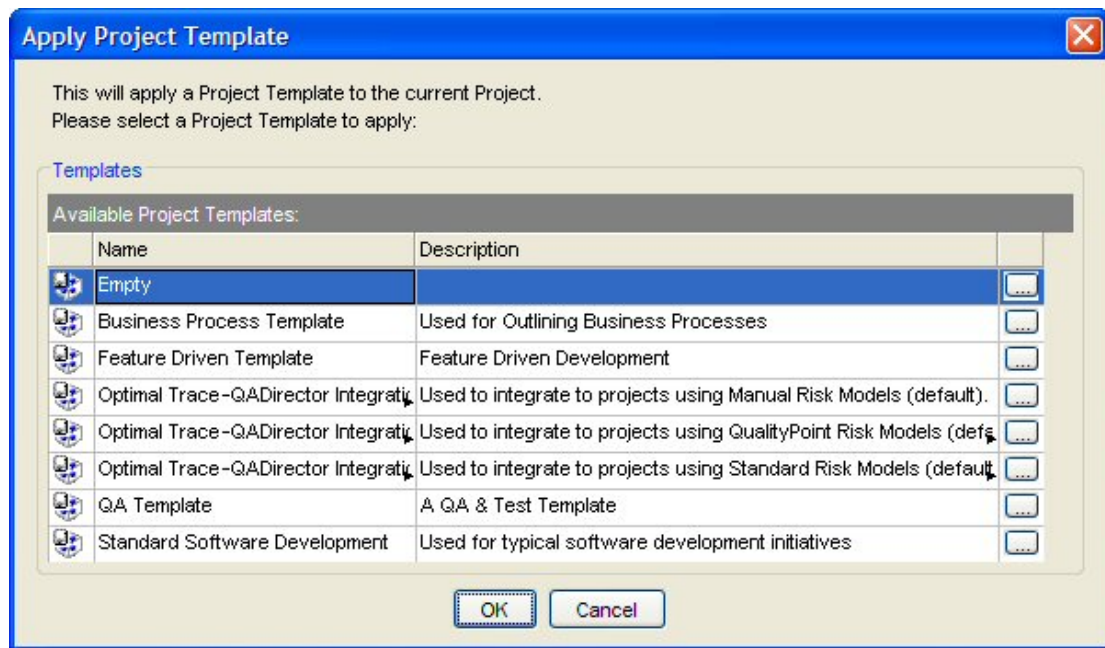
To view the details of a project template, click the **…** button next to the template on the **Apply Project Template** dialog box. The **Project Template Details** dialog box summarized the custom properties currently defined for the selected template. You can also open the specific template and navigate to its full set of data and custom properties.

Figure 5. Project Template Details Dialog Box
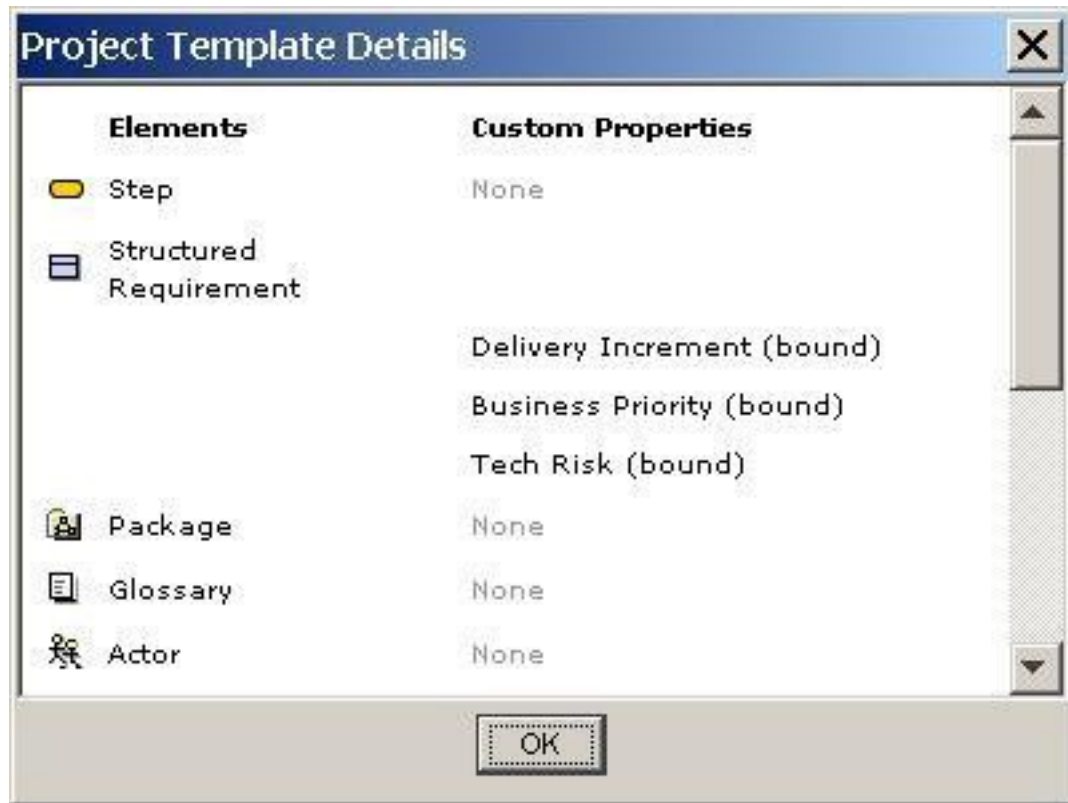
Opening Project Templates

Use this option to open an existing template to view or modify. A list of available templates appears. To view details for each template, click the **…** to the right of the template. After opening a template, the template indicator icon appears adjacent to the template name within the tree view. Since templates are specialized projects, all project level editing, reporting, etc. capabilities can be applied to project templates. Existing templates can be saved with another name. Create as many specialized templates as necessary.

Changing Project Password

If logged into a secure project that is not using Windows Integrated Authentication, you can change your password. To change the password:

Click **Project>Change Password**. The **Set Password** dialog box appears. Enter a new password in the appropriate fields and click **OK**.

Downloading a Repository Project to a Local Project

Downloading a complete copy of your project from the repository allows you to work disconnected from the repository. This is useful if working on site with your customer or at home where you do not have network access.

NOTE

Optimal Trace tracks that a project was downloaded from a repository project. When you return the project to the server by uploading it, Optimal Trace will automatically launch the project merge screen.

To download a project: click **Project>Download repository Project to local Project**. The **Save to File** dialog box appears. Optionally, change the file name and then click **Save**.

After the download completes:

• The project path displayed in the tree view points to the local file.

• The project behaves as a local project.

• The Project Status indicator at the bottom right of the screen will read 'Project Status: Offline'

• All subsequent Project changes are saved locally.

• A connection to a Repository Server is not required and you may proceed to work 'offline'. You may subsequently choose to go back online.

NOTE

Offline and Master Projects. Taking projects offline does not prevent other users from simultaneously editing the master version on the repository. By the time you are ready to put your changes back online and if other users have made conflicting changes to some of the same project elements in the intervening period, then the Visual Merge Tool is invoked. This allows you to compare two versions of a project and selectively accept or reject either the From or To version of every conflict. For more information, see Merging Projects [p. 122].

Upload Local Project to Repository

Use this option if you are either reconciling a previously downloaded offline project or if you want to transfer a local project to the Repository to begin working collaboratively.

Click **Project>Upload local project to repository**, and Optimal Trace will attempt to upload the file.

If the project was originally a repository based project that was taken offline for local access then the Optimal Trace Enterprise Server will detect this and invoke the **Project Visual Merge** screen. However, if this is the first time the project is being added to the repository then the project status will change from offline to online in the status bar and the project will now be converted into a repository project.

Exporting Projects

Use this option when exporting a given project to any text or structured format. Optimal Trace ships with a number of Export Profiles. Each export profile dictates the format of the CSV (Comma Separated Values) output file.

NOTE

When an export is created, Optimal Trace can also automatically insert a project level link to the generated file. If you do not wish to automatically create this link, uncheck **Add Report Link to Project** (locks the project).

Table 7. Default Export Profiles

Profile	Directory	Description
Text Export	...\projects\exports	Export to CSV (Comma-separated) Text File. Generates a report with all the Project details in CSV format. This report is especially good if you wish to output the content of Optimal Trace projects into text editing tools such as notepad or Excel spreadsheets. Since the output is delimited by commas, an Excel worksheet can open the output for manipulation.
MS Project Export	...\projects\exports	Generates a report with all the Project details in CSV format (comma delimited text). Using Optimal Trace supplied Mapping Rules this file may then be opened in MS Project.
Text Actor Usage Export	...\projects\exports	This report generates CSV based text files (comma delimited text). Generates an actor oriented text output with each actor and the steps it participates in. The intent of the report is to show what actors/resources interact with given steps within the Requirements and which steps have no actor currently defined. This is very useful for gap analysis and redundant actor identification. An HTML version of this export is available under the **Generation>Generate Reports…** menu option.
Text As Is/To Be Export	...\projects\exports	This report generates CSV based text files (comma delimited text). Generates a text output with e.g. current details for administrators (As-Is processes), and projected details for system developers (To-Be processes). The Goal-levels 'As-Is' and 'To-Be' that ship with Optimal Trace are used as discriminators for this export. An HTML version of this export is available under the **Generation>Generate Reports…** menu option.
OptimalJ XMI (UML)	...\projects\exports	This report generates an XML file, suitable for use with Compuware Optimal J. The output generated includes: a full listing of Requirements and each object's steps.
Enterprise Architect XMI (UML)	...\projects\exports	This report generates an XML file, suitable for use with Sparx Enterprise Architect. The output generated includes: a full listing of Requirements and each object's steps.

NOTE

Creating Custom Exports. Export Profiles rely on the velocity scripting engine and the Optimal Trace Plug-in SDK. Velocity ships with Optimal Trace. See *http://velocity.apache.org* for more details on the Velocity scripting language. See also the *Customizing Exports and Reports Using Velocity Script* Reference for more on velocity in general and building exports using velocity script.

Import Project

Use this option to import project data either from a text file, or from an existing requirements document in Microsoft Word.

Import Text File

This option permits the import of data from a text file into the selected project. This option is only available if one of the following project elements is selected in the tree:

- Select the Project to import Simple Requirements or Structured Requirements into the root Requirements Package.
- Select a Requirements Package to import Simple Requirements or Structured Requirements into it.
- Select the Glossary to import Glossary Entries.
- Select the Actor List to import Actors.
- Select a Structured Requirement to import Steps into it.
- Select a Simple Requirement to import Items into it.

For convenience, the **Import Text File** option is also available in the context menu for these project elements. Text files to import must have data arranged in fields or columns, with each field delimited by a special character such as a comma. Microsoft Excel CSV (comma separated value) files are saved in this format, and so this feature is ideal for importing spreadsheet data. Each row in the file is imported as a new project element.

Table 8. Import Text File Options

Option	Description
Import Into	Indicates the project element which will be the location for the imported elements. This is initialized with the selected item in the project tree. Use the **...** button to the right to change the import location. The selected import element will determine the kinds of element that can be imported according to the list above.
Text File	Specifies the text file to import. Type in the full path, or choose the **...** button to browse to the file.
Delimiter	Allows you to choose the character which delimits the fields in the text file. For Excel CSV, commas are used. Other options are period (.), tab and space. In the event that a

Option	Description
	different character is required, choose "Custom" and type the character in the text box to the right of the list.
First line is a header	Some text files have a first header line that names the fields. If this is the case, check this option, and when the import proceeds this first line will be ignored. Click the Next button to proceed to the next stage in the process (this is enabled when a valid file is selected) or click Cancel to abandon the process. After clicking Next, the mapping dialog appears. This dialog specifies how the fields found in the file should map to attributes of the project elements to be imported. Collectively, this set of mappings is called a map.
Map Name	Once a map has been specified, it is possible to save it using this drop-down box. Simply choose "< New >" from the option list, and specify the name of the map in the box which pops up. The name must be less than 20 characters in length, and shouldn't contain any punctuation characters. After a map has been saved in this way, its name will appear in the drop down, and it can be automatically retrieved and applied in subsequent imports. It should be noted that maps specify a particular type of project element, it is not possible to apply a map that specifies a type which cannot be imported in to the chosen "Import Into" location, and an error popup will occur if you attempt to do so.
Save	Click to save changes to the currently applied map. This is only enabled if the field mappings are changed after a map is applied.
Delete	Deletes the currently applied map. The field mappings are not changed.
Import As	Specifies the type of project element that each row in the text file represents. For most import locations, this drop-down is disabled as there is only one valid element type that can be imported. For example, if you choose to import into the Actor List, then the Import As drop-down will be disabled and only Actors will be imported.

Option	Description
Field Mapping	Shows the fields found in the file and the element attributes that they map to. If "First line is a header" was not checked in the import dialog, then the first column will name the fields "Field 1", "Field 2" etc. If "First line is a header" was checked, then the values of the first line will be read and listed in this column instead. For each field you must choose an appropriate attribute to map to from the "Maps to" column. Each cell in this column is a drop-down from which attributes of the "Import As" element type can be chosen. A special "Not Mapped" option (in italics) allows you to specify that the data in this field should be ignored. Other choices are either in bold or regular font. Bold specifies that one field must be mapped to this attribute, regular font indicates that one field may be mapped to this attribute. You cannot map more than one field to the same attribute, if you try to do this an error box will inform you.
Import	Enabled when all of the required attributes are mapped (i.e. the bold options in the "Maps to" list). It processes the import and displays a progress bar.
Cancel	Cancel the import and return to the main window.

NOTE

- When importing steps, it is possible to map a field to a scenario name. If that scenario does not exist in the requirement, it is silently created.

- Likewise, for steps, the actor attribute may be mapped. This will silently create actors if they do not exist already. In the same way Structured Requirement goal levels may be silently created.

- If the element type being imported can have custom properties, they will appear in the drop-down "Maps to" option list. If a mapping for a custom property is specified, and the map is saved and applied later to a subsequent import for which the custom property is invalid, the custom property mapping is ignored. Custom property bound values will be silently created as they are encountered in the file.

- The Field Mapping table lists the fields found in the file. This is determined by the first line in the text file only. Make sure the first line contains the correct number of fields.

- As lines are processed, only the first line's number of fields will be used. If there are more fields on a line than found on the first line, the extra fields are ignored. If there are less fields than found on the first line, the missing values are assumed to be blank.

- If a field on a specific line found or determined to be blank maps to a bold attribute (e.g. Actor Name) then the value will default to "Unknown".

- If an element to be imported has the same name as an existing element, then a copy is created, the existing element is not overwritten. For example, if an actor "System" is imported, then actor "Copy of System" is created.

- While importing, a progress dialog appears with a Cancel button. Pressing cancel stops further imports, any imports already processed will remain. To undo imports, either us the undo facility, or do not save the project.

Import Microsoft Office Word Document

Use this option to import project data from a Microsoft Office Word document. This is useful if you would like to extract data from an existing requirements document developed outside of Optimal Trace. Because such documents can have a wide variety of formats, Optimal Trace does not mandate any particular document style. Instead, Optimal Trace includes a tool by which you can annotate or markup a document indicating which parts should be associated with which project elements.

To import a Microsoft Word Document:

1. Open the document through Optimal Trace.
2. Mark up document regions as project elements using the **Doc Import Markup tool**.
3. Import the document and merge the marked elements with the open project.
4. Repeat step 2 to fix any errors or omissions.

Open the Document to Import

The **Import Word Document** option is only available if an existing project or project element is selected in the tree. On choosing the option, a standard file chooser dialog appears prompting for the document that should be imported.

Navigate to the document to import and click **Import**.

Mark up the document

After choosing the document, Microsoft Word is launched, and the document is loaded up. A special window called the Optimal Trace Markup tool appears floating over the document. This wizard-like tool is a Word add-in that is used to add the markup annotations to the document. These are special Microsoft Word comments that Optimal Trace recognizes when the document is subsequently read by the merge process. Comments must be added by using the markup tool. If they were added in error, or need to be altered they can be removed using the tool, or by deleting them directly in Word.

To mark a project element, comments must be added to the document to mark:

- The element start

- The element end

- Each element attribute

The following dialog boxes facilitate marking up the document:

- Specify the type of project element to be marked up using the **Element Chooser** dialog box.

- Mark the boundaries of the element using the **Start/End** dialog box.

- Mark the attributes using the **Attributes** dialog box.

- For advanced use, the **Find Similar** dialog box is available to guess the locations of other elements or attributes in other parts of the document based on one that has already been marked up.

Element-Chooser Dialog Box

The following figure and table describe the features of the **Element Chooser** dialog box:

Figure 6. Element Chooser dialog box
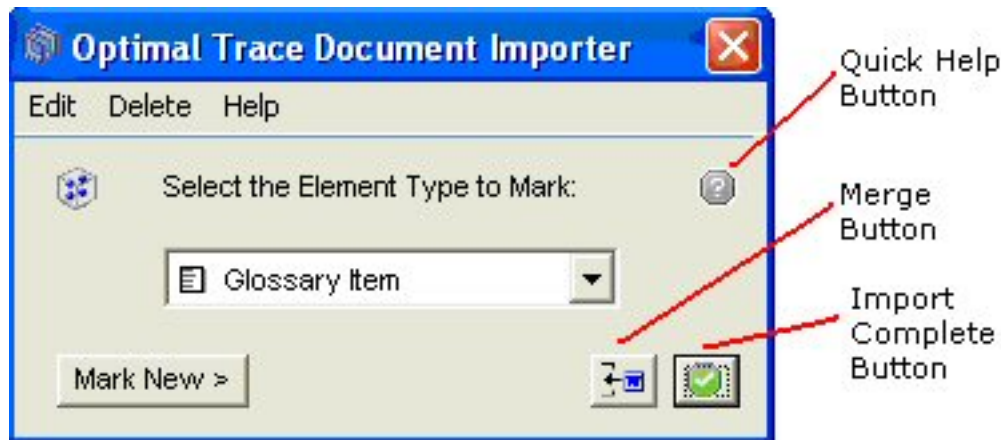
Table 9. Element Chooser Options

Item	Description
Quick Help	Click to display a floating Help screen, which contains quick instructions for whatever dialog is currently onscreen.
Select the Element Type to Mark	This list shows all the different project elements that can be marked up in the document. Choose the one you want to mark.
Mark New	Advance to the **Start/End** dialog box to define the boundaries of a new element.
Merge	Launches the merge process and imports the currently marked up elements into Optimal Trace. Microsoft Office Word and the markup tool remain active and you can return to them after the merge is done.
Import Complete	Launch the merge process for the last time to import the marked up elements into Optimal Trace. Microsoft Office Word and the markup tool will shut down.
Edit>Edit Element at Cursor	Forwards to the **Start/End** dialog box with the editing context set to the element that is closest to the cursor.
Delete>Delete Selected Markup	Convenience feature to remove all Optimal Trace markup comments in the text selected in Microsoft Office Word.
Delete>Delete Element at Cursor	Remove the markup comments for the element closest to the cursor, including the start and end comments, and any attribute comments.

Start/End Dialog Box

This dialog box allows you to mark or move the starting and ending points of an element to be imported. To use this dialog, move the insertion point in Microsoft Office Word to the point that marks the start of the element and click the **Mark Start** button. A start comment will be

added to the document, and the starting text will appear in the area between the **Mark Start** and **Mark End** buttons in the tool.

Figure 7. Start/End Dialog Box
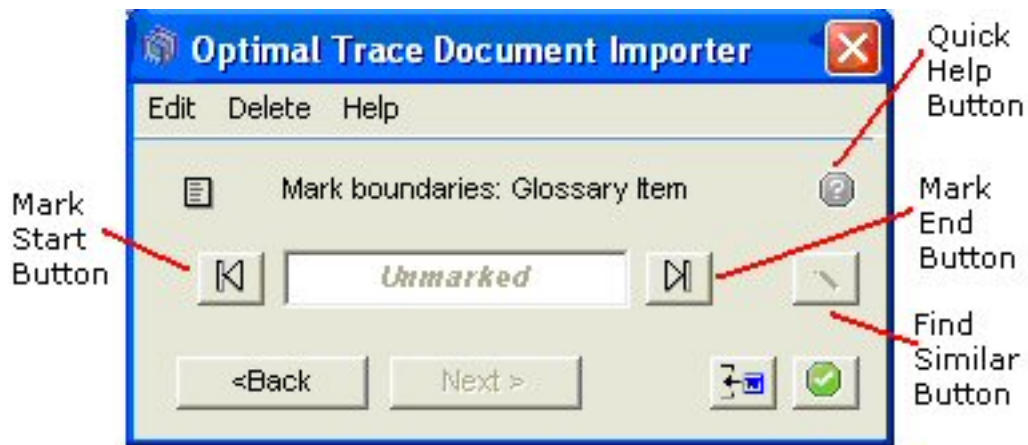
To mark the end of the element, move the Microsoft Office Word insertion point to the ending point of the element in the document, and click the **Mark End** button. The tool will create an Optimal Trace end comment at this point in the document:

Figure 8. End Comment

From the **Start/End** dialog box, the following other buttons and controls are available:

Table 10. Start/End Dialog Box Options

Option	Description
Find Similar	Enabled after an attribute is marked and forwards to the **Find Similar** dialog box by which similar attributes of other elements are inferred in the document.
Next	Mark attributes in the element that has been marked up using the **Attributes** dialog box.
Back	Return to the **Element-Chooser** dialog box. Any start or end comments that have been marked up already will remain marked up.
Merge	Launches the merge process and imports the currently marked up elements into Optimal Trace. Microsoft Office Word and the markup tool remain active and you can return to them after the merge is done.
Import Complete	Launch the merge process for the last time to import the marked up elements into Optimal Trace. Microsoft Office Word and the markup tool will shut down.

Option	Description
Edit>Edit Element at Cursor	Forwards to the **Start/End** dialog box with the editing context set to the element that is closest to the cursor.
Delete>Delete Selected Markup	Convenience feature to remove all Optimal Trace markup comments in the text selected in Microsoft Office Word.
Delete>Delete Element at Cursor	Remove the markup comments for the element closest to the cursor, including the start and end comments, and any attribute comments.

NOTE

You can also edit or delete marked-up elements by right clicking on the comment, and choose **Edit** or **Delete** from the menu.

Attributes Dialog Box

After marking the start and end points of an element, the element is set to be the editing context. This means that when Next is pressed, the attributes dialog which appears allows you mark the attributes of that element.

Figure 9. Attributes Dialog Box
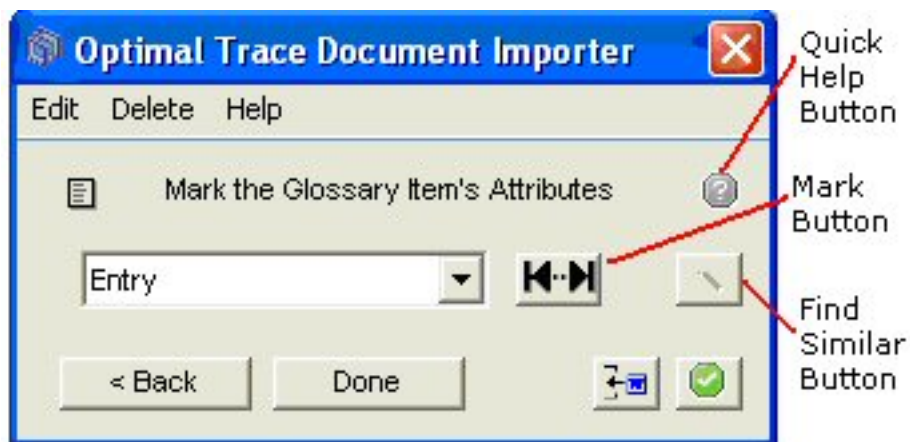
To mark an attribute, first select the attribute to mark from the list on the dialog then drag-select the area of text in the document that represents the value of the attribute. Finally, click the **Mark** button on the tool. A comment will appear in the document marking the attribute. This should be repeated for all attributes. Comments added to the document by the import tool are color coded by element. In the following figure, for example, all comments relating to the 'Word1' glossary entry have the same color.

Figure 10. Attributes Selection

It should be noted that attributes need not necessarily be marked within the start and end points of their associated element. However it is recommended as a best practice (and to avoid confusing yourself in a large document) that the start and end points are placed so that they encompass all the attributes of the element.

It should also be noted that the user is permitted to mark the same attribute twice. This is to facilitate cases where the attribute is dispersed across different locations in the document. Upon import, multiple mark-ups of the same attribute are concatenated into one single value.

The following other buttons and controls are available from the attributes dialog:

Table 11. Attributes Dialog Box Options

Item	Description
Find Similar	Enabled after an attribute is marked and forwards to the **Find Similar** dialog box by which similar attributes of other elements are inferred in the document.
Done	Indicates you are done marking up the element, and returns to the **Element-Chooser** dialog box.
Back	Return to the **Element-Chooser** dialog box. Any start or end comments that have been marked up already will remain marked up.
Merge	Launches the merge process and imports the currently marked up elements into Optimal Trace. Microsoft Office Word and the markup tool remain active and you can return to them after the merge is done.
Import Complete	Launch the merge process for the last time to import the marked up elements into Optimal Trace. Microsoft Office Word and the markup tool will shut down.
Edit>Edit Element at Cursor	Forwards to the **Start/End** dialog box with the editing context set to the element that is closest to the cursor.
Delete>Delete Selected Markup	Convenience feature to remove all Optimal Trace markup comments in the text selected in Microsoft Office Word.
Delete>Delete Element at Cursor	Remove the markup comments for the element closest to the cursor, including the start and end comments, and any attribute comments.

Find Similar Dialog Box

Since documents to be imported can be large and complex, it can take a long time to mark them up by hand. For this reason, the markup tool offers the **Find Similar** dialog box which can rapidly scan a document to find other candidate regions of the document that match the format or style of an existing marked up area. This can dramatically increase the effectiveness of the document import process.

Figure 11. Find Similar Dialog Box
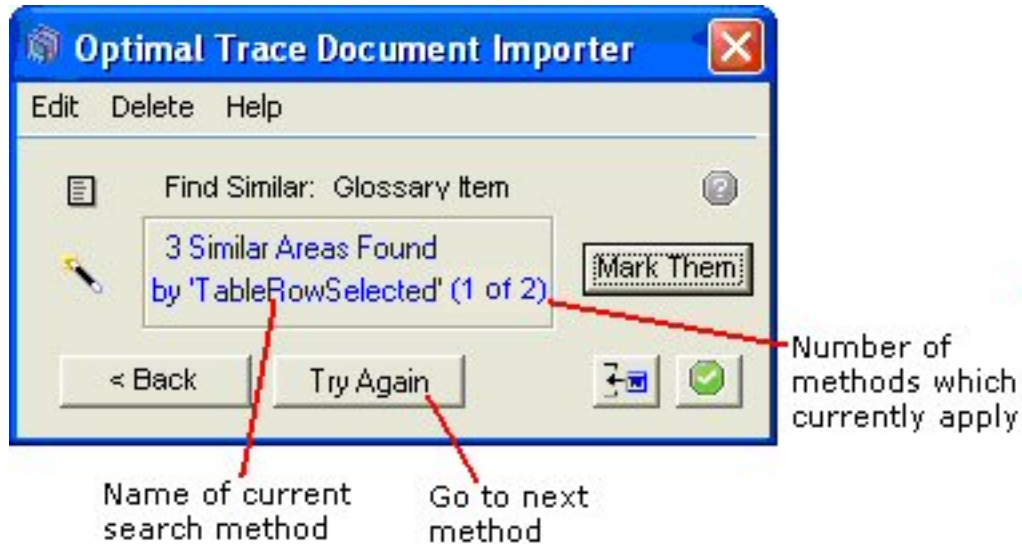
It is not necessary to use the **Find Similar** dialog box. Everything can always be marked-up and tagged one-by-one, using the other dialogs. It is also more complex to learn and use. But in such cases as documents containing large tables, it can save many hours of work. There are two different ways that the Find Similar process can be started:

- To find the boundaries of similar elements, click the **Find Similar** icon on the **Start/End** dialog box.

- To find attributes of similar elements, click the **Find Similar** icon on the **Attributes** dialog box.

In both cases, the dialog box can only be summoned after an element or an element attribute is marked up. This is called the source element or the source attribute, and is the template which is searched for in other parts of the document. There are a number of methods that the Markup tool uses to infer or guess matching regions of the document. Depending on the source, some methods may not apply. For instance, the "Table Row Selected" applies only if the source is a complete table row. If this is true, then every subsequent table row is guessed as a match. For example, the figure below shows the selected source element is a glossary item which covers a complete row in a table:

Figure 12. Find Similar Example
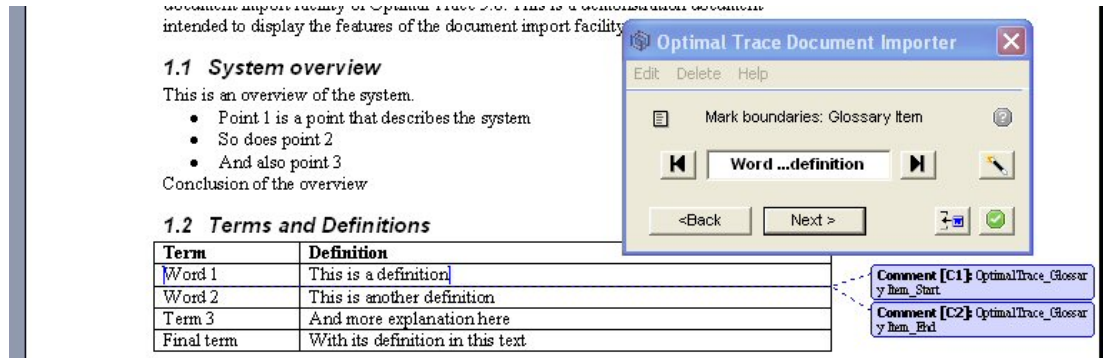
Here it is clear that the other rows in the table are also glossary entries. On clicking the Find Similar "magic wand" button, the dialog appears and, indeed, it instantly guesses that the other three rows are also glossary entries:
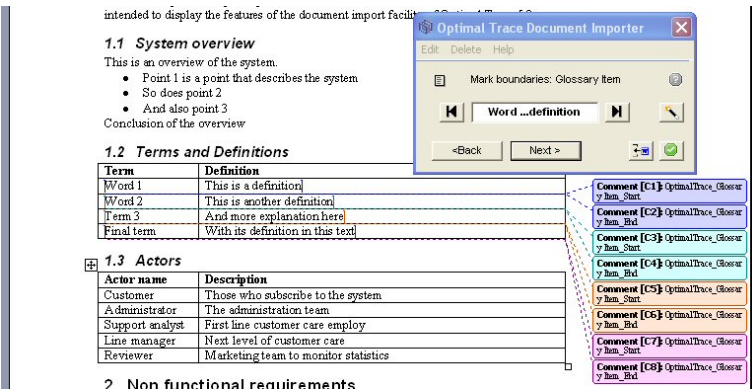
Figure 13. Find Similar Results
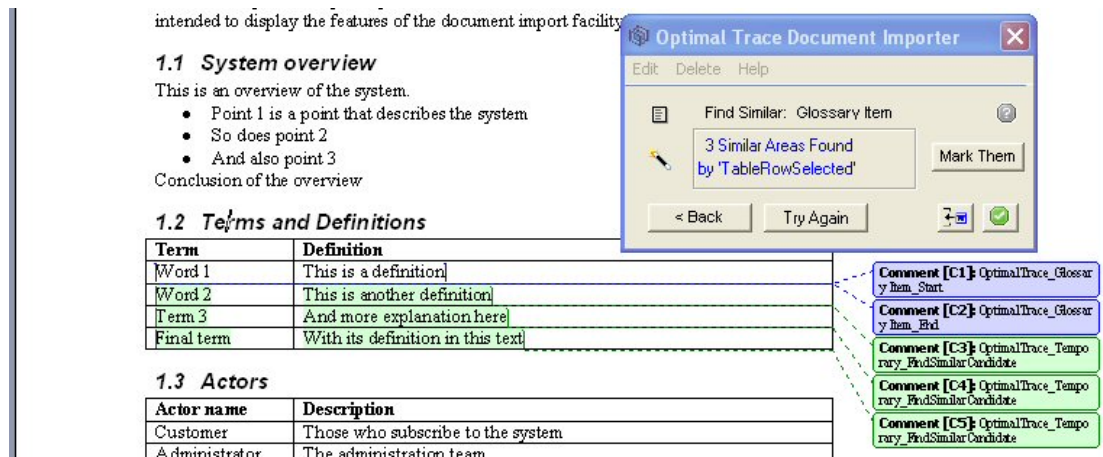
Here the other three rows are outlined with temporary markup comments in another colour. The information area in the Markup tool indicates that three similar areas were found. At this point, one of the following options can be selected:

Table 12. Find Similar Dialog Box Options

Options	Description
Remove Incorrect Temporary Candidates	If any temporary Candidate comments are incorrect, they can be removed at this point by either using the 'Delete' menu or by right-clicking on them and choosing **Delete**. Sometimes, for example, not every Row in a table is a Glossary Item.
Mark Them	Accepts each of the candidate regions and converts them into full marked up elements. The Markup tool returns to the previous dialog, either the **Start/End** dialog box or the **Attributes** dialog box, depending on whether the source was an element or an attribute, respectively.

Options	Description

Try Again	Discards the currently active candidate regions, and tries to match the source again using the next different method, if available. The "(1 of 2)" text indicates how many search methods are applicable to the current source area.
Back	Return to the **Element-Chooser** dialog box. Any start or end comments that have been marked up already will remain marked up.
Merge	Launches the merge process and imports the currently marked up elements into Optimal Trace. Microsoft Office Word and the markup tool remain active and you can return to them after the merge is done.
Import Complete	Launch the merge process for the last time to import the marked up elements into Optimal Trace. Microsoft Office Word and the markup tool will shut down.
Edit>Edit Element at Cursor	Forwards to the **Start/End** dialog box with the editing context set to the element that is closest to the cursor.
Delete>Delete Selected Markup	Convenience feature to remove all Optimal Trace markup comments in the text selected in Microsoft Office Word.
Delete>Delete Element at Cursor	Remove the markup comments for the element closest to the cursor, including the start and end comments, and any attribute comments.

The Optimal Trace Markup tool uses several different methods to guess similar areas to the source element or attribute elsewhere in the document. These candidate areas are always found in the document beneath this source area. Depending on the style and formatting of the source, some methods may be applicable and some may not. The following is a list of the different methods, when they are applicable, and what they search for.

Table 13. Markup Tool Search Methods

Method name	Applicable when the source area matches:	What it will match:
Row Selected in Table	An entire table row	All rows in the same table below the source

Method name	Applicable when the source area matches:	What it will match:
Table Cell Selected	A single table cell	All cells in the same column in the same table below the source
Entire Section Selected	An entire section, including the heading	All peer sections below the source section. For example, if the source is section 2.2, then this method will match sections 2.3, 2.4, 2.5 etc., but will stop when section 3 is encountered.
Heading Selected	A heading, but no other text from that section.	All peer section headings, as above.
Heading Omitted	An entire section, except the heading	All peer section contents, as for Entire Section Selected, but excluding the headings.
Nth Paragraph Selected	The nth paragraph within a section	The nth paragraph of each peer section below the source. For example, if the fifth paragraph of section 5.1.2 is selected, then this method will match the fifth paragraph of sections 5.1.3, 5.1.4, etc. until section 5.2 is encountered.
Bulleted Item Selected	A bulleted item in a list	All subsequent bulleted items in the same list.
Number List Item Selected	A numbered item in a list	All subsequent numbered items in the same list.
Lines With Same Font	A paragraph or part of a paragraph.	All areas in the current section with the same font. Font is matched on font Name, Size, Bold, and Italic.

Collectively, these methods should cope with a wide variety of document formats and styles. The more logical a document structure, and the simpler the layout, the more effective they will be. In the event that documents are overly complex or poorly organized, they will be less successful, and there may be no alternative other than manual markup.

Microsoft Office Word Import Tips

There are a number of techniques and tips which can prove useful when dealing with particular import situations:

Marking up Project attributes

If you need to mark up project attributes such as Project Name, Description etc, you should mark up a project element and then mark up the attributes, for example:

1. Select the entire document, using [Ctrl-A].

2. Create an element of type *Project*.

3. Click **Start** and **End** to mark up the start and end of the document as the start and end of the project.

4. Click **Next** and proceed to mark up the project name, description etc.

Find Similar Areas Usage

The recommended approach to use when marking up similar areas is to match the Start/Ends first, then move on to matching each attribute. It is usually much simpler and clearer as to what is going on. If you mark just one Start/End, and then move to the next screen and Find Similar different Names, then you may get confusing results on import. The tool will attempt to find an owner Element for all of the 10 Names, but there is only one **Start/End Element** that it can use. The recommended approach is as follows:

1. Mark the start and end of the element you wish to mark up.

2. Click the **Find Similar Areas** button and mark up the areas that match the start and end of the selected element.

3. For the element marked up in step 1, mark up an attribute.

4. Click **Find Similar Areas** again to mark up similar text in the document for that attribute.

5. Repeat steps 3 and 4 for any other attributes you wish to mark up. Once you have completed these steps, you will have successfully marked up several elements of the same type and their attributes.

Convert Text to Table and then use Find Similar

If you are having trouble using **Find Similar Areas** to mark up similar areas of text, try converting the text to a table by going to Microsoft Office Word, and click **Table>Convert>Text to Table**. Then use **Find Similar** areas to match up the areas of the table.

Find Similar Areas and Headings

The **Find Similar Areas** feature can be used to automatically mark up headings at a similar level. However this will only work correctly if all headings in the document use an appropriate MS Word style. For example, top level headings should have a 'Heading 1' style etc. Frequently, Word users change the font and formatting to create 'roll-your-own' Headings. So instead of using a Heading 1 style, users apply a large font and turn on Bold. Then the Find-Similar 'search for Headings' will fail. The solution is to hold down Ctrl and select all the bits you want to match, then apply a proper Heading Style to all of them. (Use the Styles dropdown in the Word menu bar, or click Format->Styles and Formatting to display the Styles pane). Once all these areas have a proper Heading style, find similar will detect this and match them. Note that Find Similar areas will only search within the current chapter in the document. For example, if you mark up all of a section in a document, and use find similar areas, it will highlight sections 5.2, 5.3, etc., however it will not highlight sections 6, 6.1 etc. If there are no Headings in the document, you can simply add some. It helps the Find Similar methods by giving them some structure to work with. A large document with no headings will take the search methods a lot of time to work through. You can delete the Headings afterwards if you wish.

Using 'LinesWithSameFont' to match otherwise unmatchable areas

Suppose you wish to match a number of sentences scattered throughout a large table. The sentences are not consistently organized or positioned, and hence none of the Find Similar search methods work. A very useful technique is to hold down CTRL, select the source area, and then multi-select all the other areas you wish it to find. Then go to the Font

dropdown in the Word menu bar and select an unusual font, one that is not is use elsewhere in the doc. Now click Back, if you are on the Find Similar window. Then click the magic wand button again. This time, the 'LinesWithSameFont' method should successfully find all the target areas.

Save your document often

It can be very useful to save copies of the document throughout your mark-up section, e.g. "My Doc.doc", "My Doc2.doc", "My Doc3.doc". This can be useful if you wish to import a certain section into many projects. For example you may have marked up a section of a document to import to the glossary, if you save the document, for example "My Doc - Glossary.doc", you can import these markup elements into the glossary section of many projects.

How to mark up a table column

If a user selects a column in a table and attempts to mark it up, only the final cell in the table will be marked-up. Note this is due to a restriction in MS Word. There is a workaround as can be seen in the following example. To mark up the contents of a column as a requirement description:

- Mark the entire table as a requirement, i.e. mark 'Requirement Start' at the start of the table, and 'Requirement End' at the end of the table.

- Click on 'Next>' and mark the top most cell in the target column as 'Requirement Description'.

- Click on the 'Find Similar' button. It should highlight every cell below the top one.

- Click on the 'Mark' button to mark all these highlighted cells.

Here, we are exploiting the fact that multiple appearances of the same Attribute get concatenated upon import. This is to allow dispersed chunks of text to be imported into "Project Description", for instance. The text in all the marked-up cells will be concatenated into the requirement description when the document is imported.

Sort and Split up mixed Tables

If a table contains both Requirements and Sub-Requirements (i.e. Items) interspersed with each other on different rows, then Find Similar won't differentiate the two types. The trick here is to sort the table, by whatever column is appropriate, so that all the Requirements are together and all the Items are together. Then, split the table into two. The Word menu item to do this is Table->Split Table. One new table will contain only Requirements and the other will contain only Items. Next, Find-Similar the 2 tables and mark up all their Rows and Cells, as Requirements, Items, and the respective attributes for each of them. Finally, combine the two tables back into one, and sort by a column that will recover the original ordering. (If there is no such column, it is possible to add an extra dummy column containing the numbers 1...rowcount, before sorting and splitting the table). This tip can generalize to any table containing mixed types.

Merging from the Markup tool

All dialogs on the markup tool provide two buttons to view the results of the marking up process:

- **Merge**: Show interim result in Optimal Trace.

- **Import Complete**: Show result in Optimal Trace, and quit the import process.

In both cases, the marked up elements are not imported directly into Optimal Trace, instead, a merge screen appears allowing you to preview the contents of the import before accepting it. If you merge the same elements more than once, Optimal Trace does not create duplicate elements, instead, it will remember the originally imported element, and apply any changes to it.

Microsoft Office Word Security Settings

The Optimal Trace **Document Import Tool** requires that the Microsoft Office Word Macro Security level is set to a maximum of Medium for versions 2007, 2003, and 2000. This can be set in the **Macro Security settings** screen. For example, in Word 2003, this screen is accessed via the **Tools>Options** screen. For Microsoft Office Word 2000 you also need to have the **Trust all installed add-ins and templates** option selected on the **Trusted Publishers** tab. The **Document Import Tool** has been digitally signed. Upon launching, Microsoft Office Word may ask whether it should trust the software. It will present details of the digital certificate, which is issued in the name of Micro Focus, and indicate that the signature is OK. You can safely click **always trust content from this publisher**.

Saving an Image File

Use this option to save an image file for what currently appears in the **Requirement map** and **Flow views**. To save an image for a specific flow, select that flow and the saved image will correspond to the currently displayed flow.

- Click the Requirement or Package you want to save an image of
- From the menu bar, click **Project>Save Image** and a save screen will appear.

The save file type will typically default to .jpg for a JPEG file. You may alternatively choose to save in a number of other common formats including BMP, TIF etc.

Images can be saved as either the entire image or else for larger images you may want to split the image across pages, creating different image files. To set this option, select **Options>General Options>Split Images across Multiple Pages/Files**. You may save this image wherever you want. Later, you can click on the image file in Windows Explorer and the image will appear on your screen.

Exiting a Project

Use this option to exit Optimal Trace. Click **Project>Exit** to close the program.

NOTE

If changes have been made since opening any project(s) or if you have any unsaved changes, the system will prompt you to save any outstanding changes prior to shutting down.

CHAPTER 3

Optimal Trace Projects

The Optimal Trace screen is split into six different views, namely the Tree view, the Thumbnail view, the Query view, The Traceability view, the Details view and the Right Pane view. The Tree view contains the list of currently opened Projects and their respective contents. Each Optimal Trace Project consists of: Actors, Glossary entries, Requirement Packages and sub-packages, Structured Requirements comprising scenarios and steps, and Simple Requirements comprising items.

Project Properties

When a project is first opened, its properties are displayed in the Right Pane view. Some of these are editable and include:

* `Project Name` - the name of the project
* `Creator` - this defaults to the login name however it can be changed
* `Description` - a description of the project

Non-editable properties include:

* `Created On` - the date and time that this project was initially created
* `Location` - the file location on your hard disk or on a network drive
* `Baseline` - the current project baseline

Project Non-Functional Requirements

Non-functional requirements can apply either at the project or discrete structured requirement level. The latter means that the quality or constraint applies just to that structured requirement, the former means that the non-functional requirement is project wide. Non-functional requirements fall into two categories:

* `Qualities`: qualities specify criteria for which the Project or Structured Requirement must guarantee. The Withdraw cash Requirement might have the quality that the machine is

available 24x7 with acceptable downtime or that 95% of time receipts must be capable of being issued.

- `Constraints`: examples of constraints might be that the Requirement must interact with a specific protocol for data interchange, e.g. EDI (financials), EMI (Telco billing) or newer standards such as ebXML etc.

Non-functional requirements must be unique by Description as qualities typically fall into categories that can be repeated.

To access these, click on the **Non-Functional Requirements** tab. Just as `Subject` must uniquely identify `Notes`, Non-functional requirements must be uniquely identified by description. Each Non-functional requirement comprises:

- `Category`: a piece of text specifying the type of Non-functional requirement
- `Non-functional requirement`: a description of the actual Non-functional requirement
- `Priority`: a text field for you to place prioritization information.

NOTE

Non-functional Requirements can have one or more associated Custom Properties defined. To see or modify the current set of custom properties click on the button.

Project/Requirement Links

In Optimal Trace, Links can be created at a number of levels:

- Project
- Structured Requirement
- Simple Requirement
- Simple Requirement Items

Links are used to associate two types of entities at these levels.

Any file or URL references/artifacts such as documents, graphics, URLs, Visio files, Excel spreadsheets etc. can be associated with the project or specific requirements using a link. Trace Links can be created to set-up Traceability relationships from one Optimal Trace project element to another either within the current project or to an element in a different local (file) or repository based project.

Links can be associated with Simple Requirement Items. Unlike Project/Requirement Links, Simple Requirement Links cannot be expanded in generated documents. Each Link has a name and description. If a linked file cannot be resolved or found at the location specified, then that link is displayed in red.

Table 14. Link Properties

Item	Description
Link Name	The name that you wish to call this Link, each Link name must be unique.

Item	Description
Link Location	This is the actual file name, URL or Optimal Trace 'Traced to' Project Element for this Link.
Icon	This is a visual cue indicating the type of element that is stored on the links.

File and URL (web) based Links

File based Links are intended as a convenient mechanism for associating miscellaneous information pertinent to a given requirement or the project as a whole. For example, you may wish to store a Link to domain-specific information such as a healthcare standard document, a government web site Link, or a sample screen shot.

- Click on the **Links** tab to access Links associated with the current Project or selected Requirement.
- For Simple Requirement Items, click the button to the right of the selected item.
- To create a new Link click on the button and a new blank Link is created.
- To edit the Link location you can either edit the location field directly into the text field or click on this Link button and a file chooser will appear. Navigate to the specific area and select the appropriate file then click on the Open button.

The Link information is then updated in Project's Links area.

Figure 14. Project Level Links
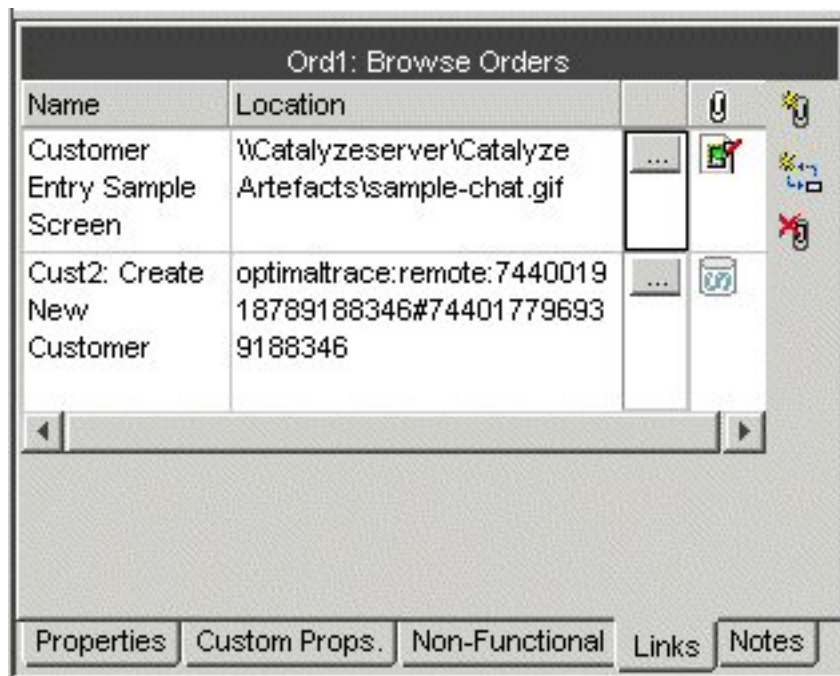
NOTE

User Interface Storyboards. Optimal Trace is very suitable for supporting Storyboards and generating attendant documentation. You can associate storyboards with specific Structured Requirements. When you generate documents, the screenshots are then embedded in the generated document providing an excellent basis for communicating to stakeholders especially on the Business side. Note that Links attached to Items are not expanded in the generated documentation.

Traceability Links

The second category of Links that can be created are Trace Links, these are Links to Optimal Trace project elements. These allow any requirement or project element to be referenced as a link associated either with the project or else with a given requirement. The process of creating a link is similar to establishing a file-based link.

- Click on the Links tab to access Links associated with the current Project.

- Create a new Link by clicking on the button.

- The Link Location now needs to reference a given Optimal Trace element. A screen appears allowing you to specify the given element that is being linked to.

- Select the element you want to link to and hit **Apply**. You can also automatically create reverse links by checking the box.

Figure 15. Element Trace Link
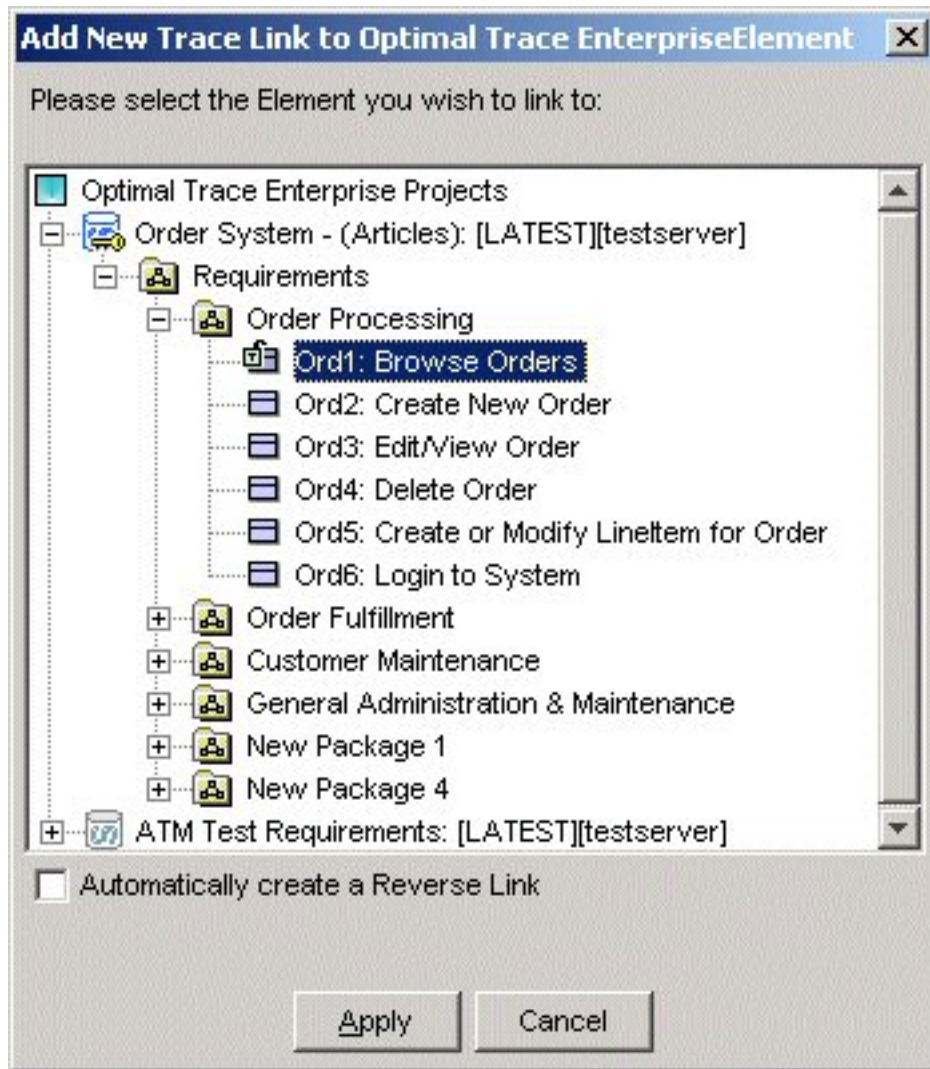
NOTE

As an alternative way of creating Trace links, you can also create Trace Links between elements by copying URIs. In this case, the reference is created by copying the element reference via the 'Copy as Link (URI)' pop up menu. Once the reference has been copied to the clipboard, then that reference is entered (by pasting it into the field) into the Location field of the link.

Project/Requirement Notes

Notes can be created at the project or discrete requirement level (structured and simple). The latter means that the note is associated with the selected requirement, the former means that the note is relevant to the entire project. Each Project or Requirement can have any number of Notes associated with it. Click on the **Notes** tab to access Notes. Notes contain two fields:

• Subject: A piece of text specifying the type of Note. Each Note must have a unique Subject.

• Note: A description of the Note itself.

Custom Properties

Projects can be created with custom properties defined for all different types of elements, e.g. Project, Package, Structured Requirement, Simple Requirement etc. They can be customized to hold data specific to the needs of different roles or objectives. For example, project managers might require Requirement level custom properties of Business Priority, Increment etc., while technical architects and QA stakeholders might want to see properties such as: Technical Risk, Functional Tests Defined etc. associated with Simple Requirement Items. Custom Properties can be set as either freeform or 'bound', the latter meaning you can select from one of a list of predefined values. Custom properties can be created for all major project element types covering:

- Project
- Glossary Entries
- Actors
- Packages
- Structured Requirements
- Structured Requirement Scenario Steps
- Non-functional Requirements
- Simple Requirements
- Simple Requirement Items

In Optimal Trace, Custom Property definitions are accessible from:

- The context that the Custom Property is related to, typically via a button located in a toolbar adjacent to the relevant element
- A centralized **Settings** tab at package or project level.

Custom Properties can be specific to a given package, meaning that the structure of the custom properties is particular to requirements contained in that package. So, to outline how all of this works, let's consider Project level custom properties. In this case, a number is defined at the project level including Business Case, etc.

Clicking on the **…** brings up a **Custom Properties** dialog box.

Figure 16. Project Level Custom Property Settings
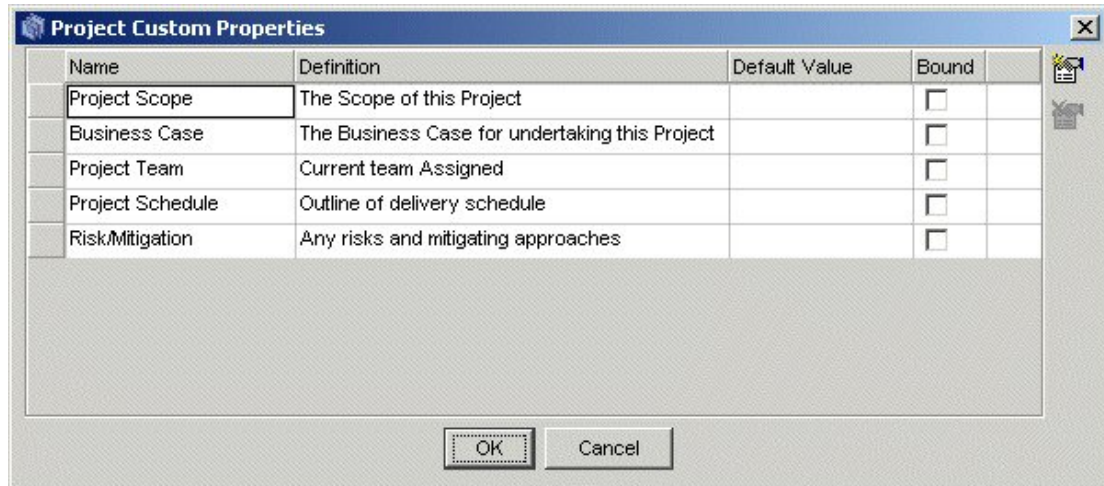
You can now add, remove or modify existing Custom Properties from this screen. Defining Custom Properties for all element types in Optimal Trace works in exactly the same way using this screen.

• To add new custom properties click on the **Add Properties** button. This will insert a new custom property. When working in a repository-based project the result of adding a custom property is that all instances of that element in the project (Requirement etc.) acquire a lock.

• To remove an existing custom property, select the custom property by clicking on the grey square to the left of the entry and click on the button. This will remove the custom property. When working in a repository based project, the result of removing a custom property is that all instances of that element in the project (Requirement etc.) acquire a lock.

To define a Custom Property as Bound, click on the checkbox to the right of the property. A **…** button appears in the right-most cell of the table for this custom property. You will then be able to add or remove given bound items by clicking the buttons.

Figure 17. Sample Bound Values
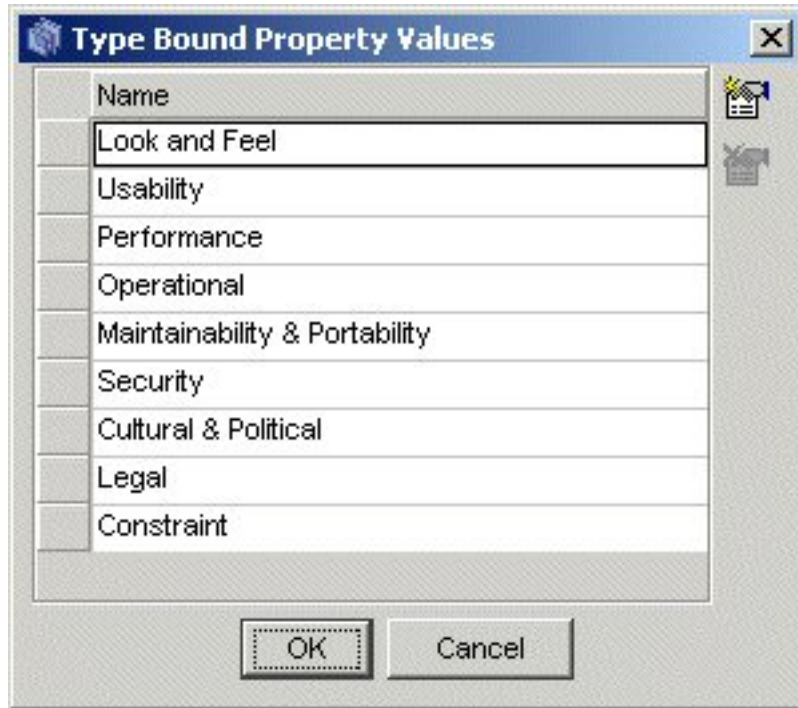
A sample set of Custom Properties at Item Level appears in the following figure showing at Item Level indicated by the red boundary.

Figure 18. Custom Properties showing at Item Level indicated by the red boundary
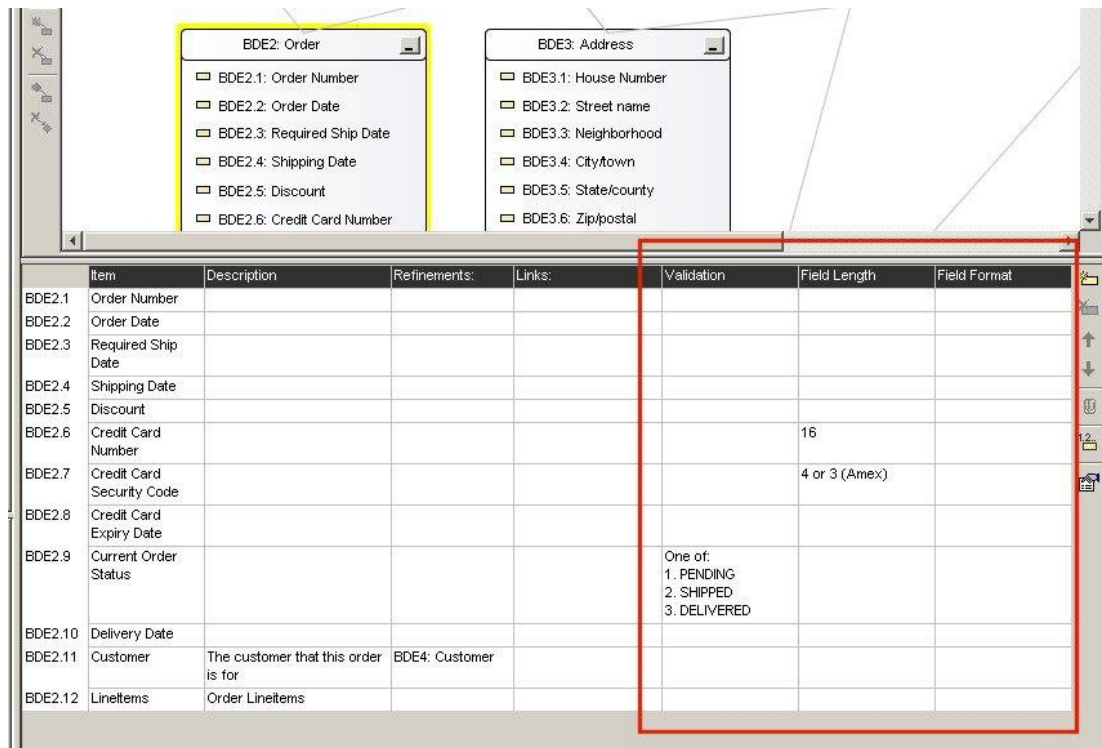
Custom Properties and Sharing

Optimal Trace provides a very flexible mechanism for customizing projects at all levels. This is possible using Custom Properties defined either at project wide level or specific to given packages of requirements. You may customize the definition of the set of custom properties at package level or a given package may share it's parent package/project's Custom Property set. Sharing of Custom Property definitions can be done by checking the 'Share Custom Properties with...' checkbox in the settings tab of a given package.

Figure 19. Package settings
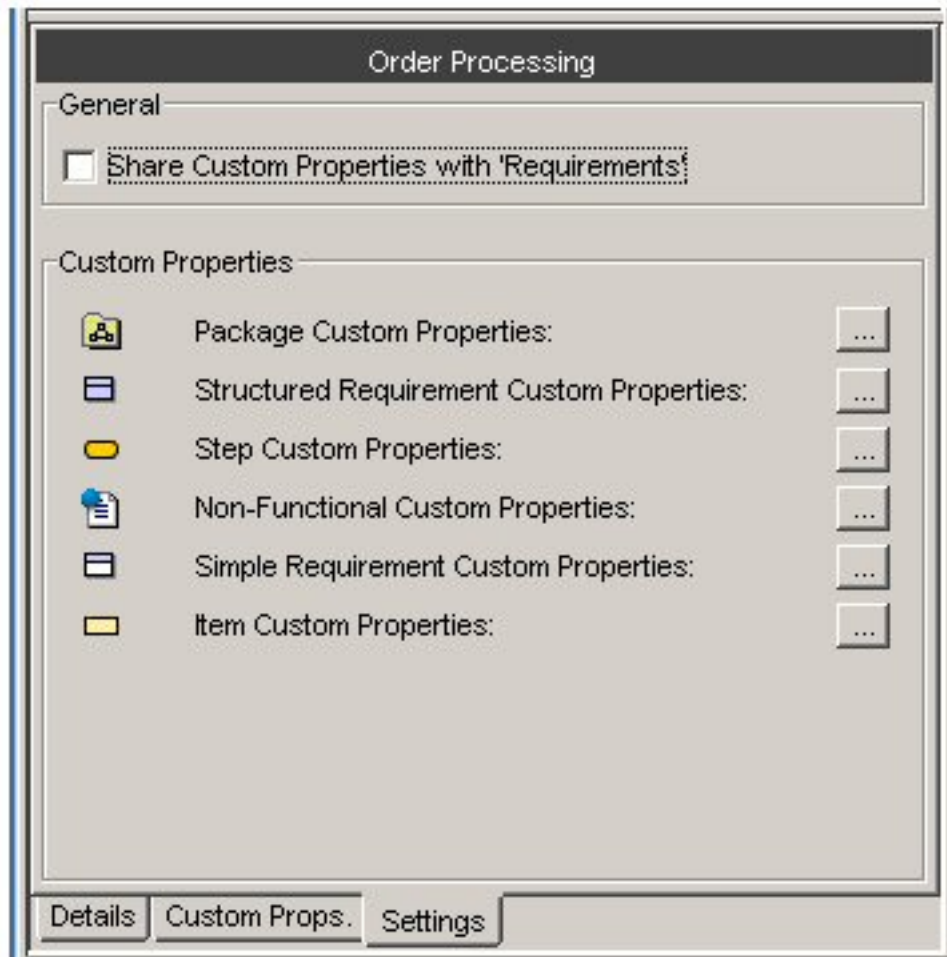
In order to do this, you select the package, click on the 'Settings' tab. On this tab there is a 'Share Custom Properties with' checkbox, which is checked by default (except in the case of the root package in new projects). If you uncheck this checkbox, the package will no longer use the set of Custom Properties defined by the parent, rather it will have its own set of independent Custom Properties that will apply to all elements within that Package and possibly all child Packages.

For example, you may have a package entitled 'Out of Scope' which contains requirements that are out of scope for the current release. Uncheck the **Share Custom Properties with** check box. You can add a Structured Requirement level Custom Property called 'Planned for Release' to this package by clicking on the 'Structured Requirement Custom Properties' button, and

adding the Custom Property as before. Now only Structured Requirements created in the 'Out of Scope' Package will have this Custom Property. If you decide at a later time that you want the 'Out of Scope' Package to share the same Custom Properties as the rest of the Project, you can re-check the 'Share Custom Properties' checkbox. Any Custom Properties defined in the 'Out of Scope' Package that are not defined as Custom Properties in the rest of the Project will be removed. In the example above, re-checking the 'Share Custom Properties' check box will mean that the 'Planned for Release' attribute is removed for all Structured Requirements in the 'Out of Scope' Package.

NOTE

To previous users of Optimal Trace. By default, when you defined a set of custom properties in previous releases, those custom properties applied to all elements of that type created within that project. For example, if you created a custom property called 'Technical Risk' for Structured Requirements, every Structured Requirement in the project will have an attribute called 'Technical Risk'. In most cases, this will satisfy the needs of your project, as typically you would tend to capture the same information for all Requirements in your project. However there may be times when you would like to have a different set of Custom Properties for a part of your project. For example you may have a package entitled 'Out of Scope' which contains requirements that are out of scope for the current release. In Optimal Trace you can for example now define a Custom Property called 'Planned for Release' that will apply to Requirements contained in the 'Out of Scope' package only.

Modifying Custom Properties and Locking Implications

When working online, any modifications to custom properties result in all dependent elements acquiring a lock. Consequently, you will see a green lock icon appear next to any such elements. For Packages, Requirements and any elements that can have Custom Properties defined, since modifying a specific element will affect the underlying structure of all instances of that element, you must have exclusive access to those elements prior to any modification. As an example, if you attempt to modify the Custom Property of a 'Requirement' and another user is currently editing any requirements in that project that use that Custom Property, then you will be unable to perform the modification and will receive a message.

Project Settings

The settings for a Project are used to apply default values for Requirements created in the Project. For Project Templates the settings specify values that will be applied to projects created from those templates. To access the project settings, click on the **Settings** tab.

There are three sets of settings available for Projects and Project Templates:

- Goal Level
- Numbering Policy
- Custom Properties

Goal Levels Settings

To access the Default Goal Level setting click on the button adjacent to the Default Goal Level text. You can specify settings for the Default Goal Level; this is the goal level that will be set whenever new Requirements are created. Goal Levels are used to specify the level of abstractness or concreteness of a Requirement; refer to Alistair Cockburn [1].

- To edit an existing goal level for a Project, select its Name/Description and change it. If an edited level is already in use by another Requirement, the corresponding Goal Level text will be altered accordingly.

- To add your own new goal levels click on the **Add Goal** button.

- To remove a Goal Level, click on the **Remove Goal** button.

Figure 20. Project Specific Goal Levels screen
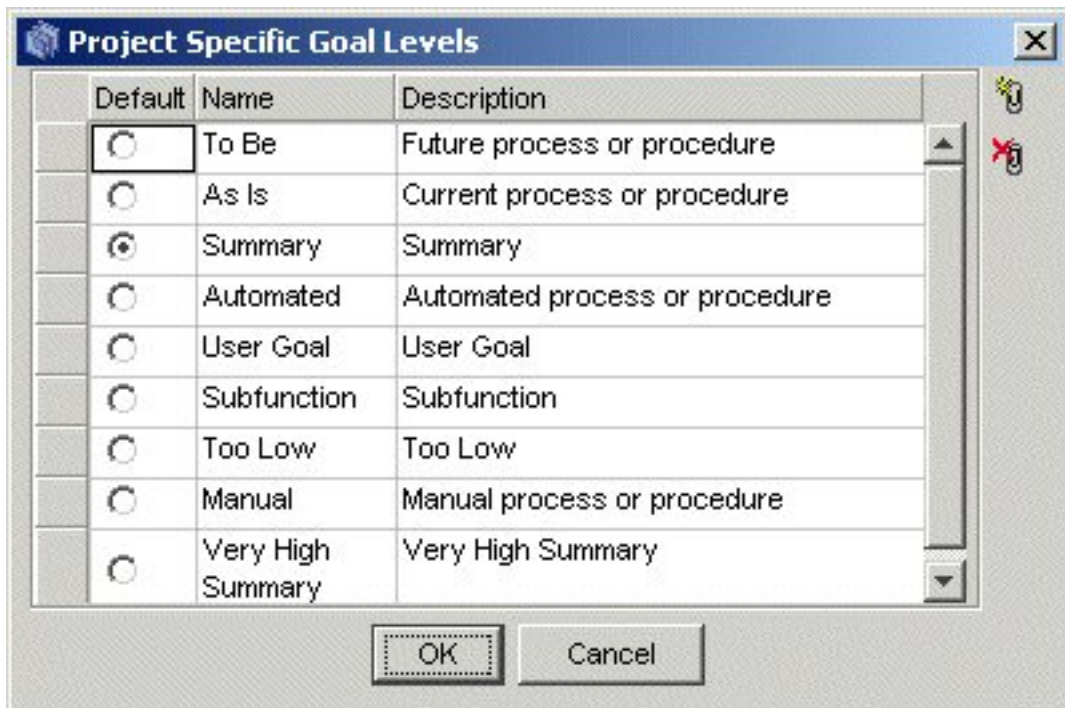
Table 15. Project Specific Goal Levels screen

Column	Description
Default	Click the option to set as the default Project Specific Goal Level.
Name	Name of the Project Specific Goal Level.
Description	Description of the Project Specific Goal Level.

Numbering Policy Settings

Optimal Trace projects can have one of three types of numbering policies as outlined in the following table. Numbering Policies affect the handling of requirement numbering in a given project.

Table 16. Numbering Policy Settings

Number Policy	Description
Package/Tag Based	The Package/Tag policy means that when a new package is encountered with a different package Tag then the numbering starts at 1. This is the default policy in Optimal Trace Project Templates
Project Based	The Project Based policy means that all Requirements are numbered uniquely across the project and specifically across packages.
Package Based	The Package Based policy means that Requirement numbering is reset to 1 when a new Package is encountered.

Custom Property Settings

Projects can be created with custom properties defined at all element levels. Custom properties can be created for projects, glossary entries, actors, packages, requirements, requirement scenario steps, non-functional requirements, simple requirements, and simple requirement items. For more information, see Custom Properties [p. 54].

Defining Glossary Items

It is important to define Glossary Items during a requirements gathering exercise as they provide the common definitions as understood by domain experts.

- To define Glossary entries, under the Project click the Glossary icon. A list of Glossary entries appears in the Right Pane view.
- You can add or remove entries by clicking the buttons in the Tool bar.
- Clicking Add allows you to add an entry.
- To remove an entry, highlight the **Glossary** item by clicking the button to the left of the entry (shaded grey square) and then click on the **Delete** button.

Each entry consists of a name (unique within a Project) and description. It is also possible to edit entries by clicking on the text and adjusting accordingly.

NOTE

Glossary Entries can have one or more associated Custom Properties defined. To see or modify the current set of custom properties click on the **Properties** button. For more information, see Custom Properties [p. 54].

Defining Actors

Actors are entities that interact with a system.

- To define a new Actor, under the Project click on the Actor List icon. A list of Actors appears in the Right Pane View. Optimal Trace ships with one default Actor, the system.

- You can add or remove Actors by clicking the buttons in the Tool bar. Click on the add actor button to add an Actor.

- To remove an Actor you must highlight the Actor by clicking the button to the left of the entry and then click on the delete actor button. If you try to delete an Actor, which is associated with a Step in a Requirement, then Optimal Trace will confirm whether you really want to delete the Actor. If you click **Yes**, then all of the associated Steps will be disassociated from the deleted Actor.

Each Actor consists of a name (unique within a Project) and a description. You may edit Actors by clicking on the text of their names and descriptions, and adjusting them accordingly.

NOTE

Actors can have one or more associated Custom Properties defined. To see or modify the current set of custom properties click on the **Properties** button. For more information, see Custom Properties [p. 54].

Packages

Packages provide a way of grouping related sets of Requirements. These can be edited by clicking on the Package Node in the tree view and modifying them in the details area to the bottom left of Optimal Trace. There is no restriction on the number of nested Packages that can exist. Packages are useful when segmenting a Project into logical units. They can also be used to specify incremental delivery units for a system. Every Project always has at least one Package, namely the default Package labeled *Requirements* if created from the empty project template.

This root package housing all other Packages & Requirements cannot be deleted. Packages can contain more packages. Requirements can be either structured, meaning they are comprised of scenarios and steps or non-structured meaning they are either a quality or constraint type statement.

Package Details

Each Package has the following:

- Package Name - the name of the Requirement. For example: *Withdraw Cash*.
- Package Tag - a tag for all requirements within the package.
- Package Description - a fuller description of the objectives of the Requirement.

Package Tags

Package level requirements can have their own specific 'Tag'. This means that each package can be dedicated to a specific 'Type' of structured requirement indicated by the tag. For example, you might choose to store all your Business Process flows in one package with tag 'BP', while a sibling package might store the corresponding detailed Software Requirements with tag 'SR'. Alternatively Product Managers might choose to place all Product Feature Requests in one package with tag 'FR', and detailed Requirements in a second package with tag 'DR'.

Package Custom Properties

Custom properties can be defined for Packages. This means that each Package can be set up to hold data associated with the package. Custom Properties can be set as either freeform or 'bound', the latter meaning you can select from one of a list of predefined values. Package Level Custom Properties behave in exactly the same way as Project Level Custom Properties. For more information, see Custom Properties [p. 54].

Package Settings

The Package Settings area allows you to configure whether this Package shares Custom Property definitions with its Parent package (or Project if it's the root package), or if it has its own set of Custom Property definitions. For more information, see Custom Properties [p. 54].

Structured Requirements

Structured requirements outline objectives or goals (and their detailed scenarios and steps) whereas non-functional requirements cover system qualities and constraints. A structured requirement provides a mechanism for capturing functional requirements for a system in a comprehensible and communicable way. A single structured requirement is a strand of functionality that a system will ultimately deliver; a collection of requirements can express the entire functional behavior of a system. Consider, for example, writing the specifications for an Online Ordering System. You would formulate an individual requirement to satisfy each goal for the system needs to provide for each user (an actor). Typical goals & requirements might be: create an order, run reports, and view shipped orders. Taken together, a set of such requirements constitutes an entire functional specification of the order system.

NOTE

Structured Requirements are an excellent way to support Agile, Use Case driven or Business Process projects. From an Agile perspective you can think of a structured requirement as a formalized 'Story' of how the system will provide value to the personas or users. From a use case perspective, a structured requirement can be considered the detail of the use case. From a Business Process perspective a structured requirement can be thought of as a documented business process.

Structured Requirements Properties

Each Structured Requirement has a number of properties that help clarify its purpose and nature.

Table 17. Structured Requirements Properties

Property Name	Description
Name	Name of the Structured Requirement. For example: Order Goods
Description	A fuller description of the objectives of the Requirement
Pre-condition	Something that must have happened prior to someone being able to start this Requirement. For example, in order to Withdraw Funds, the customer (Actor) must have an ATM card to place in the machine.
Post-condition	Something that is true on successful completion of the Requirement. For example when withdrawing funds the success criterion is that the funds are actually withdrawn and in possession of the customer and the customer's bank account is debited.
Actors	These are automatically built as a result of specifying Actors with Steps in the scenario.
Priority	The importance of the Requirement - this value typically reflects two factors, one the importance of the Requirement from a customer perspective and two the technical or logistical risk associated with this Requirement
Goal-level	Level of abstractness of the Requirement. For more information, see Goal Levels Settings [p. 59].
Trigger	How the Requirement is started or invoked. For example for Withdraw Cash this might be that the customer is low on cash and wants to buy some goods. Triggers are useful if the Actor is a non-human and represents another system. A batch feed signal is a good example of a more common trigger.
Minimum Guarantee	Requirement will guarantee to complete some functionality and this should be specified here.

Structured Requirement Custom Properties

Custom properties can be defined for Structured Requirements. This means that each Structured Requirement can be set up to hold associated data. Custom Properties can be set as either freeform or 'bound', the latter meaning you can select from one of a list of predefined values. Requirement Level Custom Properties behave in exactly the same way as Project Level Custom Properties. For more information, see Custom Properties [p. 54].

Non-Functional Requirements

NOTE

In Optimal Trace 5.0, Non-Functional Requirements are deprecated. Users wishing to capture Non-Functional type requirements, should use Simple Requirements instead.

Each Requirement can have an arbitrary number of Non-functional requirements associated with it. To access these, click on the Non-functional tab. Requirement related Non-functional requirements behave in exactly the same way as Project Non-functional requirements.

Links in Structured Requirements

Links can be associated with Requirements as well as with Projects. These provide the ability to associate documents, graphics, URLs, etc. with the Requirement. Click on the Links tab to access the Links associated with a Requirement. Links at the Requirement level work in exactly the same way as Project Links. For more information, see Project/Requirement Links [p. 50].

Notes in Structured Requirements

Each Requirement can have an arbitrary number of Notes associated with it. To access these, click on the Notes tab. Requirement Notes are useful for storing miscellaneous issues/clarifications to do with any aspect of the Requirement. They work in exactly the same way as Project Notes. For more information, see Project/Requirement Notes [p. 53].

Requirement Main Success Scenario and Alternate Scenarios

A Structured Requirement consists of a set of one or more scenarios each comprising a sequence of sub-requirements or actions (Steps). Every Structured Requirement contains a Main Success Scenario; the objective of this is to capture the Steps that will lead to successful completion of the Requirement. For example, the Main Success Scenario of a *Withdraw Funds* Requirement is that funds are successfully withdrawn. Structured Requirements may also include alternate paths or scenarios. Alternative scenarios may result in achieving the overall requirement or may mean that the Requirement is not successfully completed. Some examples of unsuccessful completion might be an ATM machine being low on cash (Alt. Scenario: Machine Low on Cash), or an account having insufficient balance (Alt. Scenario: Machine Low on Cash). In these cases, the objective of the Requirement could not be met. Sometimes, a Structured Requirement can complete successfully even if an Alternate scenario applies. For example, a machine may not have appropriate denominations to satisfy the requested amount (Alt. Scenario: Re-specify amount), but this will not prevent possible successful completion of the Requirement named *Withdraw Cash*.

Requirements Map and Flow Diagram View

The Requirement Map View shows the relationships between this Requirement and other Requirements, including Refinement and branch relationships. A Requirement map looks similar to the following figure. The Flow Diagram outlines the specific flow within a structured Requirement. This is very useful for graphically outlining the scenarios, steps and distinct sequential business rules that trigger deviations in the flow.

Figure 21. Requirement Map with Scenarios
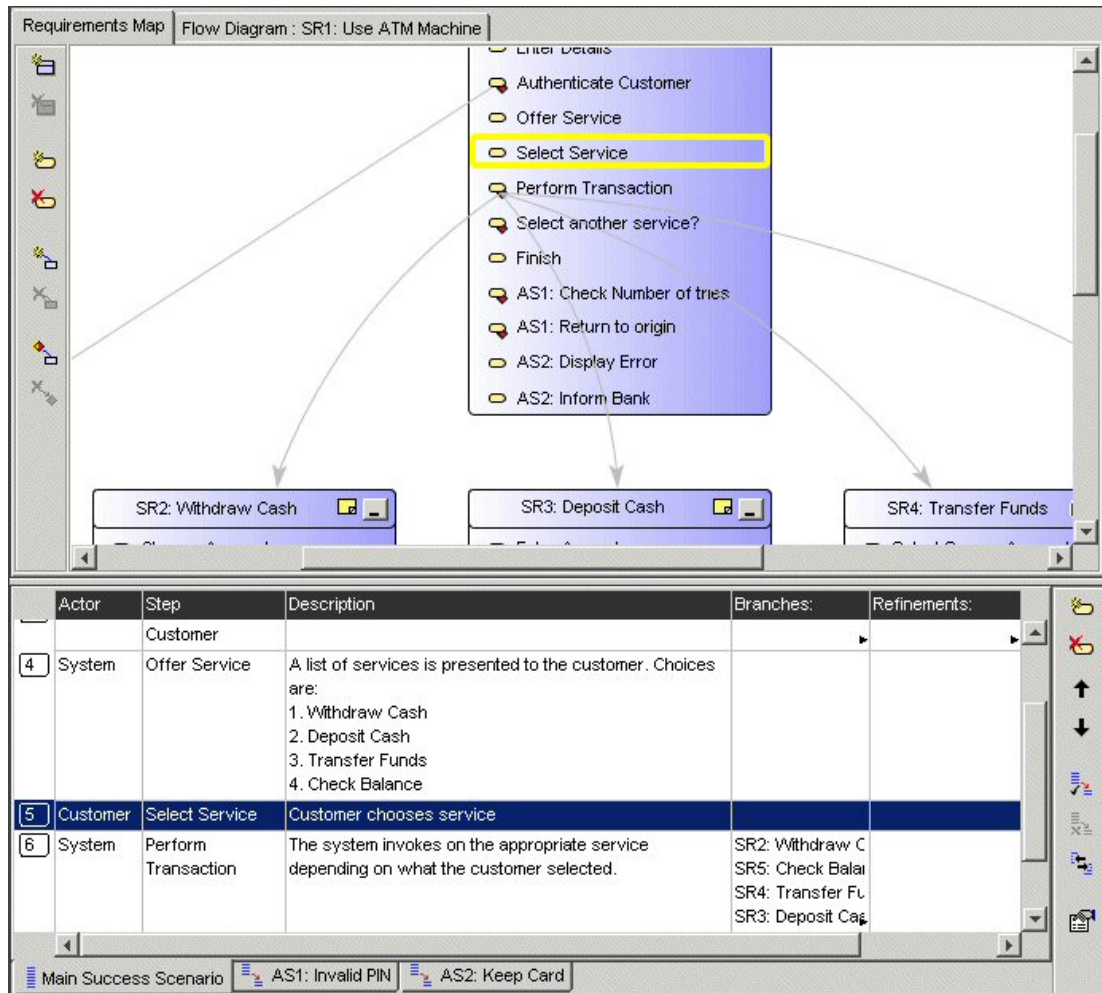
Figure 22. Requirement Flow Diagram with Scenarios
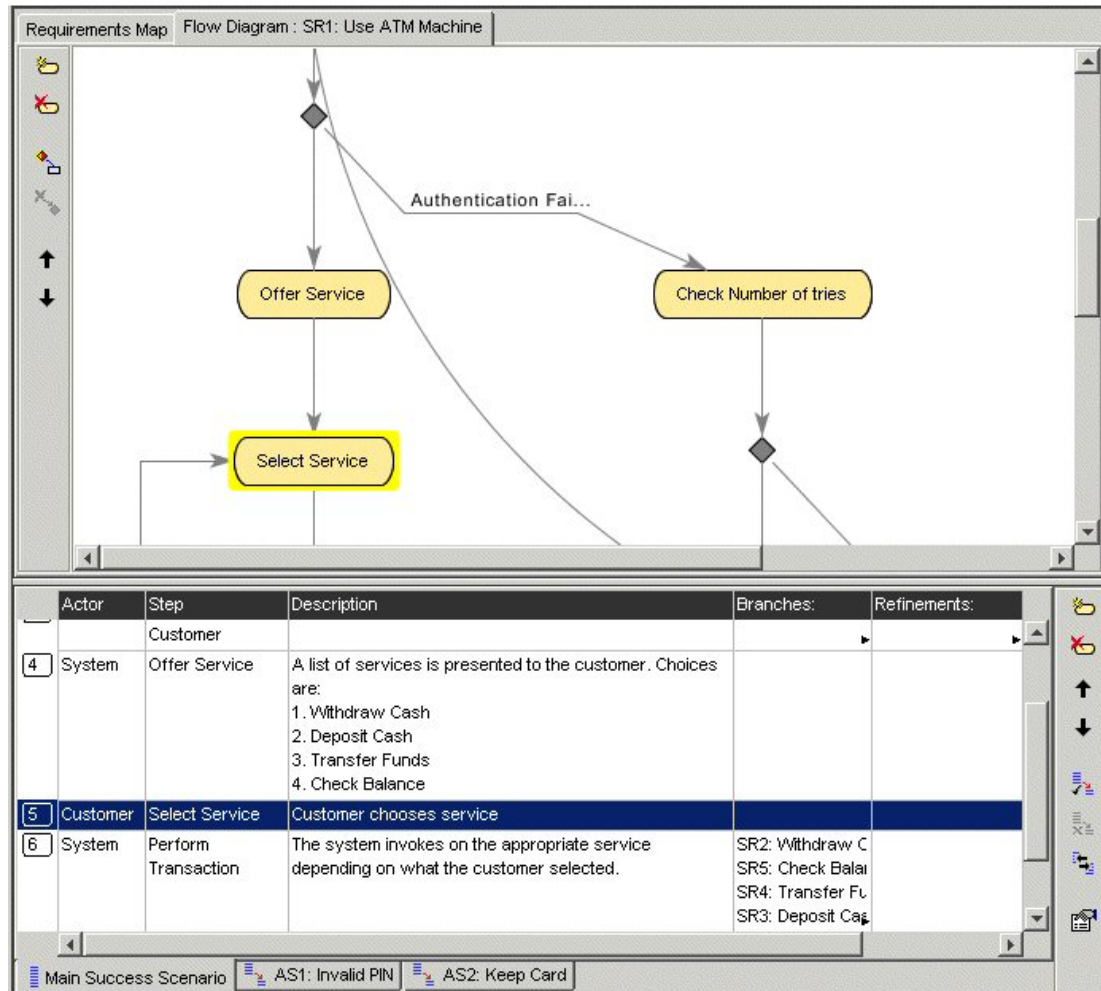
Simple Requirements

Simple Requirements allow the capture of less complex Requirements, where the Requirements tend to have a list structure. Examples where Simple Requirements would be particularly suitable include:

- Data oriented requirements where the need exists to specify format information in a tabular fashion.

- Marketing and other 'flat' requirements types where a tabular structure is common.

- Feature Lists for Product Managers that can be refined to more detailed structured requirements if necessary.

- Standard non-functional requirements types such as scalability, redundancy, etc.

Simple Requirement Properties

Each Simple Requirement has a basic set of properties that help clarify its purpose. These are:

- Name - the name of the Simple Requirement

- Description - a fuller description of the objectives of the Requirement

Simple Requirement Custom Properties

Custom properties can be defined for Simple Requirements. This means that each Simple Requirement can be set up to hold associated data. Custom Properties can be set as either freeform or 'bound', the latter meaning you can select from one of a list of predefined values. Requirement Level Custom Properties behave in exactly the same way as Project Level Custom Properties. For more information, see Custom Properties [p. 54].

Links in Simple Requirements

Links can be associated with Simple Requirements as well as with Projects. These provide the ability to associate documents, graphics, URLs, etc. with the Requirement. Click on the Links tab to access the Links associated with a Requirement. Links at the Requirement level work in exactly the same way as Project Links. For more information, see Project/Requirement Links [p. 50].

Notes in Simple Requirements

Each Requirement can have an arbitrary number of Notes associated with it. To access these, click on the Notes tab. Requirement Notes are useful for storing miscellaneous issues/clarifications to do with any aspect of the Requirement. They work in exactly the same way as Project Notes. For more information, see Project/Requirement Notes [p. 53].

Requirement Item List

A Simple Requirement contains a list of zero or more Items. Items can be used to store any kind of information related to the Simple Requirement, for example data attributes, sets of required product features etc.

CHAPTER 4

Running Searches and Querying Projects

There are two core ways in which you can Query Projects:

Simple Query
> Use the Simple Query to search for text within and across Projects.

Advanced Query
- Create queries based on conditions with 'And' and 'Or' support in a Query Builder screen. You may want to display Requirements with High Technical Risk (query on a Requirement custom property called 'Tech Risk') or show all steps that need to be changed (querying on a custom property called 'Needs Change?')

- Clicking any query result row auto-highlights the occurrence within the context of the loaded project for review.

- Save Queries Locally

- Share Queries with other Team members

- View Query Results as Publishable Web Reports

To perform a query, click on the **Query** tab or alternatively click on the button in the tool bar. This then brings up the query tab.

Simple Query

Use the Simple Query to search for text within and across projects. The search is performed on the currently selected project. Enter some text, "customer", to search for and then click **Run**. After a few moments, the search results appear. You can also click **Clear**. This results in the current result set being cleared from the Result List. The options available when running simple queries are outlined in the following table.

Table 18. Simple Query Options

| Option	Description
Match Case	This restricts the search to return only those results that match the case of the text typed into the search box.
Match Exact	This restricts the search to return only those results that match based on a complete match in the attribute, e.g. if the text that is being searched for is a partial match this would not be considered a match.
Search Repository	Checking this option means that a full search is performed across the entire repository.
Search All Loaded Projects	Checking this option means that a full search is performed across any projects that are currently loaded.

Figure 23. Running a Simple Query for 'Order'
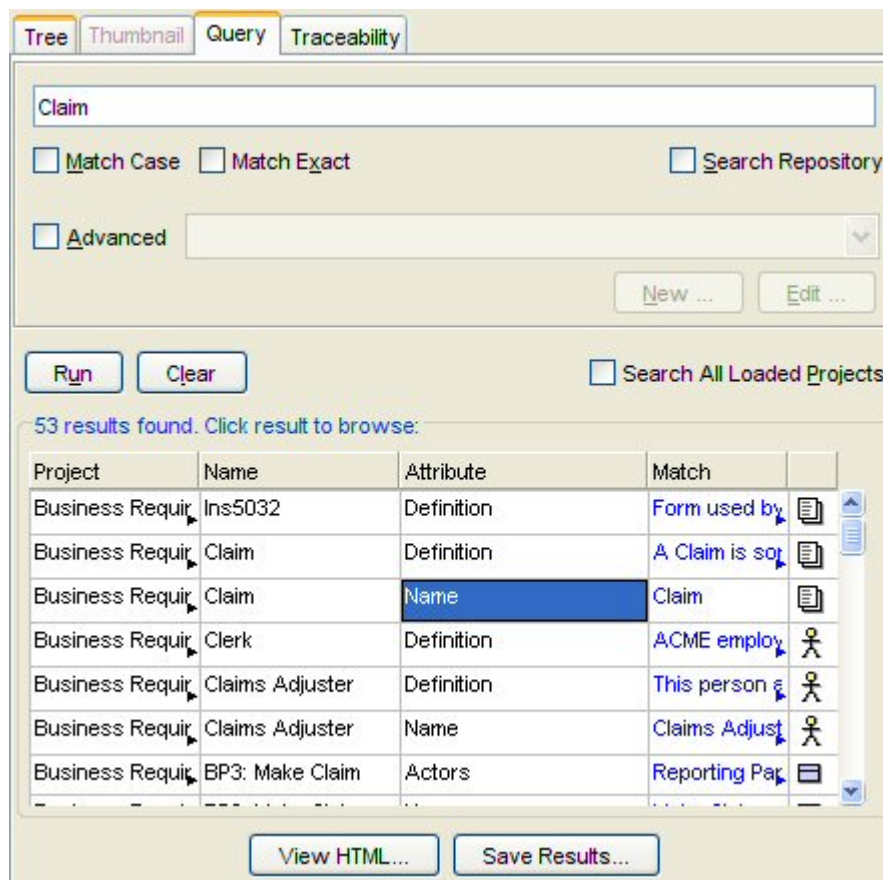
Table 19. Query Result Columns

Column	Description
Project	The Project in which the found artifact lives. This is useful if you are searching across multiple projects.

Column	Description
Name	The name of the element in the project where the match occurred.
Attribute	The name of the attribute or property whose text matched the search criterion.
Match	The text that was matched is displayed in red text.
Icon	This icon denotes the type of matched element (e.g. requirement, actor, etc.).

Clicking on a search result line highlights the matched Project element (Requirement etc.) in the context where it occurs. This provides an easy way to navigate straight to the results you are interested in. This facility is useful when reviewing a number of search results where you might want to update the Requirements for each result. In this context once a possible change is made, you can re-run the search and a revised set of results will appear.

NOTE

Searching the repository. It is quite possible that over a period of time, reusable elements can be identified in several different projects housed in the Optimal Trace Server repository. Typically there can be quite a degree of similarity between several projects in a given organization. There might for example be very similar login requirements etc. reflected as an 'Authenticate' requirements. You may want to quickly 'bootstrap' new project initiates by reusing some previously defined requirements (either requirements or non-functional requirements). To facilitate this, Optimal Trace Enterprise allows searches across the entire repository and once project hits are encountered for a given search term, then you can load the project and copy/paste multiple elements from the found project(s).

Advanced Query

The Advanced Query capability allows you to build up more complex queries that filter elements in the project. Examples of the types of queries that you might create are:

- Display all Requirements that are to be delivered in Increment 1 and 2
- Show all Legal Non-functional requirements
- Show Steps that have no actors

To enable Advanced Queries: Click on the **Query** tab and check the **Advanced** check box.

You can create, edit, delete and share queries.

Creating Queries

To create a new query click **New**. At this point the **Query Builder** screen displays. Every query is comprised of the **Query Name** and a collection of conditions that must be met.

To add one or more conditions for the query:

1. Click on the **Element** list.
2. Choose one of the elements. The list of elements is all queryable elements.

3. Choose the attribute to be queried. The element chosen in the first step causes this list to be populated.

4. Enter the condition to check.

5. Specify the **Value**. For Custom Properties that are bound, the **Value** list is populated with the values specified in the definition of the custom property. For the condition options **isEmpty** and **isNotEmpty** the **Value** field is disabled.

6. Click **Add Condition**.

Once the condition is added you may also check the **Match Case** or **Match Exact** options. These behave in the same way as for simple queries.

Figure 24. Query Builder for Advanced Queries
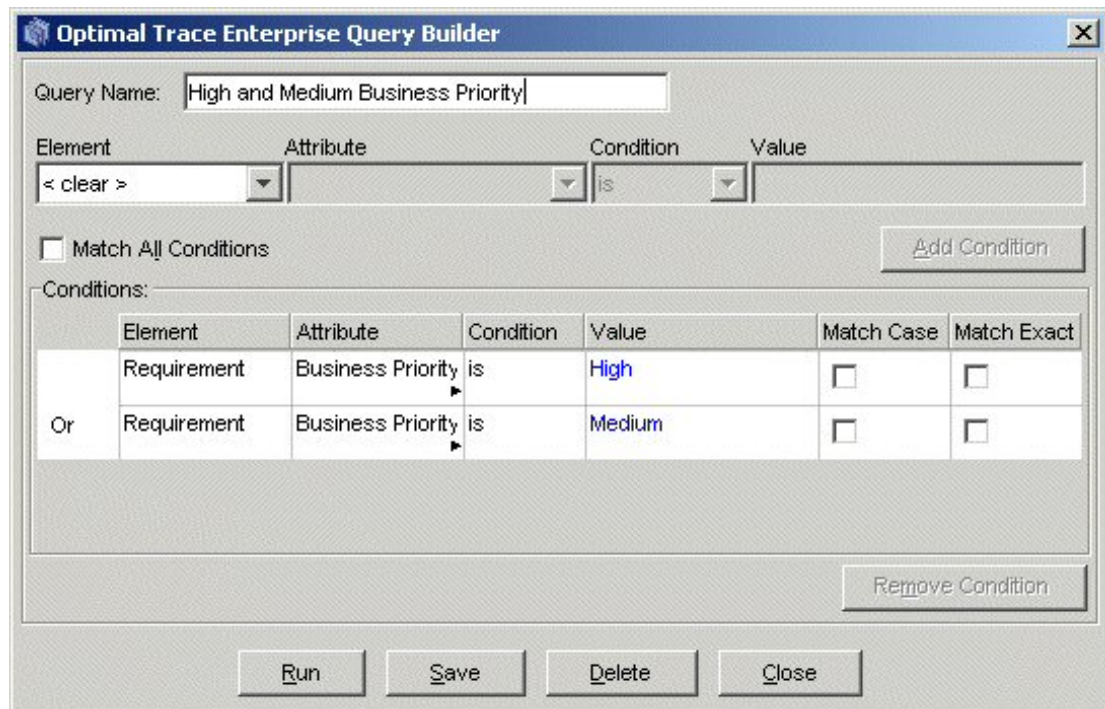
You can also build the query such that all the conditions are met (And), or only some of the conditions are met (Or). Leaving the **Match All Conditions** box unchecked means Or while checking it denotes And. If conditions are added that make the query irresolvable then Optimal Trace will inform you with an appropriate message. Additionally, if you have a set of conditions and by checking 'Match All Conditions' that query becomes irresolvable then you will be told with a specific reason for which condition makes the query invalid.

For more information, see Advanced Query Conditions [p. 72].

Advanced Query Conditions

Table 20. Advanced Query Conditions

Condition	Description
Is	The value must match the attribute in the element.

Condition	Description
IsNot	The value must not match the attribute in the element.
IsEmpty	The attribute of the element must have no value.
IsNotEmpty	The attribute of the element must have some value.

To remove a condition: select the `Condition` to be removed by clicking on it in the list of conditions and then click **Remove Condition**.

From the **Query Builder**, you can also run the query directly. This allows you to validate that expected results show for the query without having to dismiss the Query Screen completely. This is a convenience allowing you to make appropriate changes in the Query Screen. You can also Save or Delete the query by clicking the respective buttons.

Editing Queries

To edit a query:

1. In the **Query** tab, select the Query you want to edit from the list.
2. Click **Edit**.
3. Add or Remove conditions. For more information, see Creating Queries [p. 71].

Deleting Queries

To delete a query:

1. In the **Query** tab, select the query you want to delete from the list.
2. Click **Edit**.
3. Click **Delete**.

Viewing Query Results as an HTML Report

You can view the results of the query in a Report format by clicking the **View HTML** button. This creates a single page HTML file that shows the results. The query report is created as a file (HTML formatted) each time you click **View HTML**. This file is created in the following location:

`<INSTALL_DIR>\Documents and Settings\<USER_DIR>My Documents\Micro Focus\Optimal Trace Enterprise\<REL_NUM>\EN\reports\`. The file name is created as follows: `<QUERY_NAME>_Output_Report_File.html`. For example: `High & Medium Priority Reqs_Output_Report_File.html`.

Figure 25. Query Results as a HTML Report

Saving Query Results in a Text File

You can save the results of the query into a CSV (Comma Separated Values) formatted Text file. Such Text files will open in Microsoft Office Excel by default if you have this loaded on your system. To do this: click **Save Results...** and specify the name of the text file.

CHAPTER 5

Analyzing Traceability in Projects

Optimal Trace Projects are comprised of Simple Requirements and Structured Requirements with scenarios, steps, items, branches and refinements. You can access the automatically generated Traceability Tree enabling tracing to all dependent elements either within or across packages/projects. Four types of Traceability relationships are allowed in Optimal Trace:

Branches
> Branches allow one step (sub-requirement) in a given project. You can branch either conditionally or unconditionally to a different step or Structured Requirement.

Refinements
> Refinements allow a given step, or item, to be decomposed into a more detailed requirement either within the same package or across packages.

File Links
> File Links mean that a given requirement can be linked to any number of associated file artifacts. For example: sample screenshots in the form of GIF or JPG files, Microsoft Office Excel spreadsheets, Microsoft Office Visio flows can all be created as links.

Element Links
> Element Links allow linking one element to another element either within/across a project(s). Examples of this kind of Link relationship include when Test Cases are linked back to associated Requirements.

Figure 26. Traceability Tree with suspect Links and Linked Screenshots
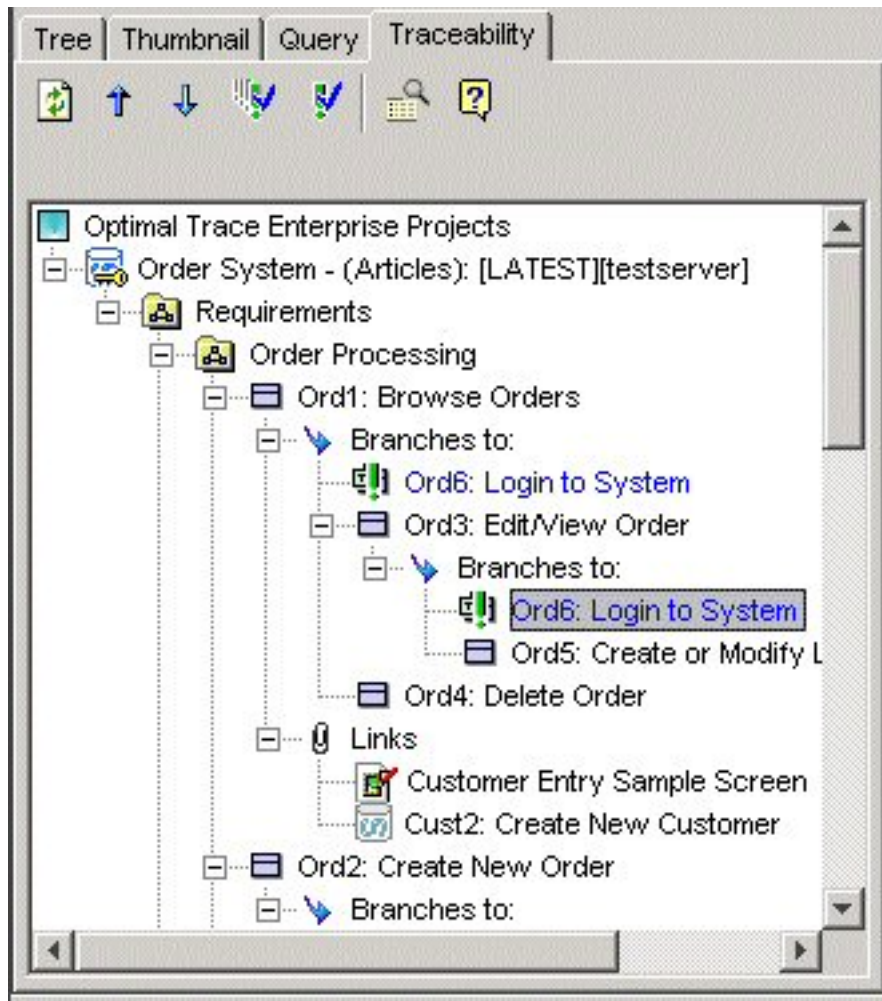
Each Branch, Refinement, or Link may have the following state which is visually indicated:

Table 21.

Trace State	Description
Not Suspect	This means that the branch, refinement or link is more recent than any part (any sub-component) of the element that is 'Linked To'.
Suspect	This means that the branch, refinement or link is less recent than any changes in any aspect of the element that is 'Linked To'.
Unknown	This means that the 'Linked To' element is currently not loaded and the element text is reflected as a light Grey. To load the element, double-click on it.
Unresolved	Only applicable to file based links. This means that the 'Linked To' file is not found and is marked in red.

Suspect Links

Suspect Links are best understood with some examples. The next sections outline the options that are available in the Traceability Tree.

- Example 1: if a test has a Trace Link back to an original Requirement, then if someone makes a change to the requirement then the link from the test will be marked as suspect.

- Example 2: if a screenshot is linked to a given requirement and the screenshot is altered then the link is marked as suspect.

Refreshing the Trace Tree

Click the **Refresh** button to refresh the contents of the **Traceability Tree**. This re-loads all currently loaded projects and gets the most up to date state of the elements from a Traceability perspective.

Navigating the Trace Tree and Loading Projects

Navigating to the Previous and Next Suspect Link(s) is done by clicking the **Up Arrow** and **Down Arrow** buttons respectively. Where cross-project traces links exist you can automatically load the traced to element (and project if not already loaded) by double clicking the link in the Traceability Tree.

If the *Traced to* element is a file, Optimal Trace will resolve the link and invoke the 3rd party tool where possible. The underlying associations in Windows are used to resolve the appropriate tool to use and launch.

Inspecting and Clearing Suspect Links

Suspect Links mean that some change has occurred in the element being pointed to. Such changes may be relatively benign. In order to examine the nature of the changes made (making the link suspect), click on the **Inspect** button. In this instance you are presented with a **Changes** dialog box. This displays the detail of all changes made either since the link was created or else since it was last cleared of its suspect status. As well as viewing the specific changes that make the element suspect, you can also save the list of changes as a text file by clicking the **Save as** button.

Once you have reviewed the changes you may clear either one or all suspect links. This is done by either clicking the Clear One or Clear All buttons respectively. Once you clear the suspect status, the element is locked to avoid conflict and multiple people editing status at the same time.

NOTE

To View Traceability for single elements: Select the element in the tree area and click on **Traceability** button. This brings up a **Traceability** dialog box for the selected element.

NOTE

Trace Tree performance for large projects. If a project has a large number of suspect links, displaying these in the Trace Tree can have a negative impact on performance. The default.properties file in the installation folder contains a setting called 'maxDisplaySuspectLinks'. This is by default set to 5000. The trace tree will stop searching for suspect links once it has reached the number specified by this setting. Additionally it will ask the user if they wish to expand all these suspect links, as doing so may take a significant amount of time.

CHAPTER 6

Edit and View Menus

Copy/Paste Options

You can copy and paste the following: Actors, Glossary Items, Packages, Structured Requirements, Steps, Simple Requirements, and Items.

To copy and paste: select an item and use the **Copy** and **Paste** buttons.

If you have multiple Projects loaded, you can paste from one Project into another.

To copy multiple requirements, packages, steps or items you need to initially select multiple elements. Optimal Trace uses the standard Microsoft Windows keys to support multiple select. There are two mechanisms for selection. To select a range of adjacent requirements or packages, select the beginning element in the tree and then while holding down the 'Shift' key select the ending requirement that you wish to copy. All requirements or packages in between the initially selected element and final element are marked for copy. Once the elements are selected then paste into the desired new location. Alternatively to copy non-sequential single elements use the CTRL key while selecting each desired element and paste as per normal. Requirements or packages can be copied within the current project or into another project.

The following shortcut keys apply:

- Copy - hold down `[Ctrl]` and hit `[C]`, or hold down `[Ctrl]` and hit `[Ins]` (`[Insert]`)

- Paste - hold down `[Ctrl]` and hit `[V]`, or Hold down `[Shift]` and hit `[Ins]` (`[Insert]`)

NOTE

Copying with Custom Properties: In general when copying from one project to another, or one package to another, if there are Custom Properties associated with the element to be copied then the custom properties are only copied over if they are also defined in the destination. All other standard attributes of the copied element are copied. The exception to this rule, is when the object you are copying is a package. In this case, if there are custom properties defined on the package then the package is pasted keeping its custom property structure. In this case the Package Custom Property setting on the destination will have the 'Share' attribute unchecked.

NOTE

Multiple copy of Steps and Items: Optimal Trace supports multiple copying of steps and items. In this instance, however, the steps or items to be copied must be contiguous and individual selection with `[Ctrl] + [C]` is not supported.

Copy as Link (URI)

To establish Traceability Links within or across projects you ordinarily use the **Add New Trace Link** functionality. There is, however, an alternative way to copy unique links to elements. This is through the **Copy as Link** option. This creates the trace to element reference id and copies it to the clipboard. This means that you now have a unique reference to the element. To copy the reference to the clipboard, right-click on the specific element in the Tree.

NOTE

Starting Optimal Trace from any third-party environment is possible using copied references. For example, if you embed the copied link reference as a link in a web page, then clicking that reference will resolve back to the specific element in Optimal Trace. Similarly, any third-party tool that supports invocations can make references back in the same fashion. To see an example of this, see the generated HTML pages from the Traceability Report.

Search Option

Clicking the **Search** button opens the **Query** tab.

Undo/Redo Options

Use these options to undo/redo any actions you make, before saving. Click **Edit>Undo/Redo** and Optimal Trace will undo/redo your last action.

Show/Hide Columns Option

Use this option to select specific columns to be visible while editing the project. This allows you to focus on the specific columns that may be of interest at a given time during analysis. The following project elements may be made visible/invisible: Non-functional Requirements, Steps, Items, Actors, and Glossary.

Table 22. Additional Show/Hide options

Option	Description
Show Current Package Contents Option	Use this option to view the most recently selected Package in your Project.
Show Current and Sub-Package Contents Option	Use this option to view the most recently selected Package, and the contents of all of its sub-Packages, in your Project.

Option	Description
Show Contents of all Packages Option	Use this option to view the Requirements contained in all Packages, in your Project, regardless of which Package you have currently selected.
Show Cross Package Branches and Refinements Option	Use this option only when you have selected either one of the options described above.
Expanding and Collapsing Requirements	During a requirements session you may find that you are building Requirements with large numbers of scenarios and Steps, or a large number of Items. Optimal Trace provides a facility for adjusting the way Requirements are displayed in the Requirement map. When you create Requirements, they are shown fully expanded in the Requirement Map by default. In other words, in the case of Structured Requirements they show all scenarios and all Steps, and in the case of Simple Requirements they show all Items.

To collapse all structured requirements: right click on the Requirement Map and click **Hide All** of the Steps in Requirements.

This will collapse the Requirements for a more manageable view. A collapsed view allows a more convenient way of traversing the set of Requirements and highlighting specific ones for which you can see the detailed scenarios etc. To collapse all simple requirements: Right click on the Requirement Map and click Hide All of the Items in Requirements.

NOTE

You can also select a specific Requirement to expand by either double clicking on the Requirement title or else clicking on its button.

CHAPTER 7

Requirements Menu

This allows you create, edit, delete Packages, Structured Requirements and associated Scenarios and Steps, and Simple Requirements and associated Items. Additionally you can move and reposition both Packages and Requirements and all associated convenience capabilities such as Renumbering.

Creating Requirements/Packages

Choose a Package for the new requirement by selecting it in the tree view. If you have not defined any packages, select the default Requirements Package. Click the **New Structured Requirement** or **New Simple Requirement** button on the tool bar.

To create a new package, click the **New package** button on the tool bar.

Deleting Requirements/Packages

To delete a Structured or Simple Requirement, select the requirement in the tree view and click the **Delete** button. If the requirement has Steps or Items you will be prompted to confirm the deletion. If the requirement has refinements or branches associated with it, you will be prompted to delete the requirement only or the requirement and its associated children.

To delete multiple requirements or packages you need to initially select the requirements/packages in the tree view. Use the standard Microsoft Windows keys to support multiple select. There are two mechanisms for selecting. To select a range of adjacent requirements or packages, select the beginning element in the tree and then while holding down the [Shift] key select the ending requirements that you wish to copy. All requirements or packages in between the initially selected element and final element are marked for deletion. Once the elements are selected then hit the delete button. Alternatively to delete non-sequential single elements use the [Ctrl] key while selecting each desired element and delete as per normal.

Renumbering Requirements

During the course of the requirements gathering phase, it is important to maintain the consistency of each requirement's number. In the course of your work, new requirements are added and existing requirements are deleted. Optimal Trace will recycle deleted requirement numbers. For example, if you delete a requirement SR4 from a project containing the requirements SR1, SR2, SR3, SR4 and SR5, the next requirement created will be created as SR4.

Over time you may want to consolidate the numbering, perhaps prior to a project being baselined. When renumbering is applied, all of the requirements across all the packages in the project are numbered according to the current numbering policy. If any simple requirements have been re-numbered, their Items will also be renumbered to reflect the new Simple Requirement number. For more information, see Project Baselines [p. 22], and Numbering Policy Settings [p. 60].

To apply renumbering to a project, click the **Renumber** button. Since renumbering is an occasional activity and considering the implications of renumbering, you will be prompted for confirmation of this action. Once confirmed, the renumbering is applied to all requirements.

NOTE

Renumbering of scenarios is handled automatically and no gaps are allowed to appear when deleting scenarios.

Moving Requirements/Packages

There are two ways to move Requirements and Packages:

- Drag and drop: use standards Microsoft Windows drag and drop functionality to move your items.

- Tool bar: select a requirement in the tree view and then click the **Move Requirement** button on the tool bar and the **Move Requirement to Another Package** dialog box displays. Select a location and then click **Apply**.

NOTE

Moving and Custom Properties. When moving from one project/package to another where Custom Properties are associated with the element(s) to be moved, the custom property values are only moved if the Custom Properties are defined in the destination. The one exception to this rule is when the element being moved is a package. In this case when the package is moved, all the custom property values are moved, and the package becomes an orphan (un-shared) if its custom property definitions are different from that of its new parent.

NOTE

Moving and Locking. When moving requirements you acquire an explicit lock on the package that contains the Requirement. This is because you will be changing the explicit structure of the package on moving.

Multiple Requirement or Package Moves

To move multiple requirements or packages at the same time you need to initially select the requirements or packages within the tree view. Use the standard Microsoft Windows conventions for selecting multiple items. Once the elements are selected, follow the procedures above.

Repositioning Requirements/Packages

When you add a new requirement into a package or a package as a sub-package, that item is positioned at the end of the current list of requirements/packages. It is possible that you may want to re-sequence or re-order it over the lifecycle of the analysis phase or beyond.

To reposition the requirement or package: select it in the tree and click the **Reposition** button in the toolbar. The **Reposition** dialog box displays and you can then use the **Up Arrow** and **Down Arrow** buttons to reposition it.

Branches Menu

Use the **Branches** menu to branch from step to step and from a step to a structured requirement. In addition to branches within a given structuredrequirement, Optimal Trace allows branching between structured requirements. The mechanism to branch to another structured requirement is very similar to that used for branching to steps:

*   Select the step that the branch originates from, click **Requirements>Branches**. Branches are denoted with a directed arrow. The arrowhead indicates the step or structured requirement that is being branched to.

Creating a Branch

Create a branch to perform the following:

*   Branch from a step to an existing step or structured requirement

*   Branch from a step and implicitly create a new structured requirement while branching

In the case of *Withdraw Cash* for example, a branch might occur when a customer requests a certain amount from the ATM and sufficient funds are not available. Another example is if an incorrect multiple of currency notes has been entered (typically only multiples of 20 are handled by many ATM machines).

To create a branch:

Click a step (either in the Flow Diagram or the Requirements Map) that you want the branch to originate from and then click on the button in the central vertical toolbar adjacent to either the Flow Diagram or Requirements Map. This will display the **Branch Properties** dialog box.

If you want to create a new structured requirement to branch to, click the **New Requirement** button. This will result in the new structured requirement being created and selected as the branch destination. A condition that causes the branch to occur can also be specified if appropriate.

A conditional branch is depicted by a diamond box connected to the step that is branching, with the condition displayed adjacent to the connecting line on the Flow Diagram. A conditional branch is indicated by clicking the **Conditional Branch** checkbox.

If you do not branch with a condition then no diamond is shown, instead a line is drawn directly from the originating step to the destination step.

Editing and Deleting Branches

- Editing: Select the branch line in either the Flow Diagram or Requirements Map. Do this by clicking on the line at which point the line is colored red. You may either edit the branch details in the bottom left branch detail area or by clicking **Requirements>Branches>Edit Branch**.

- Deleting: Select the branch line either in the Flow Diagram or Requirements Map. Click **Requirements>Branches>Delete Branch**. The **Delete Branch** dialog box appears from which you can delete the branch and its children or only the branch.

Steps Menu

Use this menu (**Requirements>Steps**) for manipulation of Steps (sub-requirements). Each scenario is composed of a number of Steps. Each individual step is a single step of the action required to complete a structured requirement. Together, fulfilling all of the steps in a structured requirement results in the scenario being completed. Note the steps menu is only visible when a structured requirement is selected in the tree.

Each step has the following attributes:

- The actor that is starting or initiating the step.

- The name of the step.

- A detailed description of the step.

- Applicable branches or refinements.

The Main Success Scenario of Withdraw Cash might contain Steps such as: insert ATM card, prompt for PIN, enter PIN, validate PIN, or choose account type.

Step Custom Properties

Custom properties can be defined for Steps. This means that each Step can be set up to hold associated data. Custom Properties can be set as either freeform or bound. Bound means that you can select from one of a list of predefined values. Step Level Custom Properties behave in exactly the same way as Project Level Custom Properties. Clicking the **Custom Properties** button in the toolbar to the right of the scenario brings up the **Custom Property Editor** screen.

Adding and Deleting Steps

1. Click the **Add Step** button to add a step, or
2. Click the **Delete Step** button to delete a step.

Move Step Up/Down Options

Use this option to move the selected Step up or down one position at a time in a Requirement. Effectively you are re-ordering the steps in the given scenario. To move steps, click either the **Up** or **Down** arrow buttons.

Items Menu

Use the **Requirements>Items** sub-menu for manipulation of Items. Each Simple Requirement is composed of a number of Items. Each individual Item can describe some piece of information that complements the Simple Requirement. Note the Items menu is only visible when a Simple Requirement is selected in the tree view.

Each Item has the following attributes:

* The `Name` of the Item.

* A detailed `Description` of the Item.

* Applicable refinements and links.

Item Custom Properties

Custom properties can be defined for Items. This means that each Item can be set up to hold associated data. Custom Properties can be set as either freeform or bound, the latter meaning you can select from one of a list of predefined values. Item Level Custom Properties behave in exactly the same way as Project Level Custom Properties. Clicking the **Custom Properties** button in the toolbar to the right of the item list brings up the **Custom Property editor** screen.

Working with Items

Table 23. Working with Items

Action	Description
Add	Use the **Add Item** option to add a new Item to a Requirement. Click the **Add Item** button.
Delete	Use the **Delete Item** option to delete the selected Item from a Requirement. Click the **Delete Item** button.
Move Item Up/Down	Use the **Move Item Up/Down** options to move the selected Item up or down one position at a time in a Requirement. Effectively you are re-ordering the items in the given item list. To move items, click either the **Up** or **Down** Arrow buttons.
Renumber	Use the **Renumber** option to renumber the Items in the item list sequentially. Moving items up/down can cause the item numbers to get out of sequence. Clicking on the button will renumber the items.

Action	Description
	NOTE
	Over a period of time, certain items may get removed. In this case when adding new items the new item number will be set to the maximum possible number available, allowing holes to develop in the numbering. This is deliberately done to preserve continuity of number especially when a broader team is receiving the requirements and used to associating a certain item number.

Refinements Menu

Use the **Requirements>Refinements** menu for refinements purposes. Typically many initial Project requirements are high level, e.g. one-line descriptions of some key functionality. We encourage these types of requirements to be captured as 'Simple Requirements' as they provide an invaluable audit trail especially when the Project requirements are later altered or represented as detailed Structured Requirements associated through refinement.

The Refinement concept in Optimal Trace allows high-level requirements (perhaps Simple Requirements with one or two Items) to be detailed to a greater degree of precision while maintaining the original requirement with no change. When defining Refinements you can refine across Packages. It is common that Requirements at one 'level' might exist in a dedicated package with a given 'Tag' thereby marking these requirements as being at that level. The refined to requirements might exist in a second dedicated package with their own Tag.

The Refinement Links a Step or Item at one level to more detailed Requirements (Simple or Structured Requirements). Refinements are denoted by solid grey straight lines connecting the Step or Item to the refined Requirement.

Creating Refinements

Use this option to:

- Refine from a Step or Item to an existing Requirement.
- Refine from a Step or Item and implicitly create a new requirement while refining.

In the case of the Item 'Order' in the 'Order System' demo for example, a refinement relationship occurs between Order and Line Item, indicating that the Order contains the Line Item. Multiple Refinement Links can be created to a given Structured or Simple requirement.

To create a refinement:

1. Click on a Step or an Item in the Requirements Map view. This will be the step/item that 'refines'.
2. Now click on the **Create Refinement** button in the central vertical toolbar adjacent to the Requirements Map. This opens the **Create Refinement...** dialog box. This dialog box shows each of the packages and requirements where you can refine to.
3. If you want to create a new Requirement to refine to, click **New Requirement**. This will result in the new Requirement being created and selected as the refined to requirement.

Deleting Refinements

Use this option to delete an existing Refinement. To do this, first select the refinement that you want to delete by clicking the line from the step to the requirement in the Requirement Map. Once selected, the refinement line changes to a red color.

Figure 27. Selecting a Refinement Line
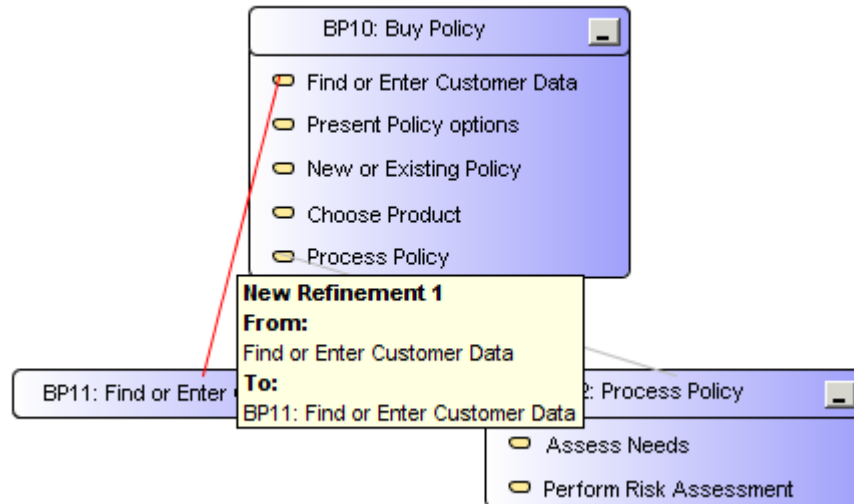
Click the **Delete** button. The **Delete Refinement** dialog box appears from which you can delete the refinement and its children or only the refinement. When you click the delete refinement button you may also delete any refined to Requirements.

Figure 28. Delete Refinement Dialog Box
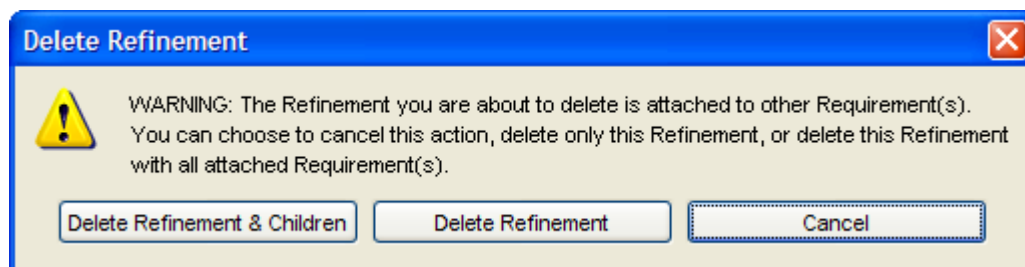
Refine Requirement

Use this option to create a new refinement to another Requirement when there is no sub-step or item already created on the 'refining' Requirement. This is a convenience option that:

• Creates a new step or item in 'refining' Requirement

• Creates the refinement relationship from that new step or item to the 'refined to' Requirement.

Scenarios Menu

Use this menu for scenario purposes. The following options are available within the Scenarios menu.

Table 24. Scenarios Menu Options

Options	Description
Create New Scenario	Use this option to create an Alternative Scenario in a Structured Requirement. Alternative scenarios provide an optional series of Steps to the Structured Requirements Main Success Scenario. This is why they are referred to as an Alternative Scenario.
Delete Scenario	Use this option to delete an Alternative Scenario.
Reposition Scenarios…	When you add a new scenario into a Structured Requirement, that scenario is initially positioned at the end of the current list of scenarios. From time to time, you may want to re-sequence the alternative scenarios over the lifetime of the analysis phase. To reposition a given scenario, first select that scenario by clicking on the relevant scenario tab. Now click the **Reposition Scenario** button in the toolbar. Use the **Reposition Scenario** dialog box to reposition the scenario within the requirements by using the up and down arrows.

CHAPTER 8

Generation Menu

Use this menu for document generation purposes.

During the requirements gathering phase of a Project, formal documentation is typically required for customer sign off. Several versions of a requirements document may be required prior to final sign off of a Project, and indeed an updated version may well be required after final sign off due to subsequent changes to requirements.

Requirements documents are often the home of data that stems from multiple sources; so managing requirements documents can be a major challenge. Ideally, changes within the requirements document should be preserved as the document evolves. Using traditional techniques, this type of auditing is difficult to accomplish, particularly when it must be coordinated across a large team. Optimal Trace facilitates generation of Microsoft Office Word documents, preserving non-Optimal Trace data within these documents. Optimal Trace also facilitates round tripping of changes made to Optimal Trace data within these same Microsoft Office Word documents, back into the Project.

Generate Requirements Document

Use this option to generate requirements documents in Microsoft Office Word 2000, 2003 and 2007 formats.

NOTE

Prior to generating a requirements document, you must configure the MS Word security settings. For more information, see Configuring MS Word 2000 & 2003 Security Settings [p. 93], and Configuring MS Word 2007 Security Settings [p. 94].

To generate a Microsoft Office Word document detailing requirements using Optimal Trace Click on the **Generate Requirements Document** button and the **Document Generation** dialog box will appear.

Optimal Trace has the ability to ignore custom property errors that arise during document generation. These errors occur when custom properties in the template and the project do not match. In previous releases, document generation stopped when it encountered inconsistencies

in custom properties between the template and the project. In this release, users have the option to ignore the errors in order to proceed with the documentation generation process. Users can then view the errors and trace their location to the corresponding table. An empty token appears in the document where the error occurred.

The **Document Generation** screen shows the available set of document profiles (collections of document templates used to format the generated document), and allows you to select the one you want to use for document generation. When you select a profile Optimal Trace automatically suggests a file name, which is created by appending the profile name to the Project name. You can override this default suggestion by explicitly specifying a document name yourself. These other options are available when generating:

Table 25. Generation Options

Option	Description
Automatically Generate Custom Properties	Check this box if you have a project that has Custom Properties and wish for them all to be added automatically. If the selected Document Profile has already been customized to have some Custom Properties included, then this option will only add the ones that are missing.
Generate Partial Project	Check this box if you wish to generate a given package from the current project. If you check this box then a selection screen will appear when you generate allowing you to select the specific package.
Expand File Links in Document	Check this box if you wish to expand all file links in the generated document. To define the types of files to be expanded, select **Options**>**Tool Settings**, and then type the desired file types in the **Expanded File Types in Generated Docs** box.
Add Document Link to Project	When a document is generated Optimal Trace can also automatically insert a project level link to the generated document. If you do not wish to automatically create this link, clear the **Add Document Link to Project (locks the project)** option. The impact of adding a project link is that the project element acquires a lock.
Remove Hidden Text	When a document is generated Optimal Trace inserts hidden text surrounding the document content. This is used to identify project elements within the document when the document is being updated from Optimal Trace or reversed into Optimal Trace. Additionally, on normal generation certain Microsoft Office Word Macros are inserted into the generated document. These power the custom menus in documents used for reversing documents. Using this option will remove all this hidden tag/text information from the document. It will also not include the macros thus making the document free of any markup. This will reduce the document size. **NOTE** Removing Hidden Text is recommended if you never intend on using reversal of documents or if your audience is high level and you are concerned about not being able to open the documents due to security settings. By removing the text, reversal of documents is not possible

Click **Generate** to create the document.

If you attempt to generate a document with a name that already exists, Optimal Trace informs you of this and gives you the option of either overwriting the old document or specifying a different name. You can cancel document generation by pressing the **Cancel** button on the progress screen. When the document is created, a File Link to the document is automatically inserted into the Project's Links area, assuming the **Add Document Link To Project** option was selected.

NOTE

Forms Documents:

- Microsoft Office Word Forms: These are Microsoft Office Word documents where only certain areas are editable. For Optimal Trace, these editable areas will generally consist of data values originating from the Project.

- Usage: In particular, these types of documents are for nontechnical users who wish to edit Optimal Trace documents and then reverse these changes back into the project. As long as they keep the document protected, they can safely edit the data fields without fear of doing any damage.

- Profiles that generate Forms documents: Default Form, Default No Images Form, Overview, and ChangeHistory.

- Issues:

  ◦ Navigation is different. Press TAB or PageDown to move from formfield to formfield.

  ◦ Clickable hyperlinks don't work, so clicking on an external link won't do anything. Neither will clicking on the Table of Contents, which can be annoying but is default Word behavior. However if the document is unprotected first, via the Optimal Trace menu, then links start working.

  ◦ Many of the common Microsoft Office Word facilities, such as Search, won't work until the document is unprotected.

  ◦ Sometimes, when tabbing through the form fields in a documents, the focus and cursor seem to disappear. If tab is pressed a few more times, it comes back. The reason for this is that there are hidden form fields in some areas in the Optimal Trace document, for instance the Branches table is completely hidden but contains form fields. If 'Toggle Hidden Text' is selected from the Optimal Trace menu, it is clear what is going on. All these points are as per Microsoft Word design and are beyond Optimal Trace control.

Configuring MS Word 2000 & 2003 Security Settings

Prior to generating requirement documents from Optimal Trace, you must configure the security settings in MS Word 2000 and 2003.

1. Open a MS Word 2000 or 2003 document.
2. Click **Tools**>**Macro**>**SecurityToolsMacroSecurity**.
   The **Macro Security** dialog box appears.

3. Select either a `Low` or `Medium` security level.

4. On the **Trusted Sources** tab, select both the **Trust access to Visual Basic Project** and **Trust All Installed Add-Ins And Templates** boxes.

5. Click **OK**.

Configuring MS Word 2007 Security Settings

Prior to generating requirement documents from Optimal Trace, you must configure the security settings in MS Word 2007.

1. Open a MS Word 2007 document.

2. Click the **Office** button, and then click **Word Options**.

   The **Word Options** dialog box appears.

3. In the left pane, select **Save**.

4. Under **Save documents**, select `Word Macro-Enabled Document (*.docm)` from the **Save files in this format** list.

5. In the left pane, select **Trust Center**.

6. In the right pane, select the **Trust Center Settings** button.

   The **Trust Center** dialog box appears.

7. In the left pane, select **Macro Settings**.

8. In the right pane, under **Macro Settings**, select **Disable all macros except digitally signed macros**.

9. Under **Developer Macro Settings**, select **Trust access to the VBA project object model**.

10. Click **OK** to dismiss the dialog boxes, and then close the Word document.

Opening a Document after Generation

When you generate the Microsoft Office Word document you can automatically launch Microsoft Office Word with the generated document open. To do this, just click the **Open** button when generation is completed. This will start Microsoft Office Word and you can view or edit the document.

Update Requirements Document Option

Use this option to update a document you previously created, for example, to reflect changes you may have made to the Project.

NOTE

- Partial Documents cannot be updated.

- Custom Properties are Read Only in terms of Document Generation. This means that changes to Custom Properties (add, remove or edit) will not work for updating the document. Changes to existing Custom Property values will be updated.

Choose the document you wish to update and click on **Select**. It is important that you update the correct document. If Optimal Trace detects that the document you've selected was not originally generated from this Project then it will inform you of this and prompt you to select a different document.

If a problem is encountered during the document update, an error screen will appear. Optimal Trace will attempt to locate the error in the document when you click the **…** button. In most cases, the error is an easy manual fix. Note however, that fixing the error may require some knowledge of XML. When you click **…**, all the hidden text in the document will be displayed. Most of this hidden text consists of XML tags.

Editing the Requirements Document

From time to time you will want to modify a generated document outside of the Optimal Trace environment. Optimal Trace provides full support for such edits and provides a facility for round-tripping the changes back into a Project.

NOTE

Partial Documents cannot be reversed.

Using the Optimal Trace Menu in Microsoft Office Word

When Optimal Trace-generated documents are opened in Microsoft Office Word, a special menu is inserted into Microsoft Office Word. Optimal Trace-generated documents exist independently of an Optimal Trace deployment. As such, they can be edited either onsite or at a remote location. This is useful when making changes in Microsoft Office Word documents and then reabsorbing those changes back into an Optimal Trace project.

The following table outlines each menu option, its likely usage scenario and its purpose/description.

Table 26. Optimal Trace Options in Microsoft Office Word

Option	Usage	Description
Toggle Hidden Tags	Diagnosis & Repair	This turns on and off the hidden text that Optimal Trace uses to support round-tripping and document updates. Use this option for diagnosis when a document ceases to be round-trippable or updateable. The likelihood is that a hidden XML tag has been inadvertently deleted.
Protect Document	Normal Editing	Microsoft Office Word Forms-based documents are ones where only specific fields are available to you for editing. This has the welcome side effect of protecting all the hidden text, which otherwise could be accidentally modified. In such Forms documents, if you want to edit in other areas of the document, you will need to unprotect the document. This option then re-protects the document after such an editing session.

Option	Usage	Description
Unprotect Document	Normal Editing	Microsoft Office Word Forms-based documents are ones where only specific fields are available to you for editing. In such generated documents if you want to edit in other areas of the document, you will need to unprotect the document. This option allows you to do that.
Insert Unique ID	Advanced Editing	This option will automatically generate a unique Optimal Trace ID for advanced customization of documentation. Typically, this option is used for generating new IDs when the user is manually adding a new Requirement.
Create Reserved Text Area	Advanced Editing	This (rarely used) option creates a reserved area for you to wrap certain non-Optimal Trace content which otherwise would interfere with the normal workings of the document. An example would be a user wishing to add some text of their own, which contained reserved XML characters such as `<` or `&`. Note that most normal freeform text can be freely typed anywhere in documents without problems. Also, binary content such pictures, Microsoft Office Excel spreadsheets, etc. can be safely inserted in documents as-is without needing to use this option.
Duplicate Current Row	Normal Editing	This allows you create new steps, glossary items, actors, links, notes, etc by copying an existing row in the table. Use this to add new entities to the document, which can then be round-tripped back into Optimal Trace.
Insert Custom Property	Editing a Profile	Disabled for generated documents.
Delete Custom Property	Format Tables	Disabled for generated documents.
Format Custom Property Tables	Format Tables	Disabled for generated documents.
Format Tables	Editing a Profile	Disabled for generated documents.

Inserting/Deleting in Microsoft Office Word

Table 27. Insert/Delete Items in Microsoft Office

Insert/Delete Type	Description
Steps	Inserting new steps in a scenario within Microsoft Office Word can be done very simply. Select the row in the specific scenario that you wish to insert steps into. Once you have the step highlighted, under the Optimal Trace menu option click **Duplicate Current Row**. This has the effect of making a copy of the currently selected step and the name becomes 'copy of xyz step' where 'xyz step' is the selected step.

Insert/Delete Type	Description
	To delete steps: select the row you wish to delete and click delete as you would with any normal table.
Items	Inserting new items in a Simple Requirement within Microsoft Office Word can be done very simply. Select the row in the specific item list that you wish to insert items into. Once you have the items highlighted, under the Optimal Trace menu option click **Duplicate Current Row**. This has the effect of making a copy of the currently selected item and the name becomes 'copy of xyz item' where 'xyz item' is the selected item.
	To delete items: select the row you wish to delete and click delete as you would with any normal table.
Glossary Items	Inserting new glossary items in Microsoft Office Word can be done very simply. First select an existing glossary item that you want to use as the basis for the new item. Once you have the step highlighted, under the Optimal Trace menu option click **Duplicate Current Row**. This has the effect of making a copy of the currently selected glossary item and the name becomes 'copy of xyz item' where 'xyz item' is the selected glossary item. Both the name and description are copied. Note: To delete glossary items, simply select the row you wish to delete and hit delete as you would with any normal word table.
Actors	Inserting new actors in Microsoft Office Word can be done very simply. First select an existing actor. This will become the basis for the new item. Once you have the actor highlighted, under the Optimal Trace menu option click **Duplicate Current Row**. This has the effect of making a copy of the currently selected actor and the name becomes 'copy of xyz item' where 'xyz item' is the selected actor. Both the name and description are copied.
	To delete Actors: select the row you wish to delete and click delete as you would with any normal table.

Encoding Data

When Optimal Trace generates a document it encloses each piece of generated text within opening and closing tags. These tags are hidden. For example:

```
Project Creation Date: <Project_CreationDate>Monday, Oct 22, 2003</Project_CreationDate>
```

Optimal Trace hides the enclosing tags, denoted by angle brackets and the title delimiters, leaving visible text, in this case `Monday, Oct 22, 2003`. By clicking on the button (or the Toggle Hidden Text item in the menu) you can toggle between the hidden and non-hidden state. So there are two distinct portions to each generated field:

- The title of the field. This is generally freeform text and is not interpreted by Optimal Trace. It is simply copied over as-is from the skeleton

- The value of the attribute from the Project, enclosed with: `<name_of_field> value </name_of_field>`

Modifying Existing Elements

Optimal Trace works with documents using hidden tags to wrap generated data; however, it is possible to change the values of the data within those tags.

NOTE

When running spell check in Microsoft Office Word, do not display any hidden text. Hidden text can be displayed/hidden by clicking the **Show/Hide** button.

For example, with hidden text displayed, the following text appears:

`<UseCase_Precondition><!(CDATA[Clerk is logged in)]><UseCase_Precondition>`

If you spell check a document with hidden text displayed, numerous errors will be found.

As long as you do not adjust the enclosing tags, changes can be made to any elements within Microsoft Office Word and subsequently saved for merging back into the Project

NOTE

About Ids: When viewing hidden text, in generated Microsoft Office Word documents, you will see many examples of entries similar to the following:

`<Requirement_Id>27205259710765</Requirement_Id>` These are special numbers used to track individual elements. Under no circumstances should you modify these numbers, as doing so will cause failure in subsequent updates and reversing.

Reverse Requirements Document Option

Use this option to reverse a document back into your project, e.g. after you have made changes to elements within the document. If you have unsaved changes in your project, you will be prompted to save these changes before reversing.

NOTE

- It is important that you are reversing a document into a project that originally generated that document. If Optimal Trace detects that the document you've selected was not originally generated from this project, it will inform you of this and prompt you to select a different document.

- Custom properties are Read Only in terms of document generation. This means that changes to custom properties (add, remove or edit) will not work for reversing the document. Changes to existing custom property values will be reversed.

- It is not possible to reverse a document that has been generated with the **Remove Hidden Text** option.

Select the document, click on **Reverse**. If there are problems, an error screen will appear. Click the **...** button to open the document and attempt to locate the errors.

If the document has no formatting errors, the **Visual Merge** screen will appear and from there you can reconcile differences between data in the Project and the reversed document. However if merging is not required, an explanatory screen will appear. If the **Ignore DocGen Custom**

Property Errors option is selected in the **General Options** dialog box and an inconsistency is found between the custom properties in the document and the custom properties in the project, a warning message appears. Click **Details** to view more information regarding the warning.

Generate Reports

Use this option to publish a Project's details to the web by generating HTML pages. This allows your customers/developers to view, at will and from anywhere, your Project requirements on a progressive and incremental basis via your web site. This is especially useful in distributed development scenarios, where numerous and often geographically dispersed development teams, need to view the Project requirements. Optimal Trace ships with some ready-to-use HTML reports, which are based on Report Profiles. There are two ways to generate a report:

- Using the Optimal Trace GUI. For more information, see Generating Reports From the Optimal Trace Client [p. 99].

- through the Microsoft Windows DOS Command Prompt. For more information, see Generate Reports from Command Line [p. 99].

NOTE

For a list of reports to generate, refer to the document *Customizing Exports and Reports Using Velocity Script*.

Generating Reports From the Optimal Trace Client

To generate a report::

1. Click **Generation>Generate Reports**. The **Report Generation** dialog box appears. The information on this dialog box includes:
   a) **Profiles**: Displays the name of the report profile. Profiles allow you to generate certain elements from your Project and to adjust the branding and content.
   b) **Description**: Displays a description of the report profile.
   c) **Directory**: Optimal Trace automatically defaults to a directory under the reports directory. Click the **...** button to change the location in which to generate the report.

2. Select the profile to use for report generation. If you want, select a different directory to save your generated HTML file to.

3. Click **Generate**.

A report is created in the specified location and a link is automatically inserted into the Project Links area.

Generate Reports from Command Line

To generate a report of a repository project from a command line, perform the following steps:

1. Ensure that the Optimal Trace Enterprise Server is running.
2. Open a Microsoft Windows DOS Command Prompt window.

3. Type a command that includes the Optimal Trace Command Line Report utility (`Optimal Trace Command Line Report.exe`) and its required parameters.

This utility is installed by default in the following folder: `<INSTALL_DIR>\Program Files\Micro Focus\Optimal Trace\Optimal Trace Enterprise Edition\`

Table 28. Command Line Report Utility Parameters

Parameter	Description
Project name	The name of the Optimal Trace project. This must be a repository project.
Report profile	The name of the report profile. Available profiles are as follows: • General Report • Tree View Report v1.8 • Swimlane Report • Requirement Template (AC) Report • Actor Usage Report • As-Is To-Be Report • Traceability Report • Complexity and Completeness Report
Target folder	The path and folder in which the report is generated.
User name	A user name with sufficient permissions set for the given project.
Password	The password of the user.

The command syntax is as follows:

```
"Optimal Trace Command Line Report.exe" "Project name" "Profile Name" "Target folder"
"User name" "Password"
```

For example, to generate a a General Report in the `C:\temp\reports` folder for a repository project named "Insurance", type the following command:

```
 "Optimal Trace Command Line Report.exe" "Insurance" "General Report" "C:\temp"
"Administrator" "password"
```

After running the command, Optimal Trace generates a report in the specified location. A large project may take a few minutes to generate the report.

NOTE

You could use the command prompt feature to schedule report jobs from Microsoft Windows Scheduled Tasks. Click **Start**>**Programs**>**Accessories**>**System Tools**>**Scheduled Tasks** to access this tool.

Viewing Reports

When you generate the report, you can automatically open the default viewer for that report type with the generated report open for viewing. To do this, just click the **Open** button when generation is completed. This will launch the viewer and allow you to view the report.

NOTE

Most systems will default HTML reports to be viewed in the system's default web browser. Similarly if you have Microsoft Office Excel installed, it is likely that the text based reports will show in Microsoft Office Excel.

CHAPTER 9

Options

General Options

Click **Options>General Options** and then select a tab to modify application settings.

Table 29. General Options

Tab	Option	Description
Tool Settings	Default Help Viewing Format	Select PDF or HTML from the list as the default Help viewing format.
Tool Settings	Document Generation Word Version	Select the version of Microsoft Office Word to use for document generation. The options are Microsoft Office Word: 2007, 2003, and 2000.
Tool Settings	Document Generation Empty Token	Specify a value for empty fields when generating Microsoft Office Word documents. The default token is . . . but this can be changed as required.
Tool Settings	Expanded File Types in Generated Docs	This setting is used in document generation to allow file links to be embedded in generated documents. The default settings for this option are: • Graphic type files: jpg, jpeg, gif, bmp, png • Document type files: pdf, rtf • Microsoft Office Excel spreadsheets: xls • Text files: txt • Microsoft Office Visio files: vsd If modifying this list ensure you separate the extension file types with a comma.

Tab	Option	Description
Tool Settings	Default Package Display Option	Select an option from the list: • Show Current Package Contents • Show Current and Sub-Package Contents • Show Contents of All Packages **NOTE** Selecting this option changes the default view of new projects. It does not modify the view of currently opened projects.
Tool Settings	Max Num Change History Events	When tracking changes as part of Change History, Optimal Trace loads a certain number of Change Events for viewing. This setting specifies how many events are loaded at a given time. Increasing this setting increases the load time when viewing the Project or Element Change history as these are loaded on demand.
Tool Settings	Split Images across Multiple Pages/Files	Specify whether images (flow diagrams etc.) are split across pages for document generation or when saving images to files. Set this to specify single images or else split over pages.
Tool Settings	Flow Diagram Step Display	Specify that steps should be drawn as either: `Fixed Sized` or `Fit to Content`. When the latter option is set then the step horizontal size is adjusted to accommodate all the text in the step name, the former truncates the steps to be fixed to a given size.
Tool Settings	Flow Diagram Branch Display	Specify that condition text in Flow Diagrams should be either: `Display Full Text` or `Truncate Text`. When the latter option is set then the condition horizontal size is adjusted to accommodate all the text in the step name, the former truncates the condition text to be fixed to a given size.
Tool Settings	Default Project Template	This is the default template that will appear selected when creating new projects. You will want to set this if you are using a given specific template for your projects.
Tool Settings	Ignore DocGen Custom Property Errors	Use this option to suppress custom property errors that arise during document generation. If selected, the document will generate and display warning messages when there is an inconsistency between the document template and the project. Clicking **Details** allows you to view the custom property and the table in which the warning occurred. If this option is not selected, document generation will not complete and an error message displays. This option is selected as the default. Additionally, if this option is not selected when reversing the requirements document into Optimal Trace, the

Tab	Option	Description
		user will receive the Custom Property errors and the reversal will not complete.
Structured Requirement Settings	Default Structured Requirement Goal Level	The default goal level for Structured Requirements. This default can be overridden on a Project level basis by setting the Project default goal level. This is a drop-down menu. Select an option from the list: Very High Summary, Summary, User Goal, Subfunction, Too Low, As Is, To Be, Manual, or Automated.
Structured Requirement Settings	Default Structured Requirement Priority	The default Structured Requirement priority. Each new Structured Requirement inherits this priority level. Select an option from the list: Highest, High, Medium, Low, or Lowest.
Structured Requirement Settings	Default Non-Functional Priority	The default Non-functional requirement priority. Each Non-functional requirement has a default priority. Select an option from the list: P1, P2, P3, P4, or P5.
Server Settings	Host Name for Server	Enter the host name for the Optimal Trace Enterprise Server. On a standard network, this will be the machine name where the server is running. If your server is running on your local computer, you can type localhost in place of the computer's network name. Alternatively if you know the IP address of the server you can enter it.
Server Settings	Remote Port for Server	Enter the port number that the Optimal Trace Enterprise Server is running on. Ensure that this number matches the setting on the Optimal Trace Enterprise Server. By default both the server and client side settings are set to 5456.
Server Settings	Polling Interval	This is the time setting in seconds that controls how often the client queries the server for updates. You can adjust this upwards if you wish to have less frequent polling from client to server.
Server Settings	Test Connection	Attempt a connection between the client and server using the settings specified. If there is any issue with the connection, a detailed result screen is shown. Copy and paste the contents of this screen and send it to your Optimal Trace administrator or network administrator for further diagnosis. It is likely that the server may not be correctly configured on your network.
Default Directories	Project Templates Directory	This is the location where Project Templates are stored. This can be reset by clicking the '…' button. You may wish to store your project templates on a central server. You can also edit the setting directly in the text area.
Default Directories	Open/Save Projects Directory	This is the location where offline projects are opened from or saved to by default. This can be reset by clicking the '…' button. You can also edit the setting directly in the text area.

Tab	Option	Description
Default Directories	Document Templates Directory	This is the location where document templates are stored. This can be reset by clicking the '…' button. You can also edit the setting directly in the text area.
Default Directories	Generate Documents Directory	This is the location where documents are generated to by default. This can be reset by clicking the '…' button. You can also edit the setting directly in the text area.
Default Directories	Report Templates Directory	This is the location where report templates are stored. This can be reset by clicking the '…' button. You can also edit the setting directly in the text area.
Default Directories	Generate Reports Directory	This is the location where reports are generated to by default. This can be reset by clicking the '…' button. You can also edit the setting directly in the text area.
Default Directories	Export Templates Directory	This is the location where exports are generated to by default. This can be reset by clicking the '…' button. You can also edit the setting directly in the text area.
Default Directories	Generate Exports Directory	This is the location where exports are generated to by default. This can be reset by clicking the '…' button. You can also edit the setting directly in the text area.
Spell Check	Hide Spelling Errors	This allows you to set whether or not spelling errors are automatically highlighted.
Spell Check	Suggest from main dictionary only	This allows you to set whether or not the spell checker uses suggestions from the main dictionary only, or also uses suggestions from the custom dictionary.
Spell Check	Ignore Words with UPPERCASE	This dictates whether or not words in UPPERCASE are ignored during spell check.
Spell Check	Ignore words with numbers	Check this box if you would like the spell checker to ignore words that contain numeric characters.
Spell Check	Ignore internet and file addresses	Check this box if you would like internet and file addresses to be ignored during spell check.
Spell Check	Main Dictionary	This allows you to specify the location of the main dictionary to use when checking spelling.
Spell Check	Custom Dictionary	This allows you to specify the location of the custom dictionary used when checking spelling. The custom dictionary contains any words added by users.

Spell Check and Language Support

Two dictionaries are installed with Optimal Trace: U.S. English and U.K. English. By default, Optimal Trace is configured to use the U.S. English dictionary. Dictionaries in other languages are supported by the Aspell spelling system and can be used with the spell check tool, however,

these have not been tested, and are not officially supported. To install a dictionary in a different language, follow these steps:

- Download and install the Aspell installation and specific language dictionary from the following location: *http://aspell.net/win32/*.

- Start a command prompt and type: `"C:\Program Files\Aspell\bin\aspell"` `--master=fr_FR dump master > fr_fr.txt`, where `fr_FR` represents the French dictionary (replace with desired dictionary).

- Configure the main spelling dictionary to point to the file generated in the previous step:

  - Copy the newly created `fr_fr.txt` file from "`C:\Program Files\Aspell\bin`" to "`C:\Documents and Settings\<USERNAME>\Application Data\http://supportline.microfocus.com/\Optimal Trace <Edition>\<installed version>\dictionary`" and in the **General Options Dialog** in **Spell Check** tab choose `fr_fr.txt` as the Main Dictionary. Optionally, use the following method:

  - In the **General Options Dialog** in **Spell Check** tab, choose "`C:\Program Files\Aspell\bin\fr_fr.txt`" as the Main Dictionary.

Document Settings

Use the **Document Settings** dialog box to maintain your Project's document profiles and any elements and templates associated with them.

A profile is a collection of templates that specifies the branding aspects of the generated document and the exact set of data that will be output to the document. The **Document Profiles** pane allows you to generate any subset of data to your documents. There is no limit to the number of profiles you can construct and Optimal Trace ships with some ready-to-use document profiles. Occasionally, when you are generating documents you may need to change the format of a document that is generated. Some common situations where you might want to customize profiles are:

- You want to place a customer's specific branding on a generated document. This might include the customer's logo, custom header and footer.

- You want to generate only a subset of data in a given Project, for example just generate the Actors, Glossary entries and Requirement names to the document. This is most frequently used for overviews of the Project requirements.

The **Document Profiles** pane contains a list of profiles and corresponding descriptions. Click on an item in either the **Name/Description** columns to edit. Use the **Create**, **Delete**, or **Validate** buttons to modify existing profiles.

Adjacent to the **Document Profiles** pane is another pane containing the **Document Elements** and **Advanced (Document Templates)** settings.

Document Elements

This tab contains an **Incl.** column and a **Name** column. Select the elements to include in the selected profile by putting a check in the **Incl.** column next to the desired element.

NOTE

The **Incl.** column does not appear when the default option is selected.

Advanced (Document Templates)

This tab contains a table with the following information:

• File: Names of the template associated with the document profile selected in the Profile pane, e.g. Style Template. You cannot edit a template's name from here.

• Location: Displays the Microsoft Windows path to the template. To edit a path, click on its description in the text box to select it for editing.

• Browse: This unlabelled column contains a button to navigate to a template file.

• Attach: Click the icon to edit the template.

Each profile has a set of Microsoft Office Word templates. When profiles are created the full list of its available templates is copied into a folder, with the profile's name, which is itself contained in the profiles directory. To omit specific areas of the profile, clear the **Incl.** box to the left of the template you want to omit. The following are some of the typical reasons for modifying a document template:

• To use a customer's branding - within Microsoft Office Word replace the logo in Project and adjust the header and footer in all other templates resulting in a customized set of documents for a given customer or company.

• To limit certain data sections of data output - within the profile omit sections such as the list of Actors, Glossary, and diagrams by unchecking the Includes box.

• To output summaries of data - within the relevant profiles omit specific data pieces wrapped in opening and closing angle brackets.

Within each template there is a set of hidden tags. Each of these tags specifies the data that will be generated.

• For more information, see Document Elements [p. 109].

• For more information, see Document Profile Templates [p. 108].

Document Profile Templates

The following table contains the default Document Profile Templates:

Table 30. Default Document Profile Templates

Template	Description
Default	This generates a full requirements document with all elements of the Project represented along with all attributes. Basically outputs all Project data and is branded with an Optimal Trace logo.
Default Form	This generates a full requirements document with all elements of the Project represented along with all attributes, using Microsoft Office Word

Template	Description
	forms. Outputs all Project data and is branded with an Optimal Trace logo. To navigate through Microsoft Office Word forms, press tab or page-down. For further information on forms, please refer to Microsoft help.
Default No Images Form	System profile without images, using Microsoft Office Word forms.
Overview	Requirement summary, using Forms.
Change History	Details of the changes made to a Project's documents/files.
Test Specification	This generates a test document, with the main scenario of each Requirement reflected as a discrete Test Case. This document is suitable for projects that have been created from the QA Project Profile. It is also used in conjunction with the Test Generation feature and is primarily used by the QA and test stakeholders.

Document Elements

The following table describes the Document Elements and their dependencies:

Table 31. Document Element Description

Element	Is Required	Dependency	Description
Project	Always		This is used to format the Project details and typically outputs top-level data such as the Project's name, owner, etc.
Table Of Contents			Standard Microsoft Office Word Table of Contents. If this element is included, the TOC is automatically inserted on generation of the output document.
Introduction			This item is used to format the Project's properties such as Description, or any Custom Properties it possesses.
Glossary			This is used to format the Glossary items
Actor List			This is used to format the Actors in the Project
Requirement Map Diagram			This is used to format the Requirement Map diagram
Package			This is used to format the Package.
Requirement	Dependency exists	Requires Package	This is used to format the Structured Requirement and all of its properties

Element	Is Required	Dependency	Description
Main Success Scenario	Dependency exists	Requires Requirement	This is used to format the way the Main Success Scenario is output, specifying which parts of the Steps are displayed
Alternative Scenario	Dependency exists	Requires Requirement	This is used to format the way alternate scenarios are output, specifying which parts of the Steps are displayed
Requirement level Non-functionals	Dependency exists	Requires Requirement	This is used to format the way Non-functional requirements are displayed for each Requirement
Requirement Notes	Dependency exists	Requires Requirement	This is used to format the way Notes are displayed for each Requirement
Requirement Links	Dependency exists	Requires Requirement	This is used to format the way Links are displayed for each Requirement
Requirement Flow Diagram	Dependency exists	Requires Requirement	This is used to format the flow diagram for each Requirement
Simple Requirement	Dependency exists	Requires Package	This is used to format the Simple Requirement and all its properties.
Simple Requirement Item List	Dependency exists	Requires Simple Requirement	This is used to format the way the Item List is output, specifying which parts of the items are displayed
Simple Requirement Notes	Dependency exists	Requires Simple Requirement	This is used to format the way Notes are displayed for each Simple Requirement
Simple Requirement Links	Dependency exists	Requires Simple Requirement	This is used to format the way Links are displayed for each Simple Requirement
Project level Non-functionals			This is used to format the way Non-functional requirements are displayed for the Project
Project Notes			This is used to format the way Notes are displayed for each Project
Project Links			This is used to format the way Links are displayed for the Project
Change History			This refers to the full history of the project.
Table of Figures			This is a standard Microsoft Office Word Table Of Figures, for any images which exist in the document.
Advanced Template Elements:			

Element	Is Required	Dependency	Description
Style Template			This .dot file is the Microsoft Office Word template upon which the generated documents are based. It contains the front-page logo, styles, fonts, headers and footers, etc.
Skeleton			This .doc file is the Microsoft Office Word document containing *skeleton* versions of the Document Elements. These skeletons are copied into the output document and populated during the generation process.

Changing the Document Logo

To change the document logo:

1. From the **Document Settings** screen select the profile desired.
2. Using the **Advanced** tab, edit the Style Template.
3. To change the logo, remove the Micro Focus logo and paste the desired logo in its place. Subsequent documents generated using this profile will contain the new logo.

Changing the Header and Footer

To change the header and footer:

1. Edit the appropriate style template. Due to the fact that the default is to have a different header and footer on the first page it is necessary to hit the enter key a number of time to cause a second page.
2. Click **View>Header and Footer** and any changes made will be reflected in subsequent generated documents.
3. Delete the carriage returns to revert to a one page style document

Outputting Custom Properties

Although Generation allows the convenience of automatically outputting Custom Properties on document generation, it is likely that you will want to specify given Custom Properties to be output with given Templates. To output Custom Properties:

1. Edit the Skeleton document by clicking on the Microsoft Office Word icon in the **Advanced** tab of the selected Document Profile. You can add and remove Custom Properties from the Profile and format tables.
2. In the skeleton document, position your cursor in the area associated with the element that will have custom properties output. The following can have custom properties defined: Project, Glossary Entries, Actors, Packages, Structured Requirements, Requirement Scenario Steps, Simple Requirements, Simple Requirement Items, and Non-functional Requirements. From a Microsoft Office Word perspective, these areas always correlate with tables. A table exists for each of the Custom Property enabled elements.

3. From the Optimal Trace menu, click on **Insert Custom Property**. If your cursor is incorrectly positioned you will receive a message. By default, the new Custom Property will appear either to the right of (for a column), or below (for a row), the current cursor point.

4. Enter the name of the Custom Property in the text entry area. The name must be exactly as it appears in the originating Optimal Trace project. Additionally please note that the name is case sensitive and you should ensure that the names match exactly. A screen appears prompting you to insert the name.

NOTE

Incorrect Custom Properties. If you specify an incorrect custom property, or are generating from a project that does not happen to have specified custom properties, then the Generation process will report an error. All Custom Properties in the skeleton document must have a match in the project. For example if you specify a Custom Property called 'Risk' in the Structured Requirements Table, each Structured Requirement in the project should have a custom property called 'Risk'.

Deleting Custom Properties

To delete custom properties:

1. Position your cursor over the specific custom property that you want to remove. From a Microsoft Office Word perspective, these areas always correlate with tables. A table exists for each of the Custom Property enabled elements.

2. Select the Optimal Trace menu and click **Delete Custom Property**. You will be asked to type in the name of the Custom Property you want removed. Again this data is case sensitive. If your cursor is incorrectly positioned you will receive a message informing you of this.

Format Custom Property Tables

This option will re-format any tables in the document where it detects Custom Properties. Typically, these tables will have varying width as columns are added and removed. Use this option therefore to make adjustments as necessary to the left indent and to the width of these tables.

NOTE

A bug has been reported in Microsoft Office Word where it has been observed that adding Custom Properties can cause the table's width to become infinite. In effect the table's % size is becoming greater than 100% of the available space. The table will appear to stretch off the page to the right. This option provides the user with a convenient work-around for this bug.

Format Table(s)

This macro will re-format any tables selected by the user, or the table located at the cursor, whether or not these tables contain Custom Properties. For instance to re-format any and all tables in the document, hold down [Ctrl-A] and then use this option.

CHAPTER 10

Tools Menu

View All Change History Option

Use this option to audit what changes were made and by whom. This allows you to resolve confusion or issues when dealing with any edits that may have been made to a project element. You can view all changes made to a Project. Each change point is recorded along with the specific detail of the actual change before and after at the level of the element, Requirement, Actor, etc.

You can also save the change history to a CSV file. These files can then be opened in Microsoft Office Excel so that you can perform more advanced filtering or sorting depending on your needs. Click the **Save as** button to do this. The number of changes displayed can be adjusted by setting the configurable option.

View Element History

You can also review a specific element's change history. Select the element in the Tree area and click the **View Element History** button. This then brings up the specific changes made to the selected element. Similar to the Project History, this list can be saved to a file.

View Traceability Tree

Projects are comprised of Structured and Simple Requirements with scenarios, steps, items, branches and refinements. You can access the automatically generated **Traceability Tree** enabling tracing to all dependent elements either within or across packages/projects. Select the element in the tree area and click the **View Traceability Tree** button. When elements are selected in the tree Optimal Trace automatically selects the 'traced to' element in the background display showing the full package context for the traced to element. Optimal Trace Traceability relationships comprise: branches, refinements, and links to given elements.

Where cross-project traces (links) exist, you can automatically load the traced to element and project by selecting the link in the Traceability Tree and double clicking. Traces to external

tools via links are also displayed. On clicking the Traced to element, if that element is loaded, Optimal Trace will resolve the link and highlight the linked element in the background.

Generate Test Cases

In typical organizations, software testing accounts for between 30% and 50% of development cost. The following capabilities are provided to support test generation:

- Generate Test Cases for each path through the Requirement (considering scenarios)

- Generate Test Cases for each Simple Requirement.

- Generate tests for Non-Functional Requirements at Project and Requirement Level

- Generate Forward and Reverse Trace Links from Business to Test Requirements.

  Tests can be generated for the entire project, for individual packages or for discrete requirements. Selecting the specific element required in the tree prior to clicking the Generate option sets the context.

The following three test types are generated:

- **Project Level Non-Functional Test**: These tests result from iterating through the non-functional Requirements defined at the project level in the originating project. Each non-functional requirement encountered generates one test case.

- **Functional Tests**: These Tests result from traversing each path through a given Structured Requirement. One Test Case is generated for each distinct path encountered.

- **Associated Non-functional Tests**: These Tests result from iterating through the non-functional Requirements associated with a given Structured Requirement. Each non-functional requirement encountered generates one test case.

Generating Test Cases for the Entire Project

To generate test cases for the full project:

1. Select the project in the tree view
2. Click on the **Generate Test Cases** button in the toolbar and the **Generate Test Cases** dialog box appears.
3. For more information, see Generate Test Cases Dialog Box [p. 114].

Generate Test Cases Dialog Box

Table 32. Generating Test Cases with the Generate Test Cases dialog box

Test Type	Action/Description
Project Level Non-Functional Tests	• Check the **Generate test cases for project level non-functional requirements** box to generate tests for each Non-Functional Requirement defined on the project.

Test Type	Action/Description
	• Specify the location where the tests will be created by clicking the **…** button adjacent to the **Generate to** field in the **Project Non-Functional Requirements** group. • A screen appears prompting you to specify the location you wish the tests to be generated to. You should choose a package appropriate for the type of test to be generated. You may also elect to create a New Project or open an existing project at this time.
Functional Tests	Checking the **Generate test cases for project packages** box means that you can generate tests for any requirements contained within the package hierarchy. If you choose this option, the tests can be generated both for each structured requirement encountered along with any associated non-functional requirements, and for each simple requirement encountered. For functional test generation you may check two additional options: • **Generate package per requirement**. This allows you to categorize the resultant Functional Test Cases grouped per originating Requirement. For cases where you have many alternative scenarios it is useful to check this option. • **Include Step/Item Description**. Checking this option means that on generation each Step or Item's description is carried over to the resultant Test Case. You may however want to use the Description to carry sample Test Data for instance in which case you should uncheck this setting.
Associated Non-functional Tests	Check the **Generate non-functional requirement test cases** box to generate tests for each Non-Functional Requirement associated with the structured requirement. • Once you check this you specify the location of where the test will be created by clicking the **…** button adjacent to the **Generate to** field • A screen appears prompting you to specify the location you wish the tests to be generated to. You should choose a package appropriate for the type of test to be generated.

Trace Links from Requirements to Test and vice versa

Generating Test Cases allows Trace Links to be created from the Business Requirements to Test Requirements (Test Cases) and vice versa. Two options exist:

• Create forward Trace Links to the generated Test Cases. Check the **Automatically create trace links to generated test cases** to auto-create forward links.

• Create Reverse Trace Links from the generated Test Cases back to the originating Requirements. Check **Automatically create reverse trace links from generated test requirements** to auto-create reverse links.

Generate Button

Click **Generate** to generate the test cases. The **Test Generation Results** dialog box appears.

Interpreting Tests from Structured Requirements

The core of the Test Generation capability revolves around generation of functional test paths. The algorithm for generating the functional test set is:

- *A Test for the Main Scenario*: The Test Requirement is populated with the collection of all steps from the main success flow. If the checkbox **Include Step Description** is checked, this also includes the description for each step.

- *A Test for each Alternative Scenario*: The Test Requirement is populated with the collection of all steps that comprise the Valid Path up to and including the final step of the scenario and also the remaining steps of the main scenario if the final step of the alternate scenario rejoins the main scenario.

- *A Test for each Simple Requirement*: The Test Requirement is a Structured Requirement with each step correlating one for one with each simple requirement item.

Test Generation and Refinements

If a refinement association exists between two requirements for which tests are been generated, a refinement association will be created between test cases that are generated from these requirements. This allows you to define relationships between requirements, and carry them forward to any test cases that are derived from those requirements.

Merge Two Projects

Merge can only be run for two versions of the same project. Use this option to merge Projects, when you are:

- Merging two Projects together where you or different people have been updating different copies of the Project. For example if going from Offline back to Online.

- Merging two Projects where two or more people might be working some distance apart from each other, for example, offshore development scenarios where locations are not connected by WAN and where two databases are being kept in synch.

Click **Tools>Merge Two Projects** and the **Merge two projects** dialog box appears. Select both Projects to merge by clicking on the **File** button or the **Repository** button, depending on where the Project is stored. Once you have selected a Project, Optimal Trace validates that the Project is correctly formatted and places a green tick next to the name. For more information, see .

Spell Check

Click **Tools>Spell Check** to view the **Spell Check** dialog box. This allows you to check the spelling in the current section of the project, or in the entire project. The spell check dialog will highlight any incorrectly spelled words, and will suggest an alternative spelling. The following options are available:

- **Ignore Once** tells the spell check tool to ignore this instance of this spelling.

- **Ignore All** tells the spell check tool to ignore all instances of this spelling in the project.

- **Add to Dictionary** adds the underlined word to the custom dictionary. Once the word has been added to the custom dictionary, it will no longer be highlighted by the spell check tool.

- **Change** replaces the current instance of the word with the selected word in the **Suggestions** list.

- **Change All** replaces all instances of the word throughout the project with the selected word in the **Suggestions** list.

- **Options** will open the **Spell Check** options section of the **General Options**.

Once the spell check tool has finished checking the current section in the project, it will, if the user wishes, continue checking the rest of the project.

CHAPTER 11
Multi-User Support

Optimal Trace allows several users to work on the same Project simultaneously. When other users edit or add Requirements, Actors or other Project artifacts, the changes will appear dynamically on your screen. The Optimal Trace Enterprise Server software monitors all currently connected clients and ensures that all project changes saved to the repository are broadcast simultaneously to all users. When you are editing an artifact, Optimal Trace ensures that nobody else can edit that artifact or the artifacts upon which it depends, by locking them. People are free however to edit any Project artifacts that are not directly affected by your edits. For more information, refer to the *Optimal Trace Installation Guide*.

Configuring Optimal Trace to work through Optimal Trace Enterprise Server

To create or edit a remote Project, you must tell Optimal Trace where to find the Repository. Click **Options>General Options**. For more information, see General Options [p. 103].

NOTE

If you do not already have an Optimal Trace Enterprise Server on your network, you will need to install a copy before you can use any of the Optimal Trace collaboration facilities. Refer to the *Optimal Trace Enterprise Server Help* for full details on configuring a server.

Concurrency and Locking

Typically, applications allow for only one user to edit a file at any point in time. For example, a Microsoft Office Word document stored on a central Server is viewable by several users at once, but only one user will have the "lock" required to make changes to the Project. This "lock" facility prevents conflict due to multiple concurrent attempts to update the same Project.

Optimal Trace's locking mechanism, allows multiple users to access and edit a Project at the same time while ensuring that their changes do not conflict with each other. Every Project artifact (e.g. Requirements, Actors, etc) is monitored for edit attempts. In the event of an edit

attempt, it and every other artifact that depends on it is locked for editing. All users can see a locked artifact, but only the user with the lock can edit it. The lock is released when that user saves changes back to the Repository. Parts of a Project that are not directly affected by an edit attempt remains unlocked; any user can work on them. If you wish to work on a Project in collaboration with other users, everyone simply opens the Project. Initially, you will not be aware that other users are present. However, as soon as someone starts to edit a Requirement (for example, to add a new Step), a Padlock icon will appear next to that Requirement in every other user's tree view, symbolizing that the Requirement is locked.

NOTE

If you position the cursor over the specific locked element in the tree, a popup appears with the user name of the person that has acquired this lock.

If you start editing a requirement, you will acquire a "lock" on the element and a padlock icon appears next to your requirement. You can still click on the Requirement and view it in the usual way, but its details will be grayed out and you will not be able to edit it. Once the user who is working on that Requirement finishes and saves his work, the locks will be removed, and the padlock icons will disappear from your screen.

Locking Rules

When multiple users are working, a number of locking rules apply. This ensures that the integrity of the Project is maintained and that there is no conflicting data.

Table 33. Locking Rules

Action	Locked Entity
Attempt to edit Project properties, links, notes and non-functional requirements	Project
Apply label to Project	Project
Attempt to edit an Actors name or definition	Actor only
Attempt to add an Actor to Actor List	Actor List
Attempt to remove Actor from Actor List	The Actor, Actor List and all Packages, Requirements in Packages and all child Requirement Packages and their children.
Attempt to edit a Glossary Entry name or definition	Glossary Entry only
Attempt to add a Glossary Entry to Glossary	The Glossary
Attempt to remove Glossary Entry from Glossary	Glossary Entry only

Action	Locked Entity
Attempt to edit a Package name or description	Requirement Package. This will allow users to edit the properties of all subordinate objects but not allow addition/removal.
Attempt to add a Package to a parent package	Parent Requirement Package. This will allow users to edit the properties of all subordinate objects but not allow addition / removal.
Attempt to remove a Package from a parent package	Parent Requirement Package and all subordinate and reachable objects. This is because the sub requirements will be deleted by the package delete so we don't want to allow users to edit any of them. Likewise with any objects reachable by the Requirements.
Attempt to edit a Requirements properties, links, notes, NFRs, etc (excluding graph position)	Requirement only
Attempt to set a Steps actor	Requirement only
Attempt to create an Actor from Step	Requirement and the Actor List
Attempt to set a Requirements goal level	Requirement only
Attempt to create a GoalLevel from Requirement	Requirement and Project
Attempt to remove a Requirement from a Package	Parent Requirement Package, Requirement to be deleted and all reachable objects (via refinement/branch relationships)
Attempt to add a Requirement to a Package	Parent Requirement Package. This will allow users to edit the properties of all subordinate objects but not allow addition / removal.
Attempt to add/modify Step/ Scenario on a Requirement	Requirement only
Attempt to add/modify Refinement/Branch on a Requirement	Requirement and all reachable objects via the refinement / branch relationships. Also lock the refined/branched to Requirement and all reachable objects.
Attempt to remove Step/Item/Refinement/Branch/Scenario, on a Requirement	Requirement and all reachable objects.
Renumber all Requirements	Root Requirement Package and all subordinate objects
Paste	Destination (new parent) of the object being pasted and all objects associated with the object being pasted
Copy	No locking required (only on paste)

Action	Locked Entity
Undo/Redo	No extra locking required since any objects affected should already have been locked.
Display goal levels dialog	Lock the Project object
Delete a goal level	Lock root Requirement package and all children recursively
Document generation	Project only
HTML generation	Project only
Reverse document	Project and all reachable objects
Merge	Project and all reachable objects
Create/Delete/Edit custom property, display Bound Value Dialog	Lock custom property type list, all affected custom property holders and their parents. In the case of Step, Item, Requirement, NFR: lock all Requirement packages/Requirements.

Merging Projects

The merge tool takes two projects, labeled *From* and *To* and merges them into one project labeled the *Result Project*. A merged *Result Project* can include:

- Objects in the *From* project but not in the *To* project

- Objects in the *To* project but not in the *From* project

- Objects which are common to both the *From* and the *To* project

If any objects in both the *From* and the *To* projects have different attributes, they will trigger a decision point (or merge conflict). For example, two Actors called "user", one with the description "The user" and the other with the description "The generic user". When two projects have the same name, the object that was edited most recently (evaluated based on project timestamps) is chosen. When two projects have different names (e.g. merging two different projects together), you must choose which object to include in the merged result project using the **Project Merge** dialog box.

The **Project Merge** dialog box shows all conflicts (differences) graphically so that you can decide how to resolve them on a one-to-one basis. By default, the **Result Project** pane of the **Project Merge** dialog box displays the most recently changed element for every conflict detected.

The following table describes the various options for resolving project conflicts.

Table 34. Project Merge Options

Option	Description
Previous	Navigates to the previous conflict.
Next	Navigates to the next conflict.

Option	Description
Add Element to Merged Project	Adds a selected element to the merged result project.
Remove Element from Merged Project	Removes a selected element from the merged result project.
Move Element in Merged Project	Moves a selected element in the merged result project.
Switch Properties in Merged Project	Displays the **Resolve Properties Conflict** dialog box from which you can choose the desired property to include in the merged result project.
Switch Associated Elements in Merged Project	Allows you to choose the desired associated element to include in the merged result project.
Switch Elements Position in Merged Projects	This means that the selected Element has a positional change. Positional Changes happen when elements are added or removed. If the number of elements is the same in the From and To project, clicking this button results in the other side's positions being adopted. Position switching is only allowed if no new elements are added/removed and if the number of elements are the same.
View Element Properties in Merged Project	Displays the properties of a selected element.

Once all outstanding merge conflicts have been resolved, you can save the merged project (Click **Save** on the **Project Merge** screen).

Security and Access Control on Projects

Optimal Trace allows permissions to be set for Groups of Users and individual users on given projects or project packages. This ensures that project stakeholders are allowed access and editing capability on appropriate areas of the project. Some common usage scenarios where you might consider applying permissions are:

- Allowing project stakeholders such as Business Analysts/Engineering etc. to have certain visibility levels into a project.

- Allowing the 'QA team' to edit the Test Requirements project but have 'read-only' access to the Business Requirements.

- Restricting Engineering teams to editing certain Packages or Groups of Requirements.

- Locking down 'reference' projects for use throughout the organization.

- Locking down the Glossary in a project.

- Locking down archived (backups) versions of projects ensuring no changes can be applied.

- Restricting 'Open' Access to sensitive projects.

Projects or portions of projects that are non-editable are visually indicated by grey text and accompanying icons. Full details on setting up Groups, Users, and Permissions can be found in the *Optimal Trace Administrator User Guide*.

CHAPTER 12

Using the Optimal Trace Plug-in SDK

With the Optimal Trace Plug-in SDK, you can create custom plug-ins that integrate Optimal Trace with external applications or serve as functions that automate repetitive actions for accessing and manipulating Optimal Trace requirements data. Plug-ins are Java components that are accessible from within the Optimal Trace client. Development of Optimal Trace plug-ins requires Java programming skills.

The Optimal Trace Plug-in SDK enables create, modify, and delete capability for the following Optimal Trace entities:

- Project custom properties
- Glossary entries
- Actors
- Packages and their custom properties
- Structured requirements and their custom properties
- Use case steps and their custom properties including main and alternate scenarios
- Refinements
- Links
- Simple requirements and their custom properties
- Items and their custom properties
- Notes
- Branches

NOTE

Creating an Optimal Trace project or deleting an existing Optimal Trace project is not supported. You can, however, update the project name and description.

The Optimal Trace Plug-in API Reference provides instructions and examples for creating custom plug-ins that create, modify, and delete Optimal Trace entities. This documentation is available on SupportLine (*http://supportline.microfocus.com/*).

APPENDIX A
UML Integration

This section is for people who understand UML, are familiar with tracing requirements into system design and have some experience of using design tools. It also presumes you are using one of the available UML design tools supported by Optimal Trace. When exporting to UML, Optimal Trace maps elements.

Table 35. UML Optimal Trace elements mapping

Optimal Trace Asset	UML Equivalent	Notes
Structured Requirement	Use Case	Structured Requirements are semantically equivalent to the Use Case notion espoused in the UML
Simple Requirement	Use Case	Simple Requirements are semantically equivalent to the Use Case notion espoused in the UML
Package	Package	
Glossary Item	None	No UML equivalent
Actor	Actor	
Step		No UML equivalent
Item		No UML equivalent
Refinement	Represented as a Requirement Generalization relationship: • Requirement with Step = UML Super Use Case • Refined to Requirement = UML Sub Use Case	No UML equivalent for Refinement. Closest semantic equivalent is Requirement generalization

Optimal Trace Asset	UML Equivalent	Notes
Conditional Branch to a Requirement	Represented as an <<extend>> association between the participant Requirements: • Requirement with Step => UML Extended Use Case • Requirement that is branched to = UML Extending Use Case	
Non-conditional Branch to a Requirement	Represented as an <<include>> association between the participant Requirements: • Requirement with Step = UML Use Case that is including • Requirement that is branched to = UML Included Use Case	

APPENDIX B
Troubleshooting

When Optimal Trace encounters problems a screen appears outlining the detail of the problem. When a problem does occur, Optimal Trace recommends that you save any open Projects and close the application: Click **OK** on the **Error** dialog box and then click **Save** in the tool bar.

Optimal Trace performs its own verification of the structure of underlying data when opening and saving of Projects, so for the majority of problems that occur, the integrity of your data will be guaranteed simply by saving any changes made to your Project. Simply start again, and open the Project, and normally you can be confident that your application has recovered. An Optimal Trace Enterprise_log is always maintained in the `<INSTALL_DIR>\Documents and Settings\<USER_DIR>\Application Data\Micro Focus\<OT_EDITION>\<RELEASE_NUM>` directory. This is a text file generated and used to collect useful information and error conditions. In all instances where an error screen appears, you should report the circumstances and description of the failure to Micro Focus Customer support.

You should also include, if possible, the `Project.ctl` file causing the problem. If the project is a repository project take the project offline.

NOTE

If you are working with Optimal Trace Enterprise Server, ask your System Administrator to check the Server logs and to send them also.

A P P E N D I X   C
Shortcut Keys

Table 36. Shortcut Keys

Option	Shortcut Key
Insert a new Step/Item	`[Alt+Shift+A]`
Create a new Alternative Scenario	`[Alt+Shift+C]`
Delete a selected Refinement	`[Alt+Shift+D]`
Refine the selected Step to an existing Requirement	`[Alt+Shift+E]`
Delete an Alternative Scenario	`[Alt+Shift+O]`
Refine the selected Step to a new Requirement	`[Alt+Shift+R]`
Delete a Step	`[Alt+Shift+S]`
Refine the selected Requirement to a new Requirement	`[Alt+Shift+U]`
Create a new Package	`[Ctrl+Alt+C]`
Document Settings	`[Ctrl+Alt+D]`
Renumber all Requirements	`[Ctrl+Alt+E]`
Save an image in JPEG format	`[Ctrl+Alt+I]`
Delete a Package	`[Ctrl+Alt+K]`
General Options for the Tool	`[Ctrl+Alt+O]`
Copy	`[Ctrl+C]`
Exit	`[Ctrl+E]`

Option	Shortcut Key
Search within a Project	`[Ctrl+F]`
Layout diagram	`[Ctrl+K]`
Merge two Projects	`[Ctrl+M]`
Create a new Project	`[Ctrl+N]`
Open an existing Project	`[Ctrl+O]`
Save a Project	`[Ctrl+S]`
Apply a Label to the Project	`[Ctrl+Shift+A]`
Branch the selected Step to new Requirement	`[Ctrl+B]`
Create a new Requirement	`[Ctrl+Shift+C]`
Create a new Simple Requirement	`[Ctrl+Shift+R]`
Delete a Requirement	`[Ctrl+Shift+D]`
View Change History	`[Ctrl+Shift+V]`
Paste	`[Ctrl+V]`
Redo	`[Ctrl+Y]`
Undo	`[Ctrl+Z]`
Save Project As	`[Alt+P+A]`
Save Project As Template	`[Alt+P+T]`
Apply Template to Project	`[Alt+P+P]`
Open Project Template	`[Alt+P+M]`
View Element History	`[Alt+T+I]`

Glossary

Actor

An Actor is an entity that is outside the scope of a system but which interacts with the system. Actors may be either human beings or other systems.

Alternative Scenario

This is a different flow of events within a Requirement that may lead to a successful outcome of the Requirement. This may be invoked due to some fault or alternative provision in the Requirement.

Branch

Branching allows for a Requirement to jump from one Step within the Requirement to another, generally due to some check passing or failing. In addition to branches within Requirements, Optimal Trace Enterprise allows branching between Requirements.

Concrete Step

A concrete Step is a Step that does not have any refinements.

Document Profile

A profile is a collection of Templates that specifies the branding aspects of the generated document and the exact set of data that will be output to the document. Optimal Trace ships with ready-to-use document profiles.

External Requirement

A Requirement that is triggered by an external Actor.

Goal Level Requirements

Requirements can be classified as being of a certain goal-level thus clarifying to a large extent the audience of the Requirement. The concept of *Goal-Levels* is borrowed from the work of Alistair Cockburn [1].

Internal Requirement

A Requirement that is not triggered by an Actor and is invoked by either an *extends* or *includes* relationship.

Item

An Item is essentially a name and a description. Items allow for a tabular set of information associated with a simple requirement.

Local Project

A Project that is stored locally, normally used for a single user installation.

Main Success Scenario

This is the Main Flow of events within a Requirement leading to a successful outcome. Every Requirement has one and only one Main Success Scenario. The Main Success Scenario of a Project could be considered the critical path of a Project.

Offline Project

A Repository Project, not requiring a live connection to the Repository. An offline Project can at a later point in time be reconciled with its Repository Project.

Package

A group of related sets of Requirements. Used to segment a Project into logical units. The mandatory minimum number of Packages per Project is one, namely the default Package labeled *Requirements*; this Package, which houses all other Packages, cannot be deleted.

Project

A set of requirements (collections of Requirements, Actors, Glossaries, Notes, Links, functional requirements, or Non-functional requirements).

Refinement

A refinement is a relationship between a Step and a Requirement, wherein the net-effect of the Step is exactly equivalent to the net-effect of the Requirement.

Repository Project

A Project that is stored in the Repository requiring a live connection to it. It may be in another country. Typically provides for multiple concurrent users with a common goal.

Round-tripping

If you have been working with copies of generated documents, away from the Project, you can re-incorporate any changes you have made into the Project copies. This is called *round-tripping*.

Scenario

Any sequence of actions (Steps). Optimal Trace allows for two types of scenario: Main Success Scenario (MSS) and Alternative Scenario (AS).

Simple Requirement

Simple Requirements are unstructured requirements and at the highest level are essentially a name and description. Examples of Simple Requirements might be data oriented requirements where the need exists to specific format information in a tabular fashion or marketing and other 'flat' requirements types where a tabular structure is more suited.

Step

An action within a scenario that achieves an effect. You may branch from any Step in a Requirement to another Step within the same Requirement, or to another Requirement, e.g. Branching (B) may be due to some check passing or failing. You may refine from any Step in a Requirement to another Requirement, e.g. Refining (R) links a Step at one level to a more detailed Requirement.

Structured Requirement

A Requirement is a descriptive narrative describing a specific functional objective of a system. It is comprised of one or more Scenarios, each comprising a sequence of actions (Steps). The purpose of a Requirement is to achieve an agreeable objective. Typically, Actors interact with Requirements. Requirements come in two forms: internal and external. Every Requirement contains only one Main Success Scenario (MSS). Requirements may also include multiple Alternate Scenarios (AS).

Template

Generate Project documents using preformatted templates, via the documents Profiles facility.

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