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Optimal Trace™

Optimal Trace™ Enterprise 5.0 Users Guide

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1 Preface

This manual is a User's Guide for Optimal Trace™ Enterprise.

Optimal Trace Enterprise is a requirements capture, documentation and modeling suite for teams of Business Analysts, Systems Analysts, Software Architects/Designers, Q/A Leads (& Testers) and Project Managers.

It provides an easy to deploy, intuitive interface for capturing, viewing and managing customer requirements and a sophisticated collaboration mechanism that enables multiple analysts to work concurrently on one or more projects.

1.1 Audience

This document is suitable for those who are gathering requirements for software systems. These roles include:

- Business analysts
- System analysts
- Project managers
- Test/QA engineers
- Software Architects/Designers

1.2 References

[1] Writing Effective Use Cases, Alistair Cockburn. 2001.

[2] Unified Modeling Language (UML), http://www.omg.org/uml/

1.3 Conventions used in this document

This section describes conventions used in this document.

1. **Notes** are used to highlight certain aspects of functionality which may be of interest, for example:

Note: This is a sample note.

2. **Tips** are used to highlight aspects typically associated with process usage which may be of interest in certain usage scenarios, for example:

Tip: This is a sample tip.

1.4   Contacting Optimal Trace Customer Support

For all technical problems and support queries, please logon to frontline at
http://frontline.compuware.com/products/ci/ Frontline contains the Optimal Trace forum as well as a FAQ area. Additionally, full up to date release information and contact numbers are provided.

Compuware telephone customer support can be contacted in the U.S. on 1-800-538-7822.

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2 Introduction to Optimal Trace™ Enterprise

This section is a general introduction to Optimal Trace™ Enterprise and some general background.

Optimal Trace™ Enterprise is a collaborative team oriented **requirements capture and management** tool intended for structured capture of requirements, thereby allowing the scope of a system to be established. Optimal Trace™ is a tool with a rich GUI (Graphic User Interface) that facilitates all aspects of requirements capture from drafting initial Notes at a customer site through to generation of final requirements documents.

Optimal Trace™ Enterprise is designed for teams with particular applicability to 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
- 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
- Managed concurrent working for users in a virtually transparent way.
- Access Control for Projects and Project Packages
- Automatic Test Generation for QA
- Baseline Creation and Management
- Automatic e-mail notification 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 Optimal Trace™ Enterprise requirements-gathering paradigm is focused on two core constructs, **Structured Requirements** and **Simple Requirements**. See Figure 1 - An Optimal Trace demo project showing Structured (red) and Simple Requirements (blue) for a sample screenshot showing structured and simple requirements. We now explain these concepts in a little more detail.

'Structured Requirements' provide a mechanism for capturing detailed functional requirements in a comprehensible and directed way. This leads to unambiguous specifications for all project stakeholders driven by business need. A single Structured Requirement is a strand of functionality that a system will ultimately deliver. 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, you would 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/Iterative concepts while still allowing non-functional operational and other requirement types to be explicitly captured as Simple Requirements.

Optimal Trace is also designed to explicitly capture less-structured or Simple requirements. For example, it is critical that for the Structured Requirement 'Browse Orders' we clearly state the expected number of concurrent users, 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. and 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 associated with individual Structured Requirements or else system-wide defined 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 fatal mistake to omit non-functional requirements such as scalability or throughput for instance. Optimal Trace, by virtue of using refinement relationships for such requirements, allows complete traceability from functional to non-functional and vice versa. This greatly reduces the risk of incomplete requirement specifications.
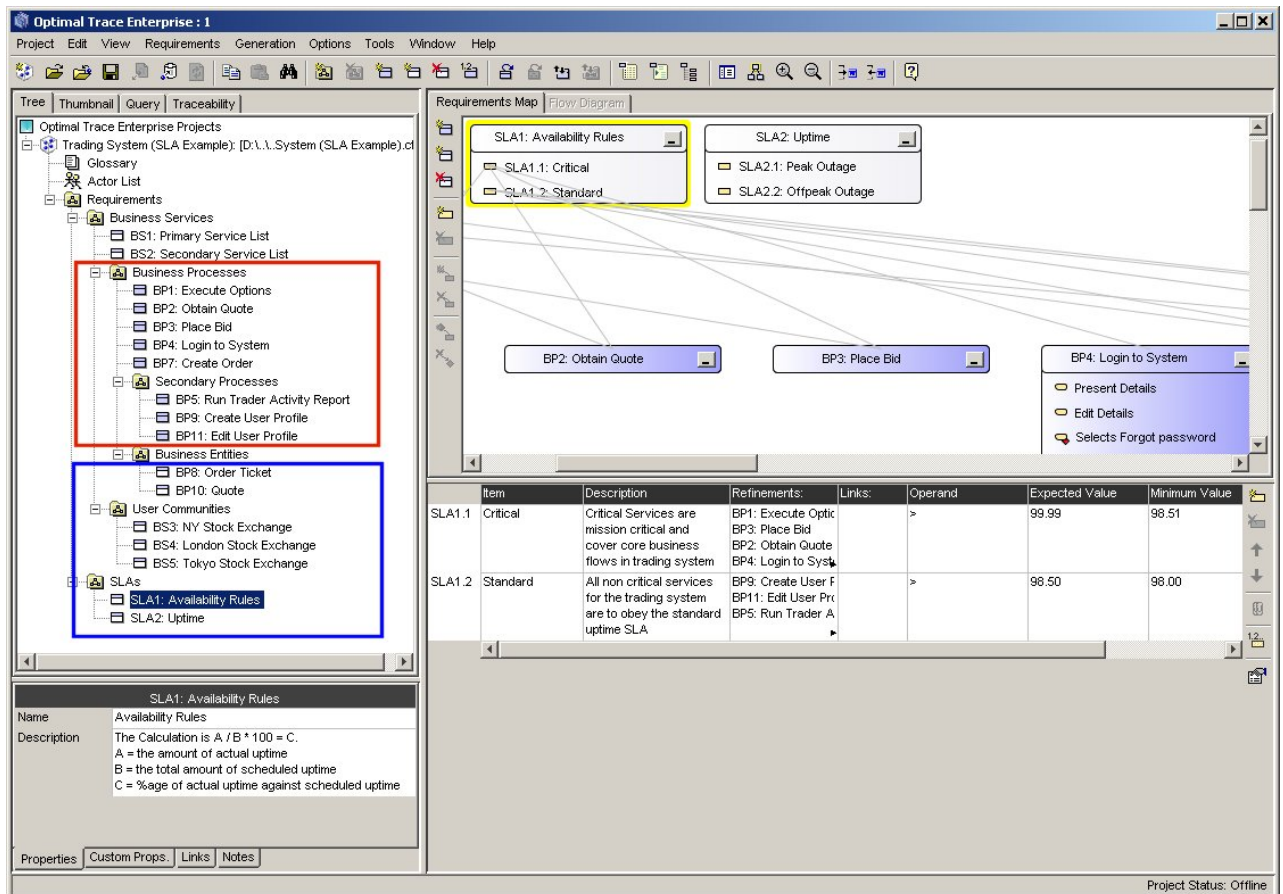
Figure 1 - An Optimal Trace demo project showing Structured (red) and Simple Requirements (blue)

Note: For users of Optimal Trace coming from version 4.1 and before, an explicit placeholder tab called Non-functional was associated with every structured requirement.

Using Simple Requirements and Requirements Items is the recommended way in 5.0 for storing non-functional requirements. This provides a highly flexible way to capture and manage your non-functionals such that they appear in the Tree and have much of the same capabilities/flexibility as Structured Requirements.

The Non-Functional area/tab is maintained for continuity reasons, specifically for projects being migrated from 4.1 and before. We recommend using Simple Requirements for any new non-functional requirements. See demos for examples of this.

2.1   Overview of the Optimal Trace™ Enterprise Project & Functionality

Each organized set of related requirements is contained in an **Optimal Trace Project**. Each Optimal Trace project is created from a **Project Template**. Project Templates allow projects to be 'primed' with either a specific project structure or sets of **Custom Properties.** (see section 7.5 Custom Properties for more on this)

Each **Optimal Trace™ Enterprise Project** can have project level **Links** to related resources and memoranda in the form of project level **Notes**. You can also define a Glossary and a list of Actors (people or things involved) on each Project.

Each Optimal Trace™ Enterprise project contains a default initial **Requirement Package**, which cannot be removed but may be renamed if you like. You may create subordinate **Packages.** These Packages can be named, renamed, tagged, given a unique description, copied, moved, and removed by you.

The **core business facing unit of Optimal Trace™ Enterprise** is the **Requirement.** Requirements exist within the context of a package. Two types of Requirements can be created in an Optimal Trace™ Enterprise project, **Simple Requirements and Structured Requirements.**

Simple Requirements are a description of something you would like the system to support. A Simple Requirement can optionally contain one or more **Items. An Item** is an extra piece of 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.

Note: In 5.0, the Non-Functional area/tab of Optimal Trace is maintained for continuity reasons only. This is specifically for projects being migrated from 4.1 and older versions of Optimal Trace. Users wishing to capture non-functional qualities and constraints should use Simple Requirements instead. See the product demos for examples of using Simple Requirements.

The **core unit of a Structured Requirement** is the **Step**, and a Requirement can be comprised of zero, one or more 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** (e.g. could be your Structured Requirement's critical path). Any series of Steps, within the same Requirement, which provides an alternative path/solution to the Main

Success Scenario, are collectively referred to as an **Alternate Scenario** (e.g. 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 a 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 and optionally creating it in the process.

Optimal Trace™ Enterprise allows you to **Refine** a Step or an Item to an existing or new Requirement, creating it in the process – effectively, linking 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™ Enterprise allows you to **Link** a Requirement (and all Optimal Trace elements) to an existing Requirement or other Optimal Trace artifacts either within or across projects.

Optimal Trace™ Enterprise provides you with a **Document Profiles** facility containing Requirements document **Templates –** you can create your own Profiles and Templates too.

These document profiles are the mechanism in which Optimal Trace generated documents can be tailored to meet your branding needs and additionally output to accept certain elements of the project.

In addition to the above, Optimal Trace™ Enterprise allows you to:

- Move a Requirement or sets of requirements to another Package/Project and move a Package or sets of packages to another Package/Project.

- Copy and paste Actors, Glossary items, Requirements, and Steps within and across Projects.

- Search & 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/Apply (Label) Baselines to Projects.

- View your 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 & 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.

- Generate Test Cases from Business Requirements.

- Spell check a Project or part of a Project.

- Security enable projects.

- Import the contents of a text file or a Microsoft Word document into a Project

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3   Installing Optimal Trace™ Enterprise

Optimal Trace Enterprise 5.0 requires that you have 175mb of disk space free. To install Optimal Trace 5.0 run the Optimal_Trace_Enterprise_Install.exe, which will prompt you to choose an installation directory.

3.1   Optimal Trace Silent™ Installer

Optimal Trace Enterprise 5.0 can also be installed using the silent install mode. The silent install mode installs the product without prompting the user or requiring any user input.

To run the silent installer, type at the command prompt:

Optimal_Trace_Enterprise_Install.exe /S /D=[Optimal Trace installation folder]

For example:

Optimal_Trace_Enterprise_Install.exe /S /D=C:\Program Files\Compuware

Will install Optimal Trace Enterprise into "C:\Program Files\Compuware".

3.2   Optimal Trace Document Import tool installation tips

Optimal Trace 5.0 contains a new document import tool which enables the user to mark up word documents and import them into Optimal Trace. This tool uses a plug-in in Microsoft Word. In order to use this plug-in, a dll file must be registered. This file will be registered automatically when Optimal Trace is installed. If you are experiencing difficulty running the Document Import tool it may because the plug-in is not registered correctly. It can be registered manually by following these steps:

1. Make sure Word and Outlook are not running.

2. Shutdown any 'Winword.exe' processes that my be running using the task manager.

3. Go to the start menu and select Run..

4. In the Run dialog enter cmd, and press return. This will open a command prompt dialog.

5. At the command prompt change directory to the Optimal Trace installation folder, e.g. 'cd c:\Program Files\Compuware\Optimal Trace Enterprise 5.0'.

6. At the command prompt type: 'regsvr32 OptimalTraceWordDocImport.dll'

4 Running Optimal Trace™ Enterprise

This section describes how you may run Optimal Trace™ Enterprise. For licensing and upgrading instructions see Section 21 Licensing and Upgrading Optimal Trace™ Enterprise.

4.1 Connecting to Optimal Trace™ Enterprise Server

Before you can use Optimal Trace™ Enterprise to create and edit **repository** based Projects, you must configure it to connect to Optimal Trace™ Enterprise Server; see Section 19.1 Configuring Optimal Trace™ Enterprise to work through a Optimal Trace™ Server, for details.

You can however load Optimal Trace™ Offline (file based) Projects into Optimal Trace™ Enterprise without having the remote connection set up.

Additionally local file based Projects can be created from scratch and edited within Optimal Trace™ Enterprise, without setting up the remote connection.

If you don't yet have Optimal Trace™ Enterprise Server installed and wish to do so, you will need to install it on a Server machine; see the relevant issue of the Optimal Trace™ Enterprise Server Users Guide, for details on how to do this.

4.2 Starting Optimal Trace™ Enterprise

To run Optimal Trace™ Enterprise from the Start menu move through Programs/Compuware/Optimal Trace Enterprise (version)/Optimal Trace Enterprise.

A splash-screen will appear, Optimal Trace™ Enterprise will load, and the screen shown in Figure 2 below will appear.

Note: If you did not use the default locations when you installed the software, then navigate to the directory where the software is installed and click on the Optimal Trace Enterprise.exe icon in the Optimal Trace Enterprise subfolder.

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5   Optimal Trace Screen Layout

When you start Optimal Trace™ Enterprise, the screen shown in Figure 2 below will appear. However if this is your very first time to start Optimal Trace™ Enterprise you will be asked for your License Key; for licensing and upgrading instructions see Section 21 Licensing and Upgrading Optimal Trace™ Enterprise.
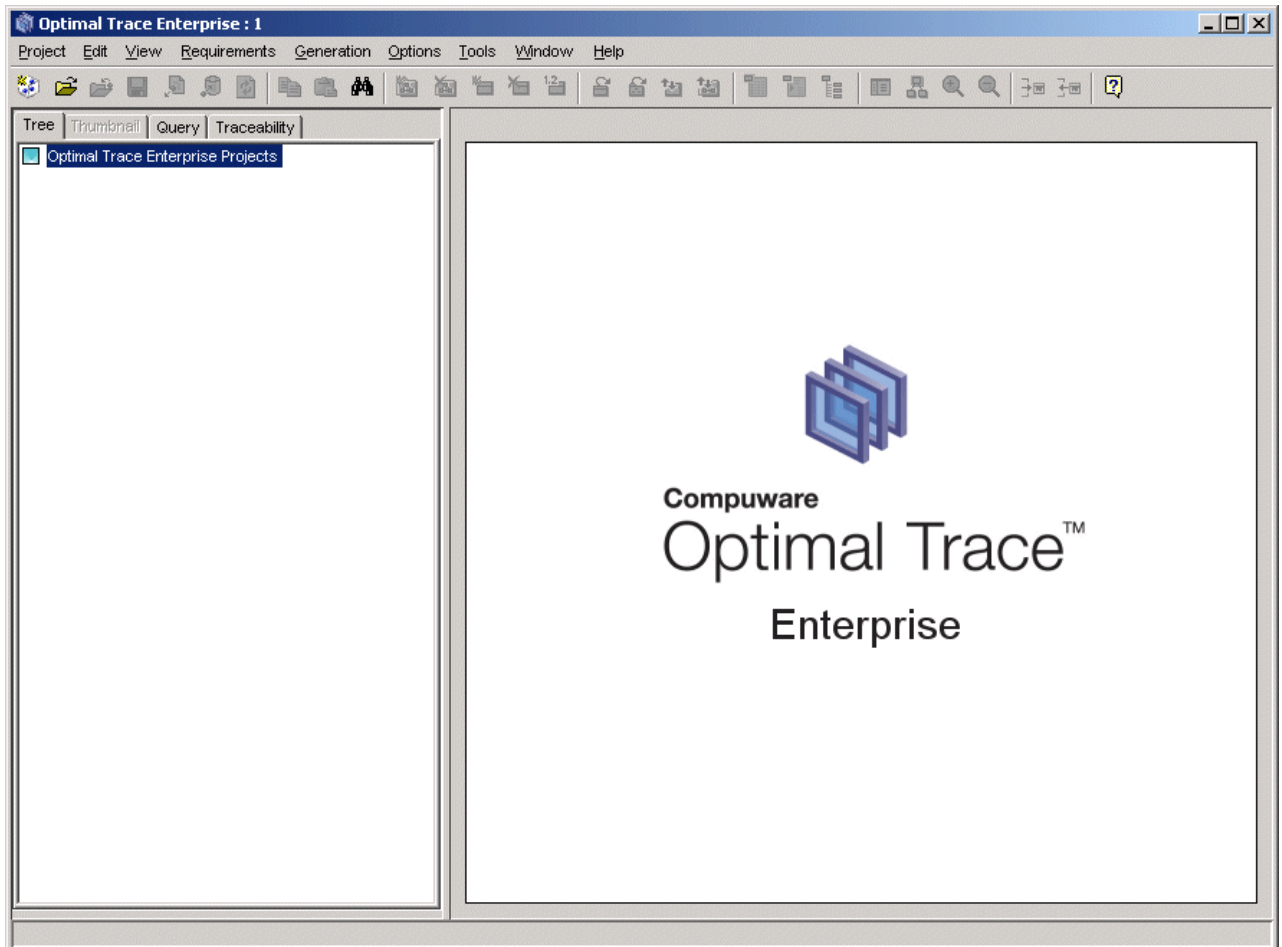
Figure 2 - Initial Optimal Trace™ Enterprise screen

Later when you are editing your Project a screen similar to the screen shown in Figure 3 below will appear. This gives you a sense of the general project components that exist in Optimal Trace.

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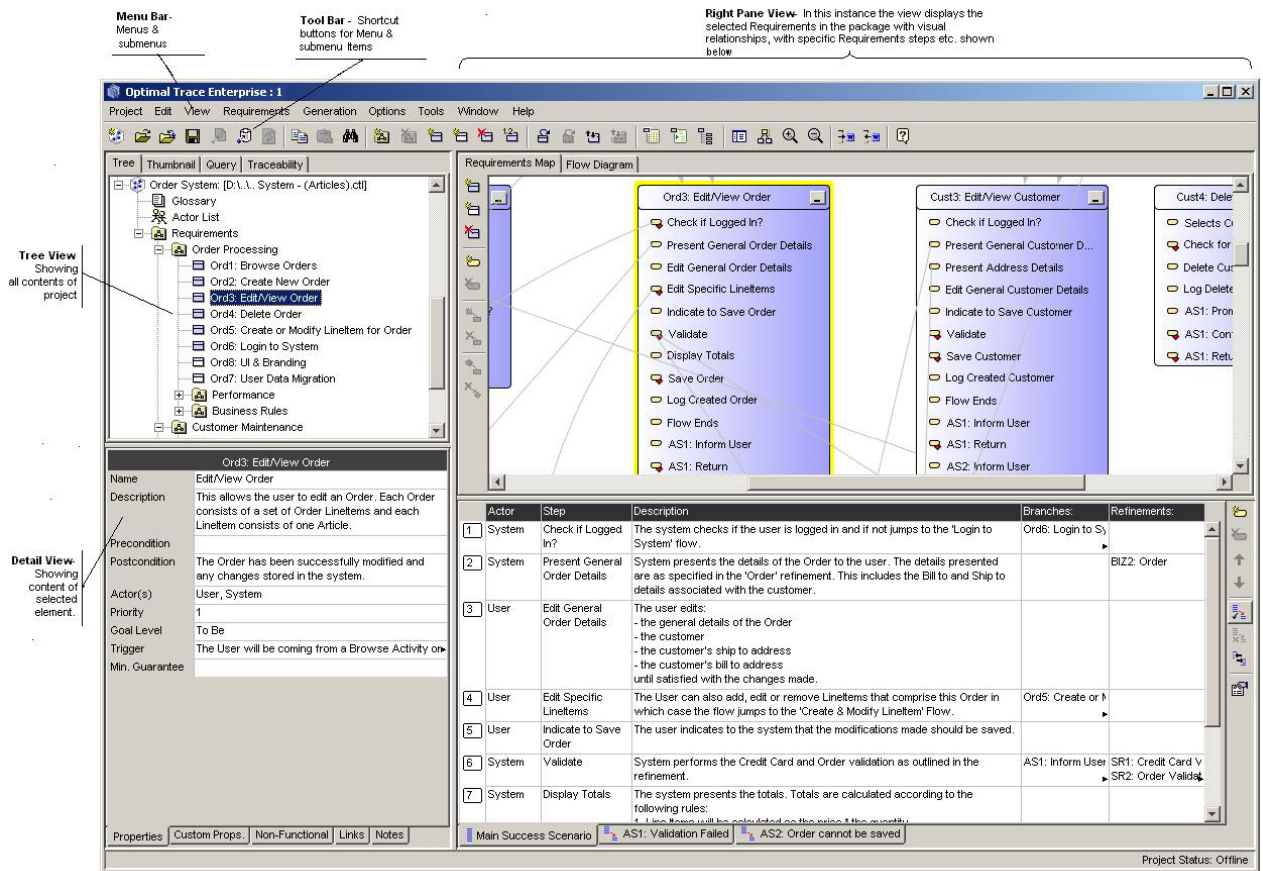
Figure 3 - Optimal Trace™ Enterprise General Layout

The screen above is comprised of the following sections:

- **Menu Bar** – i.e. the Main menu, containing menus, submenus, and options that can be used when running Optimal Trace™ Enterprise. Simply click on the options and sub-options as required with your mouse pointer, or use the arrow keys followed by the Enter key. For many of the options in the submenus you will see icons, text, and shortcut keys. For example, for creation of a new Requirement under 'Requirements' in the Menu bar you will see:

  o **Icon** –

  o **Text** – New Requirement

     When the Requirements menu is extended, hold the Alt key down and press the 'C' key, and you will get the same result. This facility is available on other options too.

  o **Shortcut key** – Ctrl+Shift+C

     See Appendix , for a list of Optimal Trace™ Enterprise shortcut keys.

- **Tool bar** - contains a list of frequently used items that can be used when running Optimal Trace™ Enterprise.

- **Tree View** - contains the list of currently opened Projects (or Project Templates) and their respective contents. A Project contained in the Tree is comprised of Actors, Glossary entries, collection of Packages and Structured Requirements. Each entry in the tree is referred to as a Node. For detailed descriptions of each entity contained within an Optimal Trace project see section 7 Optimal Trace Projects.

- **Thumbnail View** – contains a miniature of the 'Requirement Map View' or 'Flow Diagram View'. These are described in more detail in Section 7.12 A Note on the Requirements Map and Flow Diagram View.

- **Query View** - contains the list of queries and offers an ability to perform simple searches and create, edit & run queries.

- **Traceability View** - contains the traceability Tree. This shows relationships between Optimal Trace projects and elements as well as flagging suspect links and relationships.

- **Details View** - contains detail associated with the specific Node selected in the Tree View, e.g. Projects, 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.

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6   Project Menu

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 word document, or a text file into your project. Finally if you are logged in you may change your password from the Project Menu.

➢ From the Menu bar, click on Project

Within Optimal Trace™ Enterprise, everything associated with a particular **set of requirements** is contained within a Project.

Each project consists of collections of Packages, Requirements (Simple and Structured), Actors, Glossaries and a number of additional entities such as Notes and Links.

All Optimal Trace projects are created initially from **Project Templates**. Providing these in conjunction with custom properties means that you can 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: Project Template & Usage Scenarios**. Aside from 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 templatized common flows such as login etc. that can tend to recur across your projects and storing them in a company standard template.

6.1   New Project Option

Use this option to set up a new Project. This is the first step in gathering requirements with Optimal Trace™ Enterprise.

➢ From the Menu bar, click on Project and the screen shown in Figure 4 below will appear.

➢ Click on New Project, the screen shown in Figure 5 below will appear.

6.1.1   Create Local/Remote

Indicate whether you want to create a local or remote Project. To create remote Projects, you need to configure Optimal Trace™ Enterprise to communicate with an Optimal Trace™

Enterprise Server host. This is discussed further in Section 19.1 Configuring Optimal Trace™ Enterprise to work through a Optimal Trace™ Server.
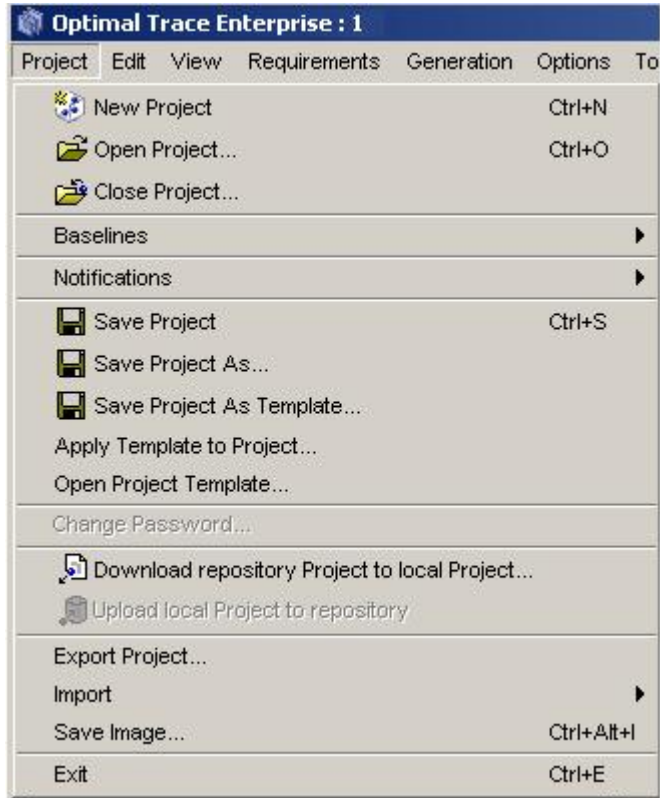
Figure 4 - Clicking the Project Menu
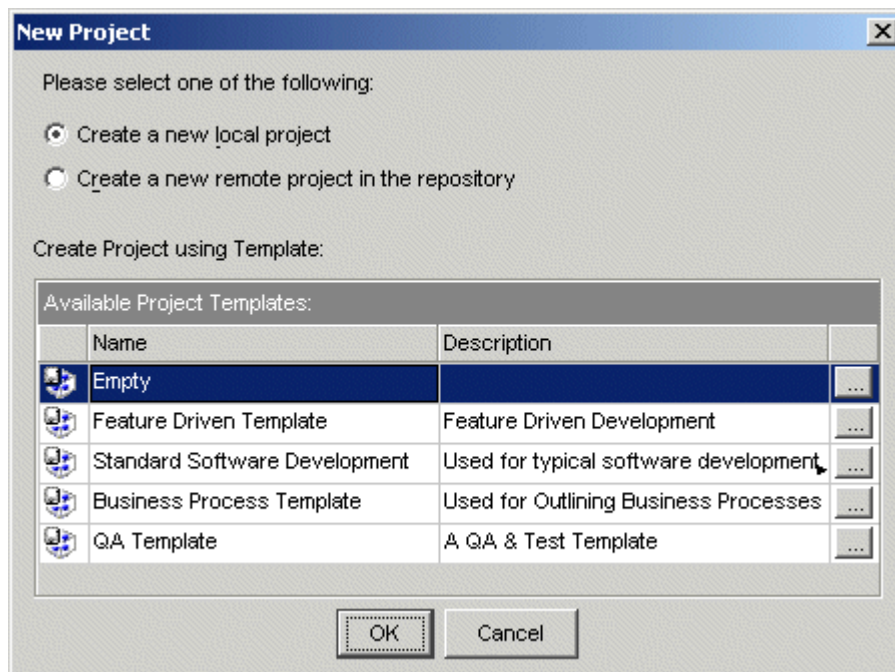
Figure 5 - Selecting a Project type and choosing a template

A local Project is stored on your computer's hard disk, and is only available for editing by one user at a time. 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. You would 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
- You are working offsite or away from your office and have no access to your Repository Server

You should 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 quite common for Optimal Trace users to initially create a Local Optimal Trace project and then at a later point to upload this to the server.
>
> For example, if working to capture the business information in a JAD (Joint Application Development) workshop, you might initially capture the requirements directly into a

local Optimal Trace project. Using a projector to show the graphical flows and textual detail with the Business Stakeholders facilitates stakeholder agreement. Once you have returned onsite or are connected with the server you would upload this and this becomes your baseline.

6.1.2   Create from Project Template

When creating a new project you specify a project template. Optimal Trace ships with the following Project Templates:

Template	Description
Empty	This is an empty template meaning it does not have any predefined 'custom properties' (for more on Custom Properties see section 7.5 Custom Properties) or project structure. This is the default when running Optimal Trace for the first time. (See Note below for more on Default Templates)
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 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 2nd package. Relate Features to Detailed Requirements using 'Refinements'.
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 & Risk/Mitigation Requirement: Delivery Increment (Bound and one of: Increment 1, 2 or 3), Business Priority (Bound and one of: High, Medium or Low) & Tech Risk (Bound and one of: High, Medium or Low)
Business Process Template	Use this template when defining higher level business processes. This template contains the following Custom Properties: Project: Project Scope, Business Stakeholders Requirement: Business Priority (Bound and one of: High, Medium or Low) & Business Level (Bound and one of: High, Medium or Low), Time, Resources Requirement Step: Time, Inputs (Bound and empty), Outputs (Bound and empty) Note: The Inputs and Outputs are Bound since you will likely have a set of predefined items, e.g. PO, Invoice etc.

QA Template	Use this Template when defining Test Requirements. Typically these requirements will link or Trace back to Business Requirements.
	(See section 7.3 Project/Requirement Links for more on Links)
	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

Note: Changing Default Project Template. You may want to change the default project template when creating new projects, this can be done by adjusting the 'Project Template Settings' under the 'Options>>General Options…' menu. See section 14.1.4 Default Directories Settings for more details.

6.2   Open Project Option

Use this option to open an existing Project.

> ➢   From the Menu bar, click on Project.

> ➢   Click on Open Project.

> ➢   Check the 'Open a remote project in the repository' for remote projects or 'Open a local Project' for offline (file based) projects.

> ➢   Select the project you wish to open.

Optimal Trace™ Enterprise allows for multiple Projects (either Remote or Local or a mixture of both) to be loaded at any one time. If you open multiple Projects, you may copy-cut-and-paste artifacts such as Requirements and Actors between them; see Section 10.1 Copy/Paste Options (within and across Projects), for details.

Having created a Project, you may configure the details associated with the Project, and specify properties, Links, Notes, and Non-functional requirements; see Section: 7 Optimal Trace Projects for details. You may also customize certain Project settings; see Section 7.6 Project Settings.

Optimal Trace 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 you attempt to open a security enabled project then the system will prompt you to login (see Figure 6 - Logging on to a secure project).
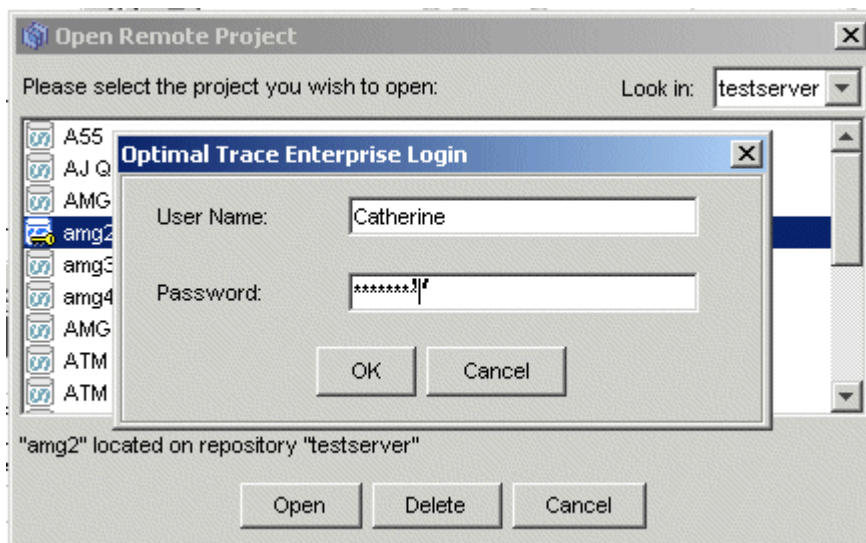
Figure 6 - Logging on to a secure project

Enter your user name and password in the fields provided.

Note 1: Case Sensitivity. User IDs and passwords are case sensitive so ensure you are using the correct case if you are having difficulty when logging on.

Note 2: Default Passwords. When new users are created in Optimal Trace they are assigned the default password of 'password'. Contact your Optimal Trace Administrator for more details and see the 'Optimal Trace Server Admin' help for more on Users.

6.2.1 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.

6.2.2 Deleting Remote Projects

From time to time you may want to delete remote projects.

Unlike locally stored Optimal Trace Professional or offline projects—remote Projects cannot be removed simply by deleting a file from the hard disk or network drive.

You need to explicitly remove the project from the Optimal Trace repository.

Prior to deleting a project you may want to consider either:

- taking the project offline as a precautionary measure in case you wish to recover that project at a later time (see section 6.12 Download Repository Project to local Project Option for details of taking projects offline) or

- making a backup copy in the repository. You can use the 'Save As…' feature, (see section 6.7 Save Project As Option for how to do this).

To delete a remote project

➢ From the Menu bar, click on Project.

➢ Click on Open Project.

➢ Check the 'Open a remote project in the repository'

➢ Select the project you wish to delete

➢ Click 'Delete'
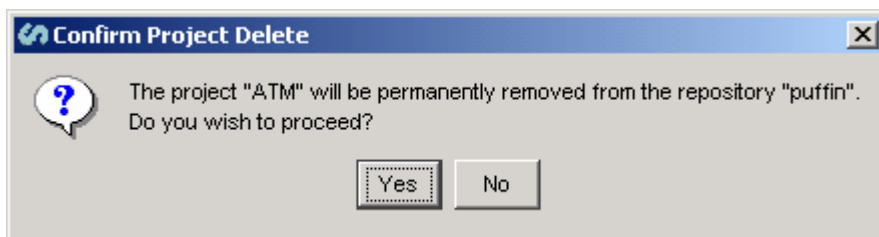
Figure 7 - Prompt for Project Deletion

When you elect to delete a project you will be prompted to confirm deletion.
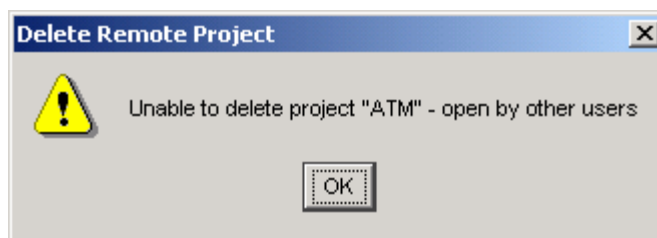
Figure 8 - Project Deletion not possible message

Tip 1: An attempt to delete a Project that is being accessed by another user will fail safely.

Tip 2: Security Enabled Projects. Projects that are security enabled may be configured such that the permission 'can delete' is unchecked meaning an attempted deletion will not succeed. In this case a suitable message indicating lack of permission is displayed.

We recommend that when security enabling projects, that you minimally default the setting to unchecked at project level. In this way, accidental project deletion is avoided.

See the 'Optimal Trace Server Admin' help for more on setting project permissions.

6.3   Close Project Option

Use this option to close your local/remote Project. It will disappear from the Tree View, but the Project will remain in the repository or file folder (remote/local).

➢ From the Menu bar, click on Project

➢ Click on Close Project, and prior to closing, if Optimal Trace™ Enterprise detects that you do have unsaved changes, it will prompt you to save prior to proceeding

➢ Click on either the Yes, No, or Cancel button, to conclude the closure

6.4   Baselines

Project Baselines are full archived snapshots of a project. Every Baseline is associated with the project that it was initially created from.

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 signing off 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 mechanism supports review sessions and allows people focus specifically on changes that have occurred since the last or any other baseline.

When creating a baseline you specify a Baseline Name and description. This allows you track specific baseline events.

Projects Baselines may be created, compared, merged, deleted and acquire permissions.

Project Baselines act in exactly the same way as full Optimal Trace Projects in that they can be opened, edited (assuming permissions are set) and manipulated in the same way as normal projects.

Note: 'LATEST' Baseline. All repository projects are implicitly baselined with a tag called LATEST. This means that the current or latest project can be compared with any previous baseline.
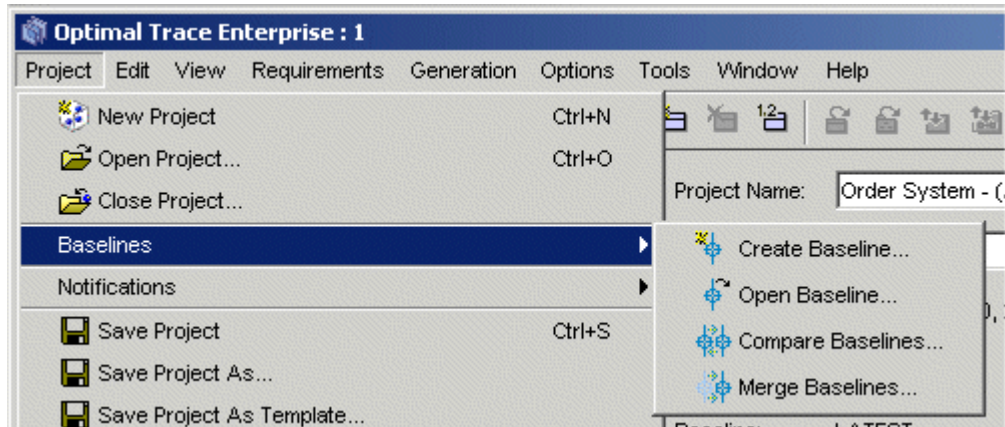
Figure 9 - The Baseline Menu Options

6.4.1   Create Baseline Option

To Create a Baseline:

  ➢ Open the project you want to create the baseline for. Since Baselines are associated
    with Repository based projects, ensure that you have a project open

  ➢ From the Menu bar, click on Project

  ➢ Click on Baselines

  ➢ Click on the 'Create Baseline…' sub-menu

You now are presented with a screen allowing you to fill in the baseline name and description
(see Figure 10 - Creating a New Baseline).
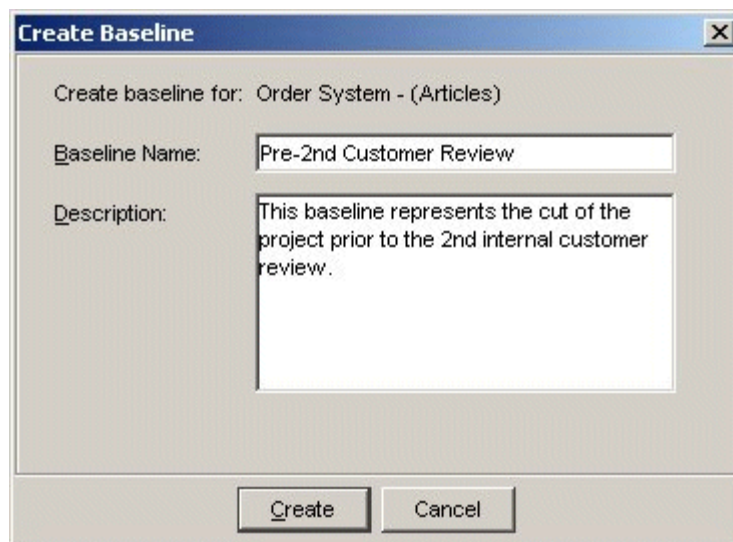
Figure 10 - Creating a New Baseline

Once you have entered a suitable name and description then click the 'Create' button. At this juncture the Baseline is fully created, is associated with this project and can be opened.

Tip: Baselining when you intend to work Offline. If you need to Baseline for a session where you will be working offline (disconnected from the repository), there are two approaches you can take.

You can first create the Baseline when online, and then take the project offline (using Download). When you merge your changes back into the repository, you can then compare the before and after state using 'Compare Baselines…'.

Alternatively, you can take the project offline, make any offline changes (without having created an initial baseline) but before merging back, create a 'Pre-merge' labeled baseline. This will allow you compare all changes pre and post the merge.

For more on download and merging projects see section: 6.12 Download Repository Project to local Project Option and 6.13 Upload local Project to Repository Option

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6.4.2   Open Baseline Option

Baselines can be opened for review or editing assuming appropriate permissions are set.

To Open a Baseline:

➢ From the Menu bar, click on Project

➢ Click on Baselines

➢ Click on the 'Open Baseline…' sub-menu

You are presented with the current list of baselines. 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 you will see an empty list.

Once the Baseline is open it can be used in exactly the same way as any project.

6.4.3   Delete Baseline Option

Baselines can also be deleted. If you do not want baselines to be deleted then set appropriate permissions on the given baseline. See the note later in this section.

To Delete a Baseline:

➢ From the Menu bar, click on Project

➢ Click on Baselines

➢ Click on the 'Open Baseline…' sub-menu

➢ Select the Baseline you want to delete and click the 'Delete' button.

You are prompted to confirm the deletion.

Note: Baselines & Permissions. Baselines can have permissions associated with them. You may consider applying permissions for the same reason you would want to set permissions on a project. In other words you might want to prevent the Baseline being deleted or modified. See the Optimal Trace Administrator help document for full details on setting project and Baseline permissions.

6.4.4   Compare Baselines Option

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

To Compare Baselines:

➢ From the Menu bar, click on Project

➢ Click on Baselines

➢ Click on the 'Compare Baselines...' sub-menu

The Compare Baselines dialog appears (see Figure 11 - Entering Baselines to Compare) allowing you to enter the Baselines that can be compared.
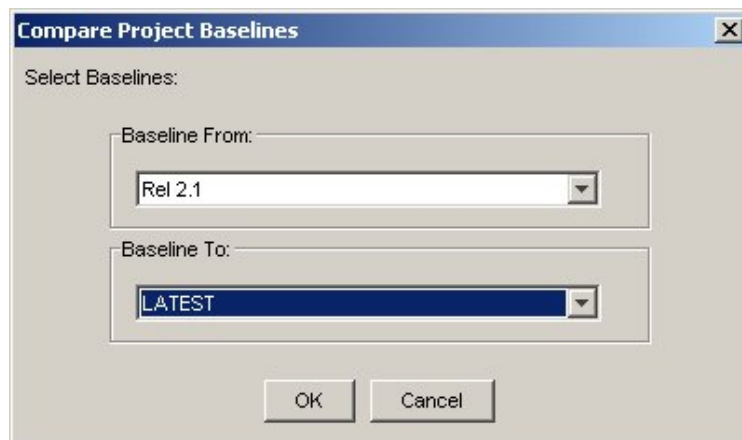
Figure 11 - Entering Baselines to Compare

Once you have selected the baseline 'From' and 'To' and hit 'OK', the Baseline Comparison Screen shows (see Figure 12 - Compare Baselines Screen). The screen consists of three panes.

The Compare takes two versions (Baselines) of the same Project labeled **From** and **To** and displays the differences between them in the third pane. Specifically the following differences can occur between baselines:

- Objects may be in the **From** Baseline but not in the **To** Baseline
- Objects may be in the **To** Baseline but not in the **From** Baseline
- Objects may be common to both the **From** and the **To** Baseline but may have different attributes

Any objects that exist in both the **From** and the **To** Projects that have different attributes trigger a visual conflict. For example, two Actors called 'user', one with the description 'The user' and the other with the description 'The generic user'.

The Compare Screen shown in Figure 12 - Compare Baselines Screen shows all conflicts (differences) graphically so that you can review them on a one-by-one basis or collectively. When the Optimal Trace™ Enterprise Compare Screen initially shows, for every conflict detected it displays the corresponding detail in the 3rd pane.

In order to move up or down between conflicts you use the Up (⬆) and Down (⬇) buttons. Selecting an entry in the 3rd pane selects the relevant entry in either the 'From' or 'To' Baseline and vice versa.

When Conflicts occur in the Compare Baselines Screen there can be one of a number of reasons. The next table outlines the meaning of the Visual Cues (Icons) that appear and explains the Conflict States when a specific button is enabled.

It should be noted that icons can appear in the From and To baselines as per the normal Tree View of the Optimal Trace™ Enterprise application, effectively **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 conflict.

Element Adornment	Action	Description
✚	Removed	This means that the selected Element was Added to that baseline.
▬	Added	This means that the selected Element was removed from that baseline.
○ or ○	Different Sub-element(s) or a Property difference	This happens in two scenarios. The first is that the change occurred due to a sub-element having been added or removed. For instance adding a new Link to a Requirement. The second scenario is that the changes are at the 'property' level so for example in the case of a package this might be a name or description change. In this instance the exact text of the change is shown in the appropriate column. Additionally, the property that was changed is reflected in the Action column.
ᴧ or ᴧ	Associated element has changed	This means that another Element that is Associated with this Element has changed (e.g. a Step Element can be associated with an Actor Element).
→ or →	Positional Change	This means that the selected Element has a positional change. Positional Changes happen when elements are added or removed where there are more elements after the specific element. For example if step 4 were removed (of a total of 6 steps) then a step positional change would result. Positional changes also occur if an element is moved up or down.

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You can also Save the results in the 3rd pane to a text file as well as generating a HTML view of the results.

To view as HTML:

> Click on 'View HTML…'

> Click on the 'Open' button

The Result shows the differences in the 3rd pane as a single HTML file.

Tip: Mailing the Baseline Differences to colleagues. The HTML report can easily be mailed to colleagues for review. This allows you mail a concise view of the differences. To access this HTML file go to your Optimal Trace installation (at <Optimal Trace Install Root>\projects\reports) and find the file called 'BaseLineCompareOutput.html'. This you can attach to the mail.

To save the differences to a text file:

> Click on 'Compare >> Save as…' menu option

> Enter the file name you want to save it as.
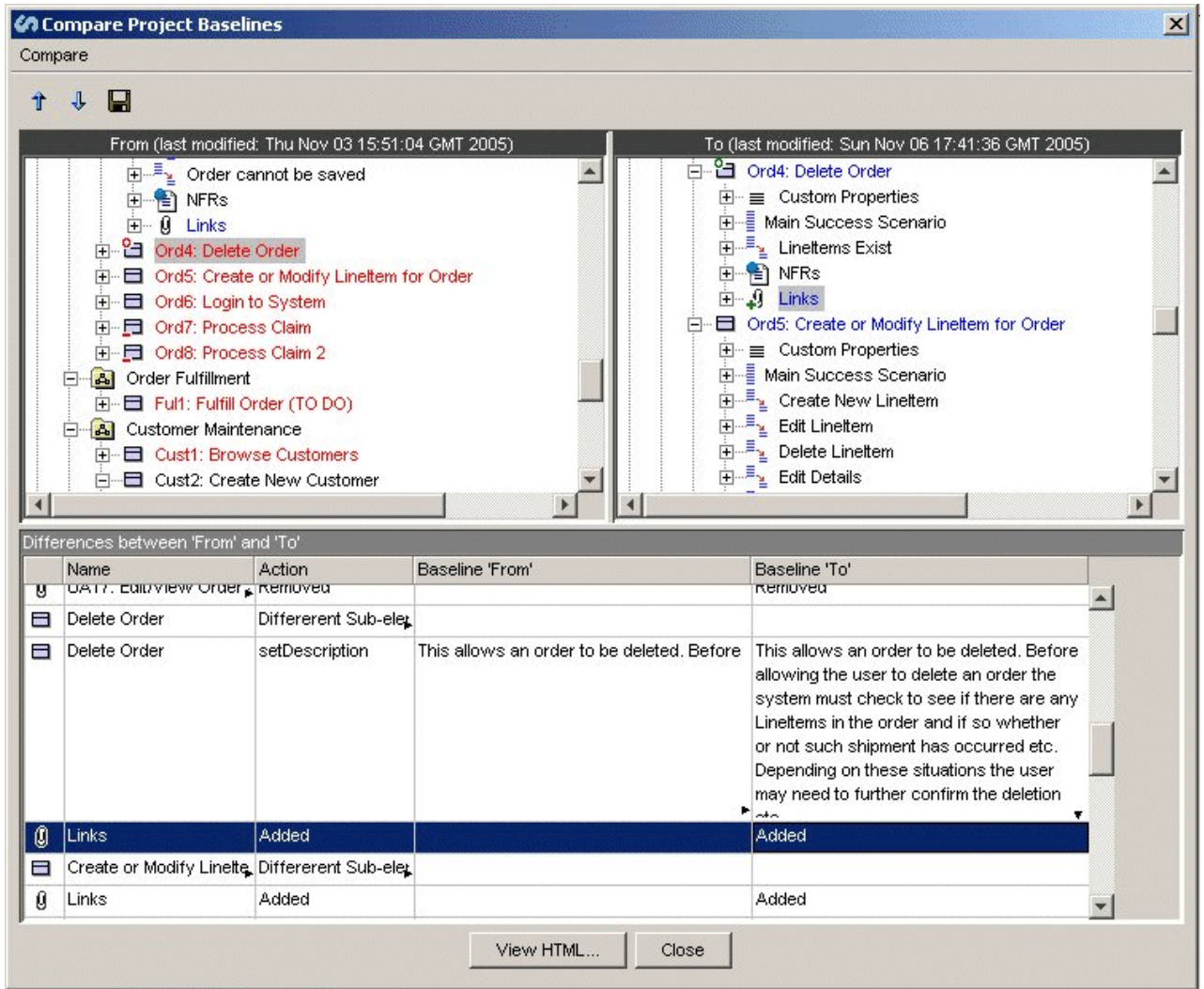
Figure 12 - Compare Baselines Screen

6.4.5   Merge Two Baselines Option

You can merge Baselines resulting in an altered 'To' Baseline. You might opt to merge Baselines under the following circumstances:

- You realize that there was some information (perhaps some functional flows etc.) held in a previous Baseline that may have been subsequently altered or deleted but now has become relevant again. In this context the specific flows might be merged forward. This may be a merge into the LATEST.

- You want to adjust a previous Baseline without having to re-Baseline. Although this is a possible scenario under certain circumstances, we recommend in general not merging back to previous baselines.

To Merge Baselines:

➢ From the Menu bar, click on Project

➢ Click on Baselines

➢ Click on the 'Merge Baselines...' sub-menu

Select a 'From' and a 'To' Baseline. Once you have the two Baselines specified:

➢ Click on the OK button to begin the merge
➢ The Baseline Merge screen then appears. The behavior of Baseline Merging is identical to Project Merging. See section 19.4 Merging Projects for full details on Project Merging.

6.5   Notifications

Optimal Trace Enterprise allows you register if changes are applied to any part of a given project. If changes are made an e-mail is issued automatically from the Optimal Trace Server.

Note: Secure Projects & Notifications. Projects must be Secure before you can register for notifications. For more about making Projects secure, see the Optimal Trace Administrator Help file.

6.5.1   Register for Notification

You can register for change notifications on the following Project Elements:

• The Project level (change to project attributes or constituent elements such as Notes etc.)

• The Glossary (change to any Glossary entry or additional/removal of glossary entries)

• The Actor List (change to any Actor entry or additional/removal of actors)

• Every Package (change to the package attributes or additional/removal of entries)

• Every Structured Requirement (change to any level of the Requirement)

• Every Simple Requirement (change to any level of the Requirement)

To register for notifications:

➢ Select the element in the tree that you wish to receive change notifications for. If you select a package you can also have the option of registering for all the packages sub-elements.

➢ From the Menu bar, click on Project

➢ Click on Notifications

➢ Click on the 'Register for Notification' sub-menu

You can alternatively right-click in the Tree and a context-sensitive menu will appear.

Once you click register then a message appears confirming that you are registered.

Note 1: Packages If you are registering for a package and if the package contains sub-packages and/or Requirements you will be prompted to confirm if you wish to register for these elements also.

Note 2: SMTP Settings. If the Server side SMTP mail settings have not been configured, you will receive a message informing you of this. Contact your Optimal Trace administrator to have these set correctly. See the Optimal Trace Server Help file for more on configuring SMTP mail settings.

6.5.2 View/Unsubscribe Notifications

You can view the list of element(s) that you have configured notifications for as well as unsubscribe from notifications on any elements.

To do this:

➢ From the Menu bar, click on Project

➢ Click on Notifications

➢ Click on the 'View/Unsubscribe Notifications' sub-menu

At this point a screen shows the current project elements that you are subscribed to. Unchecking one or more elements results in you being unsubscribed for mail notifications on that element.

6.6 Save Project Option

Use this option to save your Project.

Caution! The undo/redo memory is wiped clean after a save. So, once a Project is saved you cannot undo/redo any actions you made before saving. Any new actions since saving can be undone/redone.

➢ From the Menu bar, click on Project

➢ Click on Save Project, and a Save screen will appear.

➢ Click on the Save button.

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6.7   Save Project As Option

Use this option to save your Project with a different name. If your project is a repository based project you will be prompted to enter just the name of the project.

> **Note: Archiving Projects.** If you wish to archive Repository projects, use the save as option. This creates a complete copy of the project in the repository.

If the project is a local project (i.e. file based project) you will be prompted to enter the file name of the project.

> **Caution!** The undo/redo memory is wiped clean after a save. So, once a Project is saved you cannot undo/redo any actions you made before saving. Any new actions since saving can be undone/redone.

➢   From the Menu bar, click on Project

➢   Click on Save Project as, and a Save screen will appear.

➢   Change the file name if you want to.

➢   Click on the Save button.

6.8   Save Project as Template Option

You can create new templates either from existing projects or existing templates.

Using this option will save the currently loaded and selected project or template as a new template. You are prompted for the template name and description.

Any Custom Properties and Structural elements are saved forming the new template. The template is saved to the location specified in the Tool Settings (see section 14.1.4 Default Directories Settings for details). The next time a new project is created you will see that template shown as one of the selectable templates.

6.9   Apply Template to Project Option

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

Applying a template to a project means that the custom properties and structural elements of the template are layered on top of the destination project.

Typically, you may want to 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: Custom Properties.** When you are applying a template, if custom properties having the same name are encountered in both the template and the destination project, then the

custom properties in the destination project and any associated data will be preserved. Additionally a message informing you of this will be presented.
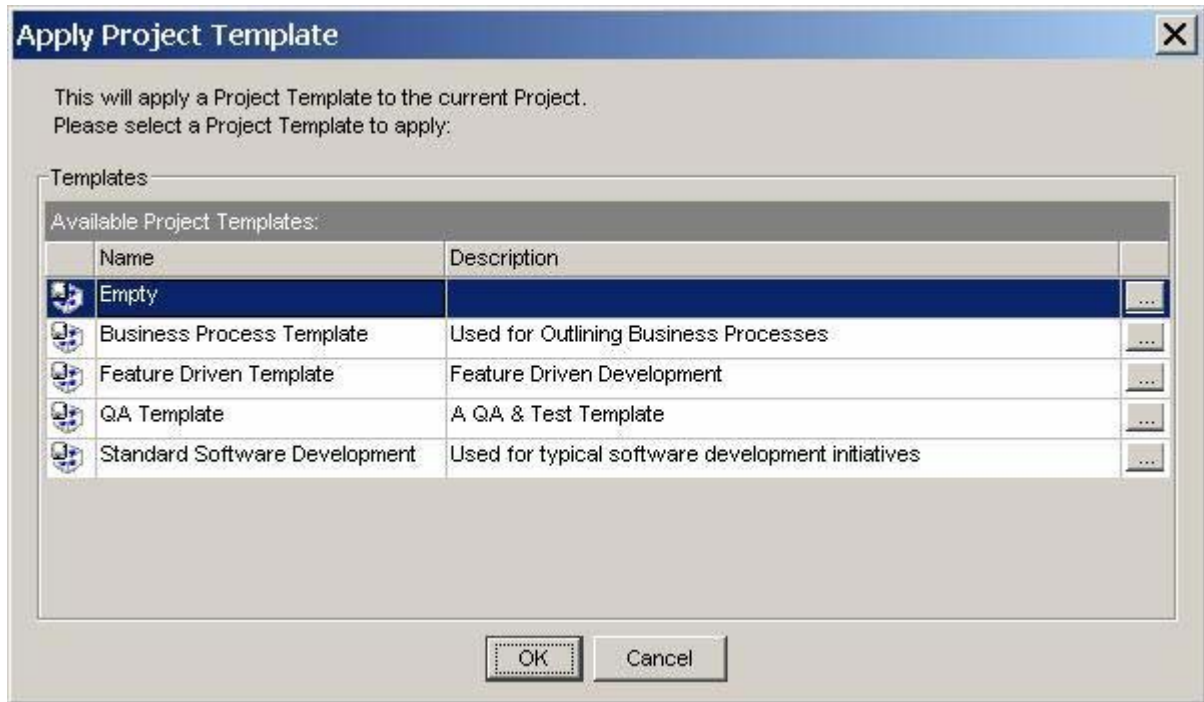
Figure 13 - List of Available Templates to Apply

When the list of available templates are shown, to find more detail you can click on the '…' button to the right of each template this will result in a summary screen showing the custom properties currently defined for this template. You can also open the template itself to navigate and see its full set of data and custom properties. (See section 6.10 Option for more on Opening Templates)
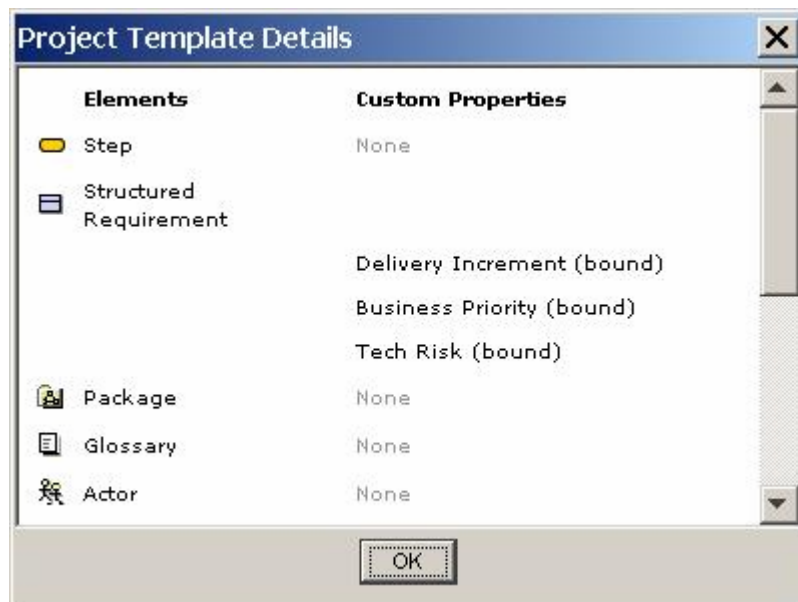
Figure 14 - Template Summary Screen

6.10   Open Project Template Option

Use this option to open an existing template for viewing and possible modification. A list of available templates is presented and similar to the Apply Template Screen you can see detail for each template by clicking the '...' button to the right of each listed template.

Once you open a template, the template indicator icon appears adjacent to the template name within the Tree. This appears as: .

As templates are specialized projects all project level editing, reporting etc. capability can also be applied to project templates. Existing templates therefore may be saved with another name and you can create as many specialized templates as required.

6.11   Change Password Project Option

If you are logged in (as a result of opening a secure project), this option allows you change your password. Clicking this will result in the screen shown in Figure 15 - Setting a Password.

Figure 15 - Setting a Password

Enter your new password in the appropriate fields and click 'OK'.

6.12   Download Repository Project to local Project Option

Use this option to download a complete <u>copy</u> of your Project from the Repository. This allows you to work disconnected from the repository offline and is useful if working on site with your customer or at home where you do not have network access.

> **Note:** The downloaded project is aware that it originated from a repository project. This way when you return it to the server & use the upload project option, Optimal Trace will automatically launch the project merge screen. See next section for more.

> ➢ From the Menu bar, click on Project.

> ➢ Click on Download Repository Project to local Project, and a 'Save Project as' will appear, which will allow you to save the Project to your local machine. See Section 6.7, Save Project As Option, for more details on how to save a Project.

Once download is complete:

- The Project's path as displayed in the Tree View, will point to the local file and 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. See Note for details.

> **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; See section 19.4 Merging Projects for full details on Project Merging.

6.13   Upload local Project to Repository Option

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.

> ➢ From the Menu bar, click on Project

> ➢ Click on Upload local Project to Repository, and Optimal Trace™ Enterprise 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. See section 19.4 Merging Projects for full details on Project Merging.

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.

6.14   Export Project Option

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 the 'Add Project Link to Report (locks the project)'.
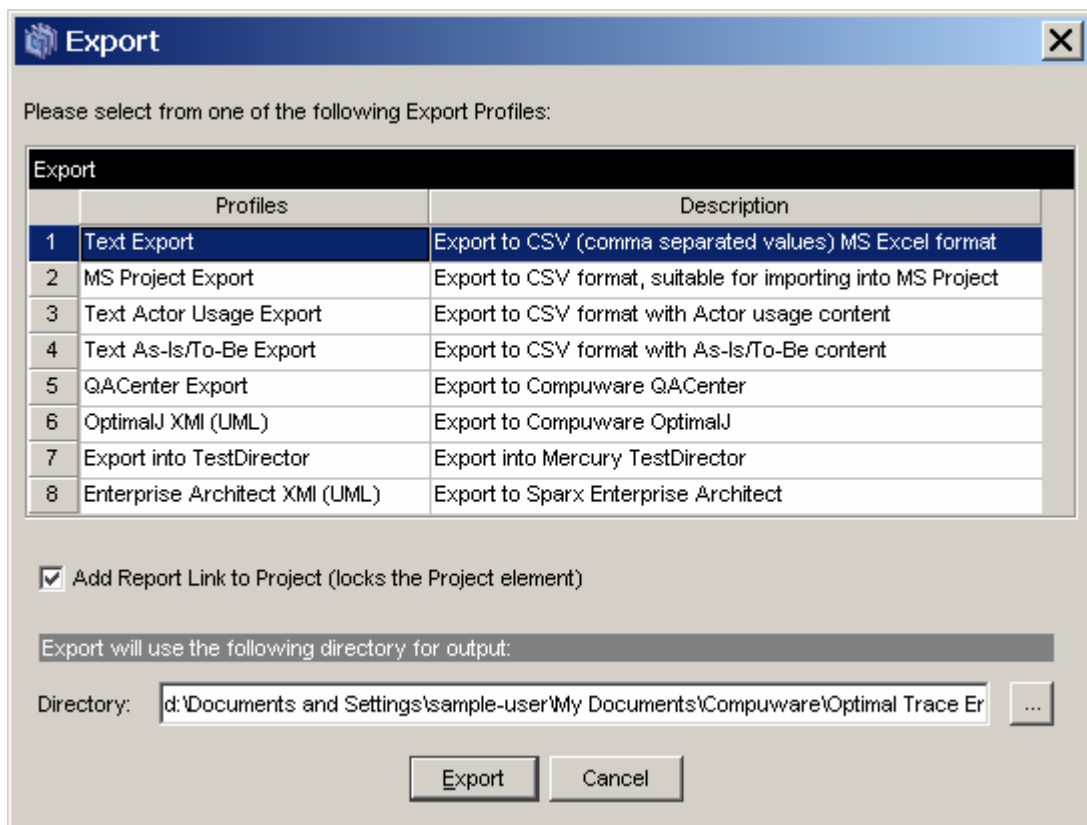
Figure 16 - Export Project Screen

The following export profiles ship with Optimal Trace:

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Table 1 – List of Generate Export Profiles shipped with Optimal Trace™ Enterprise

Export Profile	Description
Text Export Generates to directory: ...\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. **Note:** Microsoft Excel has been known to display numeric values in a .CSV file in an unexpected manner. If you are exporting to a a .CSV file for use in MS Excel, and experience this issue, changing the cell formats in Excel will help you overcome it.
MS Project Export Generates to directory: ...\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 Generates to directory: ...\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 structured 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. (see section 13.5 Option for more details)
Text As Is – To Be Report Generates to directory: ...\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. (see section 13.5 Option for more details)
QACenter Export Generates to directory: ...\projects\exports	This report generates output for use as part of the import into the QACenter product line from Compuware. See http://www.compuware.com for more on the integration capabilities into QACenter
OptimalJ XMI (UML) Generates to directory: ...\projects\exports	This report generates an XMI text file suitable for import into OptimalJ from Compuware. See http://www.compuware.com for more on the integration capabilities into OptimalJ
Export into TestDirector Generates to directory: ...\projects\exports	This report generates a CSV based text file suitable for importing into HP Mercury TestDirector. See the integration help files for more on the integration capabilities and also online at: http://www.compuware.com

Enterprise Architect XMI (UML) Generates to directory: …\projects\exports	This report generates an XMI text file suitable for import into Enterprise Architect from Sparx Systems.

> **Note: Creating Custom Exports.** Export Profiles reply on the velocity scripting engine and the Optimal Trace API. Velocity ships with Optimal Trace. See http://velocity.apache.org for more details on the Velocity scripting language. See also the Optimal-Trace-Exports-Reports-and-API-Help.pdf help file for more on velocity in general and building exports using velocity script.
>
> Specific Export formats can also be created for your needs by the Compuware Optimal Trace Professional Services team. Contact Compuware for further details.

6.15 Import Option

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

6.15.1 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 (right-click) 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.

On choosing the Import Text File option, the following dialog appears:
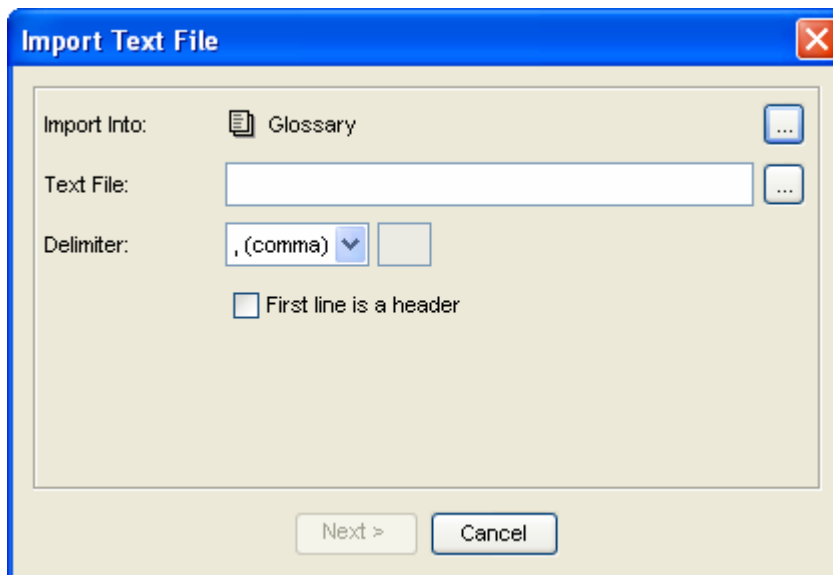
Import Into: indicates the project element which will be the location for the imported elements. This is initialized with the selected item in the project tree. Use the "..." button to the right to change the import location. The selected import element will determine the kinds of element that can be imported according to the list above.

Text File: specifies the text file to import. Type in the full path, or choose the "..." button to summon a file chooser box to navigate to the file.

Delimiter: this drop-down 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 different character is required, choose "Custom" and type the character in the text box to the right of the drop-down.

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.
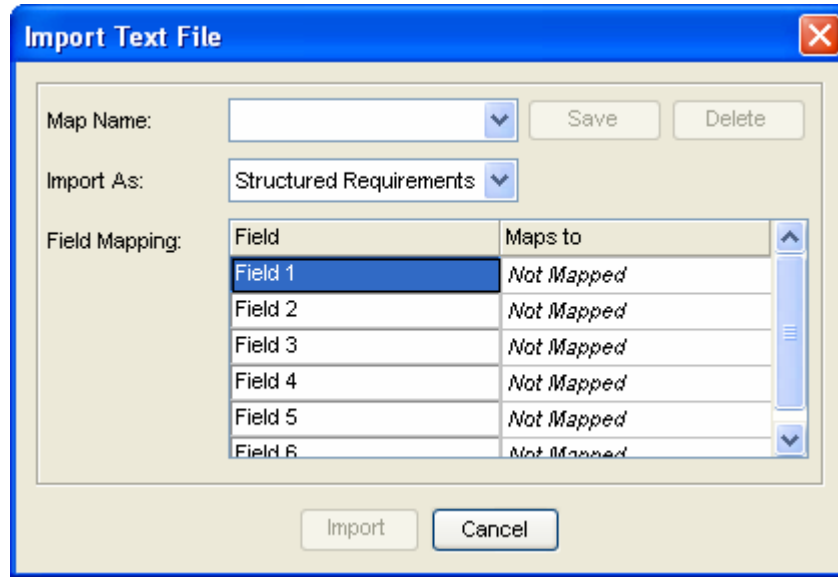
This dialog specifies how the fields found in the file should map to attributes of the project elements to be imported. Collectively, this set of mappings is called a map.

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 this button to save changes to the currently applied map. This is only enabled if the field mappings are changed after a map is applied.

Delete: this button deletes the currently applied map. The field mappings are not changed.

Import As: this drop-down 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.

Field Mapping: this table 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: this button is 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: click this button to cancel the import and return to the main Optimal Trace window.

Notes:

➢ 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.

6.15.2   Import Word Document

Use this option to import project data from a Microsoft 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. The import process is thus quite interactive, and typically it is achieved in a few passes following the following steps:

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. Go back to step 2 to fix up any errors or omissions

6.15.2.1   Opening 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.
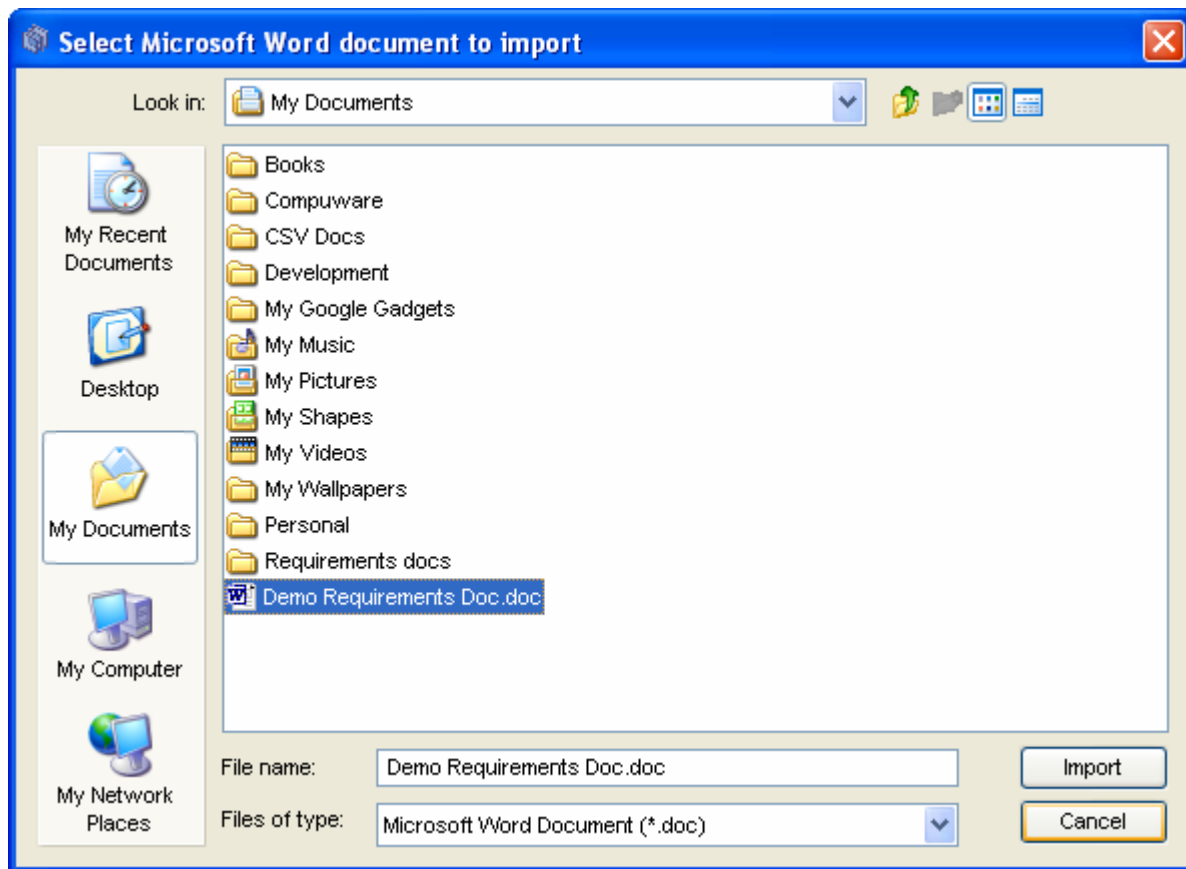
Navigate to the document to import and click the 'Import' button.

6.15.2.2 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

When the document and tool first appear the first step is to specify the type of project element to be marked up using The element-chooser dialog. Next the boundaries of the element are marked using The start/end dialog, and finally the attributes are marked using The attributes dialog. Finally, for advanced use, The find similar dialog 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.

6.15.2.2.1 The element-chooser dialog
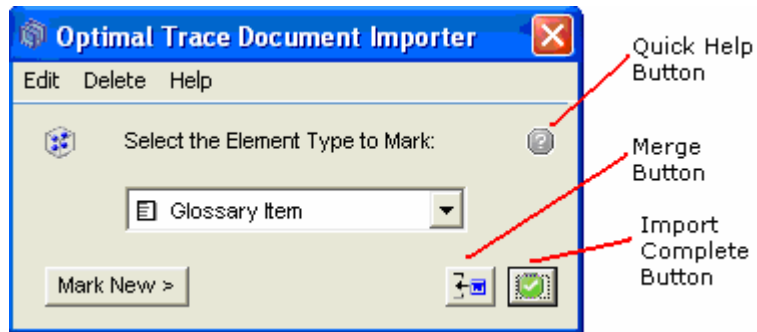
Quick Help Button: click this button to display a floating Help screen, which contains quick instructions for whatever dialog is currently onscreen.

Select the Element Type to Mark: this drop-down shows all the different project elements that can be marked up in the document. Choose the one you want to mark.

Mark New: click this button to advance to The start/end dialog to define the boundaries of a new element.

Merge Button: click this button to launch the merge process and import the currently marked up elements into Optimal Trace. Word and the markup tool remain active and you can return to them after the merge is done.

Import Complete Button: click this button to launch the merge process for the last time to import the marked up elements into Optimal Trace. You will be prompted to save your changes if you wish. Then Word and the markup tool will be shutdown.

Edit menu:

> **Edit Element at Cursor:** this option forwards to The start/end dialog with the editing context set to the element that is closest to the cursor.

Delete menu:

> **Delete Selected Markup:** this option is a convenience feature to remove all Optimal Trace markup comments in the text selected in Word.

> **Delete Element at Cursor:** choose this option to remove the markup comments for the element closest to the cursor, including the start and end comments, and any attribute comments.

6.15.2.2.2 The start/end dialog
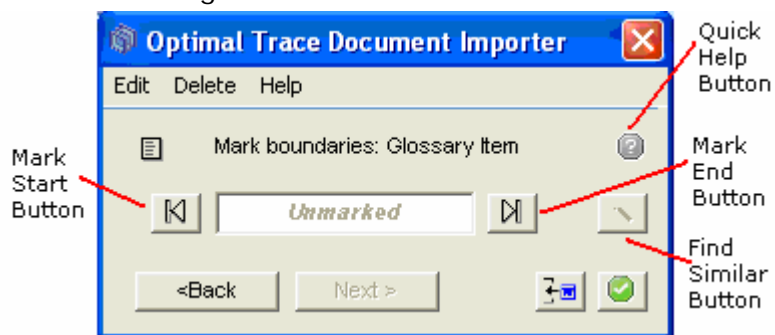
This dialog allows you to mark or move the starting and ending points of an element to be imported. To use this dialog, move the insertion point in Word to the point that marks the start of the element and click the **Mark Start** button. A start comment will be added to the document, and the starting text will appear in the area between the Mark Start and Mark End buttons in the tool.

To mark the end of the element, move the 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 as illustrated below:

From the start/end dialog, the following other windows buttons and controls are available:

Find Similar Button: this button is enabled when both the start and the end of an element are marked and forwards to The find similar dialog by which elements similar to the one just marked are inferred in the rest of the document.

Next: click this button to mark attributes in the element that has been marked up using the attributes dialog.

Back: click this button to return to The element-chooser dialog. Any start or end comments that have been marked up already will remain marked up.

Merge Button: click this button to launch the merge process and import the currently marked up elements into Optimal Trace. Word and the markup tool remain active and you can return to them after the merge is done.

Import Complete Button: click this button to launch the merge process for the last time to import the marked up elements into Optimal Trace. Word and the markup tool will shut down.

Edit menu:

> **Edit Element at Cursor:** this option will reinitialize The start/end dialog with the editing context set to the element that is closest to the cursor.

Delete menu:

> **Delete Selected Markup:** this option is a convenience feature to remove all Optimal Trace markup comments in the text selected in Word.

> **Delete Element at Cursor:** choose this option to 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.

6.15.2.2.3   The attributes dialog
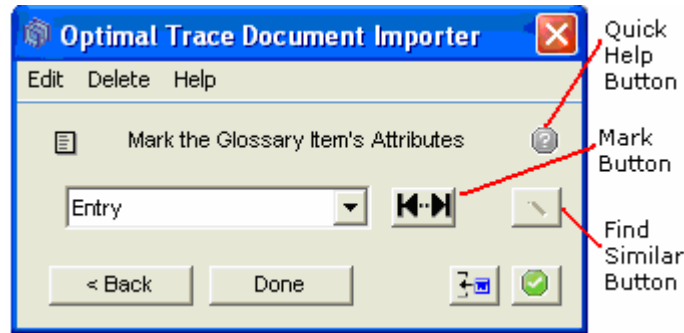
After marking the start and end points of an element, the element is set to be the editing context. This means that when Next is pressed, the attributes dialog which appears allows you mark the attributes of that element. To mark an attribute, first select the attribute to mark from the drop down menu 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, as illustrated below. This should be repeated for all attributes. Comments added to the document by the import tool are color coded by element, for example in the picture below all comments relating to the 'Word1' glossary entry have the same color.

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:

Find Similar Button: this button is enabled after an attribute is marked and forwards to The find similar dialog by which similar attributes of other elements are inferred in the document.

Done: this button indicates you are done marking up the element, and returns to The element-chooser dialog.

Back: click this button to return to The start/end dialog. All document comments will remain as marked.

Merge Button: click this button to launch the merge process and import the currently marked up elements into Optimal Trace. Word and the markup tool remain active and you can return to them after the merge is done.

Import Complete Button: click this button to launch the merge process for the last time to import the marked up elements into Optimal Trace. Word and the markup tool will be shutdown.

Edit menu:

> **Edit Element at Cursor:** this option will return to The start/end dialog with the editing context set to the element that is closest to the cursor.

Delete menu:

> **Delete Selected Markup:** this option is a convenience feature to remove all Optimal Trace markup comments in the text selected in Word.

> **Delete Element at Cursor:** choose this option to remove the markup comments for the element closest to the cursor, including the start and end comments, and any attribute comments.

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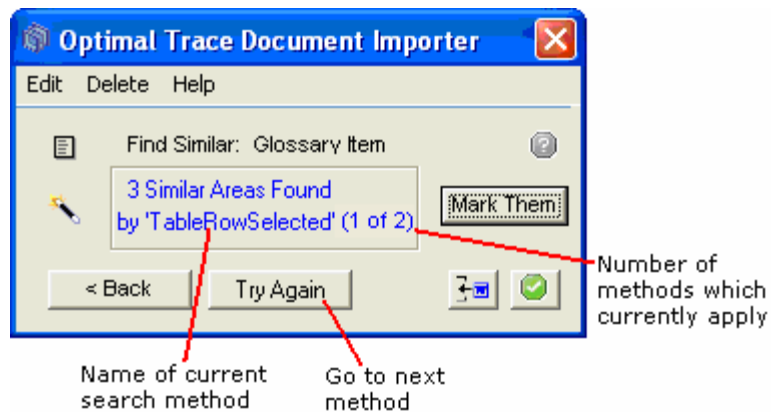
Since documents to be imported can be large and complex, it can take a long time to mark them up by hand. For this reason, the markup tool offers the Find Similar dialog which can rapidly scan a document to find other candidate regions of the document that match the format or style of an existing marked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

It is not necessary to use the Find Similar dialog. 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 invoked:

> ➢ To find the *boundaries* of similar elements, click the Find Similar icon on The start/end dialog.
> ➢ To find *attributes* of similar elements, click the Find Similar icon on The attributes dialog.

In both cases, the dialog 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 picture below shows the selected source element is a glossary item which covers a complete row in a table:
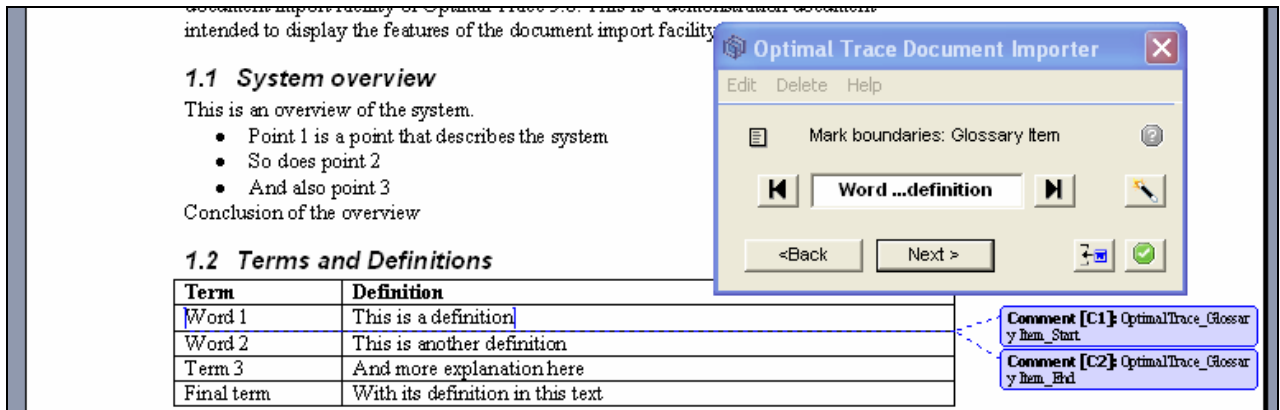
Here it is clear that the other rows in the table are also glossary entries. On clicking the Find Similar "magic wand" button, the dialog appears and, indeed, it instantly guesses that the other three rows are also glossary entries:
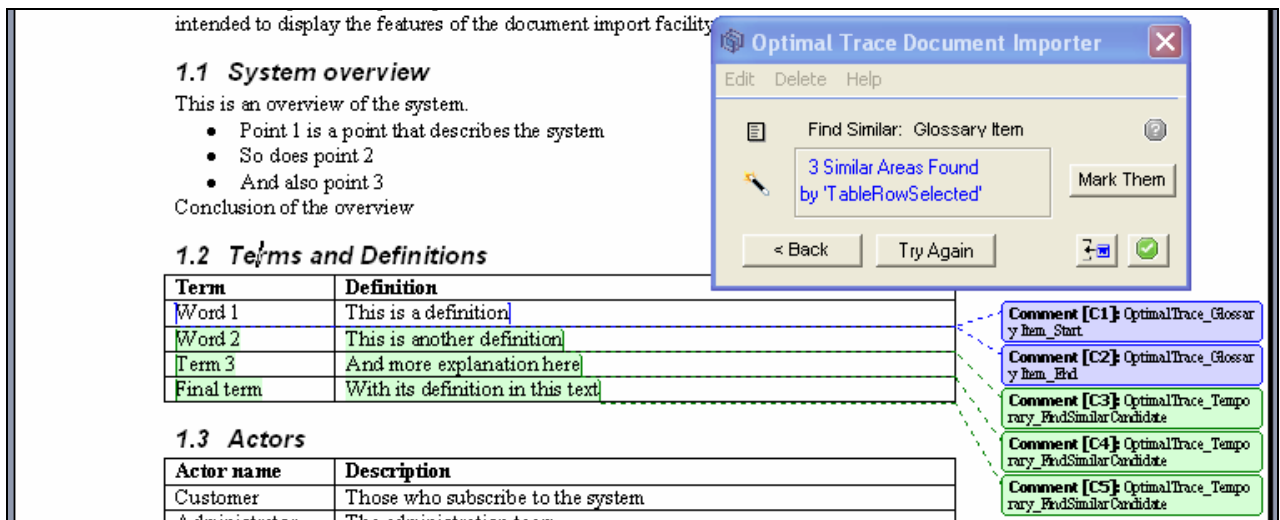
Here the other three rows are outlined with temporary markup comments in another colour. The information area in the Markup tool indicates that three similar areas were found.

At this point, one of the following options can be selected:

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: this 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 or the The attributes dialog, depending on whether the source was an element or an attribute, respectively.
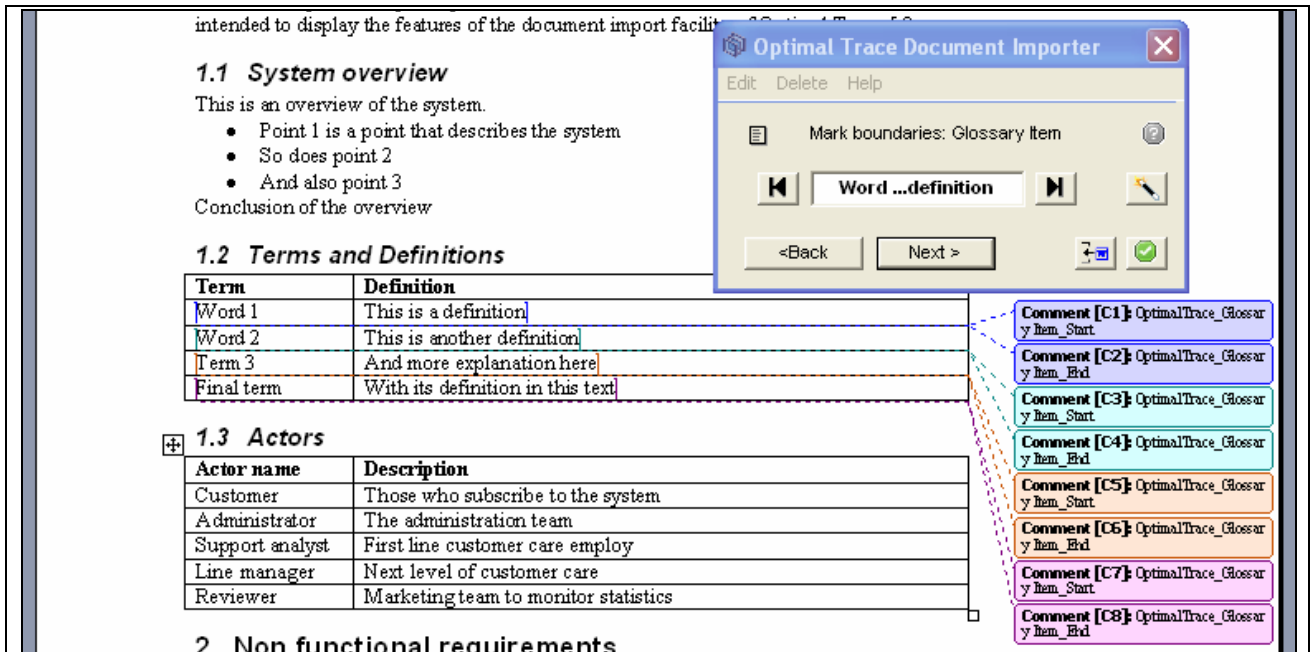
Try Again: this button discards the currently active candidate regions, and tries to match the source again using the next different method, if available. The "(1 of 2)" text indicates how many search methods are applicable to the current source area.

The other buttons and controls available on the Find Similar dialog are:

Back: click this button to return to the previous dialog, either The start/end dialog or the The attributes dialog, depending on whether the source was an element or an attribute, respectively. Any marked temporary comments will be removed.

Merge Button: click this button to launch the merge process and import the currently marked up elements into Optimal Trace. Word and the markup tool remain active and you can return to them after the merge is done.

Import Complete Button: click this button to launch the merge process for the last time to import the marked up elements into Optimal Trace. Word and the markup tool will be shutdown.

Edit menu:

> **Edit Element at Cursor:** this option will return to The start/end dialog with the editing context set to the element that is closest to the cursor.

Delete menu:

Delete Selected Markup: this option is a convenience feature to remove all Optimal Trace markup comments in the text selected in Word.

Delete Element at Cursor: choose this option to 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.

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
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. Future versions of Optimal Trace will add further methods and tune these existing ones to make them more accurate and effective.

6.15.2.2.5   Doc Import Tips

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

Tip: 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. Hit 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.

Tip: 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 10 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 here is only one Start/End Element that it can use.

Hence the simpler & recommended approach is:

1. First 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. Now in the element marked up in step 1, mark up an attribute.

4. Hit '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.

Tip: 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 the Table menu in Word and selecting 'Convert' and then 'Text To Table'. Then use Find Similar Areas to match up the areas of the table.

Tip: Find Similar Areas and Headings

Find Similar Areas 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 proper 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 Section 5.1 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.

Tip: 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 these 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.

Tip: 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.

Tip: 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:

1. 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.

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

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

4. 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 all 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.

Tip: 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 & splitting the table).

This tip can generalize to any table containing mixed types.

6.15.2.3   Merging from the Markup tool
As described, all of the dialogs on the Markup tool provide two buttons to view the results of the marking up process in Optimal Trace.

	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. The merge process is described in more detail here: 15.5 Merge Two Projects Option.

6.15.2.4   Word security settings for Document Import

The Optimal Trace document Import tool requires that the Word Macro Security level is set to a maximum of 'High' for Word 2007, Word 2003, Word 2002 and Word 2000. This can be set in the Macro Security settings screen accessed via the 'Tools-> Options' screen. For Word 2000 you also need to have the 'Trust all installed add-ins and templates' option selected on the 'Trusted Publishers' tab.

The Doc Import tool has been digitally signed. Upon launching, Word may ask whether it should trust the software.   It will present details of the digital certificate, which is issued in

the name of 'Compuware Corporation', and indicate that the signature is OK. You can safely click "always trust content from this publisher".

6.16   Save Image Option

Use this option to save an image file for what currently appears in the Requirement map and Flow views; see 7.12 A Note on the Requirements Map and Flow Diagram View, for details. To save an image for a specific flow, select that flow and the saved image will correspond to the currently displayed flow.

> ➢ Click on the Requirement or Package you want to save an image of
>
> ➢ From the Menu bar, click on Project
>
> ➢ Click on Save Image and a save screen will appear

The save file type will typically default to '.jpg' for 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 see the 'Options >> General Options…' menu item. (See section 14.1.1 Tool Settingsfor more details on image settings)

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, perhaps as in the example shown in Figure 17 below.
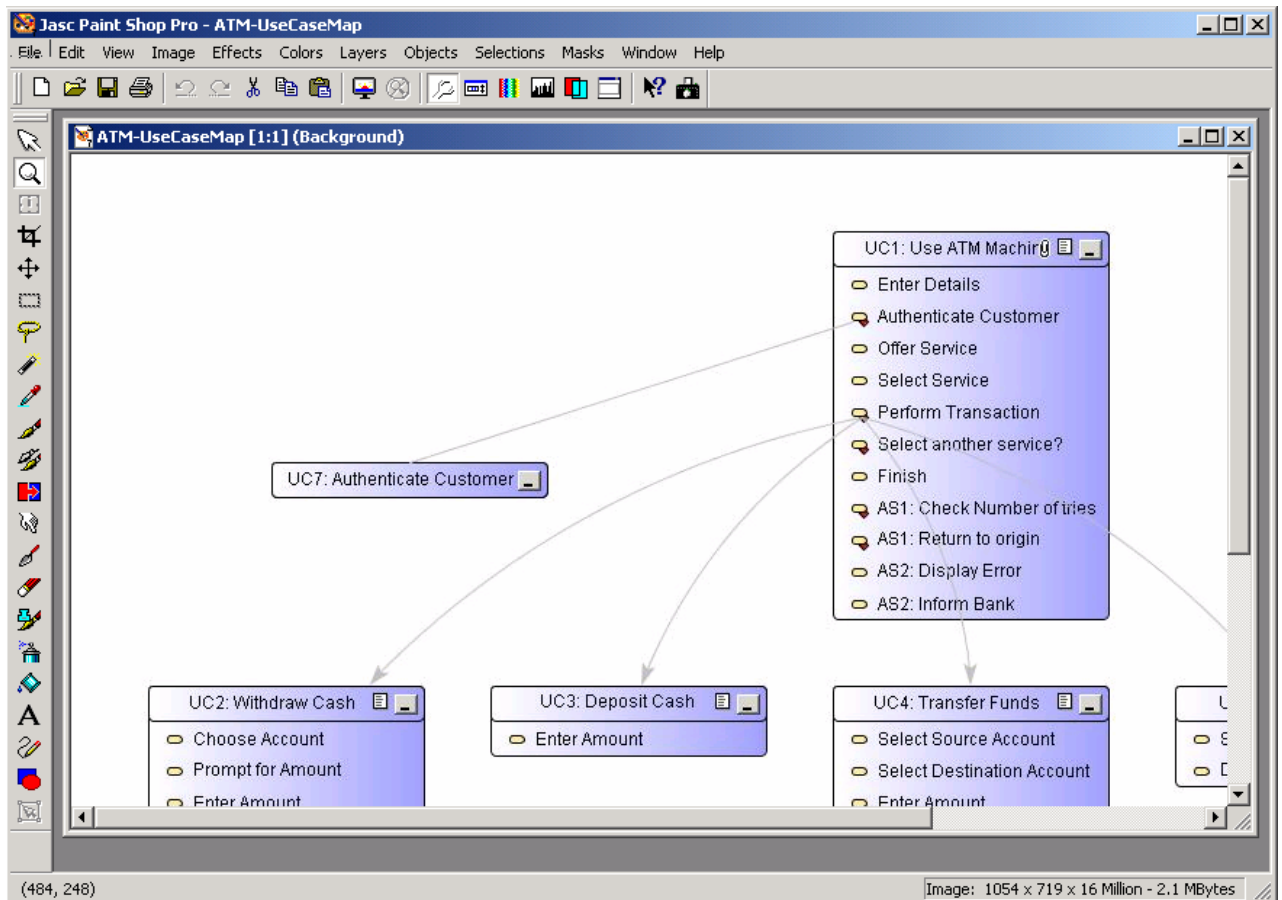
Figure 17 – Viewing a Saved Image in a 3rd party image viewing package

6.17   Exit Option

Use this option to exit Optimal Trace™ Enterprise.

➢ From the Menu bar, click on Project

➢ Click on Exit, and Optimal Trace™ Enterprise will close.

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.

COMPUWARE

7   Optimal Trace Projects

The Optimal Trace™ Enterprise 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; see the sections below for details.

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 & sub-packages

- Structured Requirements comprising scenarios and steps

- Simple Requirements comprising items

Each entry in the tree is referred to as a Node. The Project elements shown in the Tree View is further described in the following sections.

7.1   Project Properties

When a Project is first opened, its properties are displayed in the Right Pane View. Some of these are Editable and they include:

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

Non-editable properties include:

- **Project Creation Date** - the date and time that this Project was initially created
- **Location of Project** - the file location on your hard disk or on a network drive
- **Baseline of Project** - the current Project Baseline. See Section 6.4 Baselines, for details on Projects and Baselines.

7.2   Project Non-functional Requirements

Special Note: In Optimal Trace 5.0, Non-Functional Requirements are deprecated. Users wishing to capture Non-Functional type requirements, should use Simple Requirements instead for these purposes. See section 7.13 Simple Requirements Overview for more information on using Simple Requirements for capturing non-functional requirements.

In Optimal Trace, 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 is project wide. See section: 7.10 Structured Requirements Overview for more on Structured Requirements.

Non-functional requirements fall into two categories, qualities and constraints:

- ***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. 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.*

- ➢ *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. Non-functional requirements can be broken down further into two categories: qualities and constraints. Qualities specify criteria such as level of uptime, e.g. 7x24, level of security or United States security export restrictions or number of concurrent users etc. Constraints dictate requirements such as the system having a company's branding on all screens or integrating with an existing ERP system.*

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. (See section 7.5 Custom Properties for more on custom properties in general)*

7.3   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.

Firstly any file or URL references/artifacts such as documents, graphics, URLs[1], Visio files, excel spreadsheets etc. can be associated with the project or specific requirements using a link.

Secondly, 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.

7.3.1   File & 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 etc.

➤ Click on the Links tab to access Links associated with the current Project or selected Requirement. OR

➤ 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.

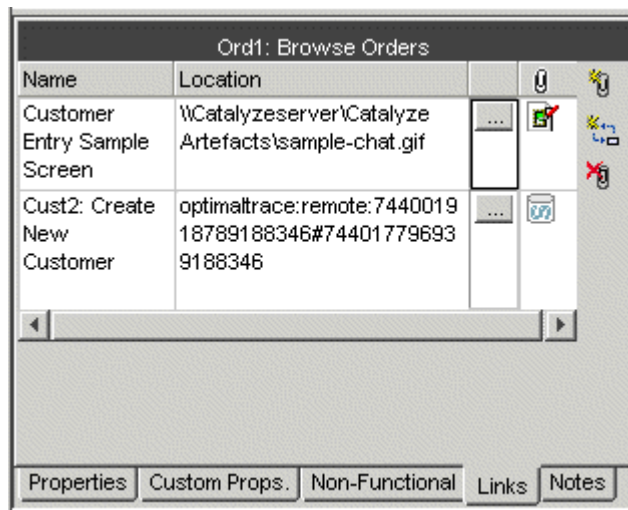The Link information is then updated in Project's Links area.

Figure 18 - Project Level Links in Optimal Trace™ Enterprise

Note: Unresolved Links. Each Link has a name and description however if a linked file cannot be resolved or found at the address specified then that link is displayed in red.

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[1] Uniform Resource Locator, this is a reference to a website and is typically of the form 'www.xyz.com'

Tip: 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.

Note: Links can also be associated with Simple Requirement Items. Unlike Project/Requirement Links, Simple Requirement Links cannot be expanded in generated documents.

7.3.2   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, and the screen shown Figure 18 above will appear. See Table 2 below, for details.

➢ 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 (See Figure 19 - Adding an Optimal Trace Element Trace Link).

➢ Select the element you want to link to and hit 'Apply'. You can also automatically create reverse links by checking the box.
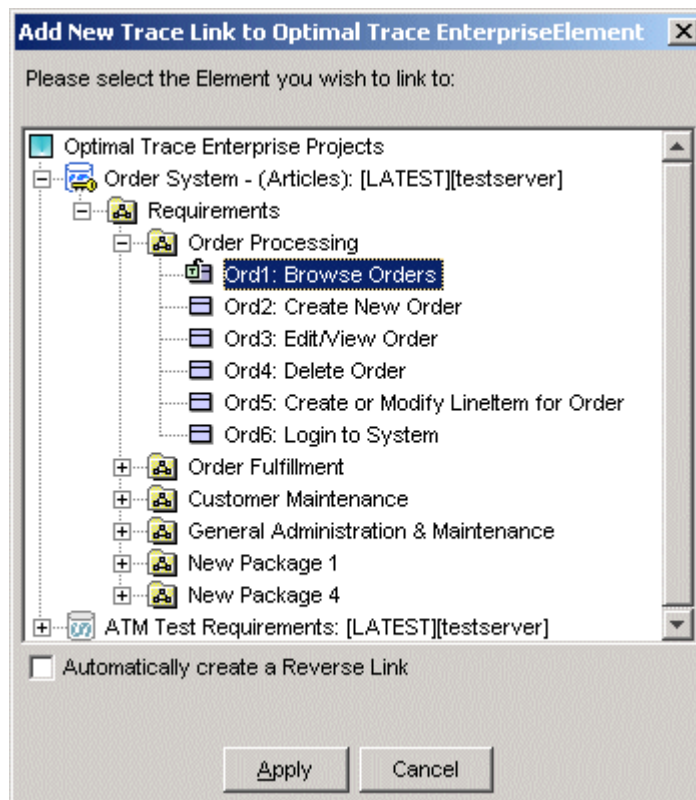
Figure 19 - Adding an Optimal Trace Element Trace Link

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. (See section 10.3 Copy as Link (URI) for more detail on how to copy link references)

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.

Table 2 - Links in Optimal Trace™ Enterprise

Item	Description
Link Name	The name that you wish to call this Link, each Link name must be unique.
Link Location	This is the actual file name, URL or Optimal Trace 'Traced to' Project Element for this Link
Graphical Icon	This is a visual cue indicating the type of element that is stored on the links.

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7.4   Project/Requirement Notes

In Optimal Trace, 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 an arbitrary number of Notes associated with it.

  ➢ To access these, click on the Notes tab, and the screen shown Figure 20 below will appear. See Table 3 below, for details.
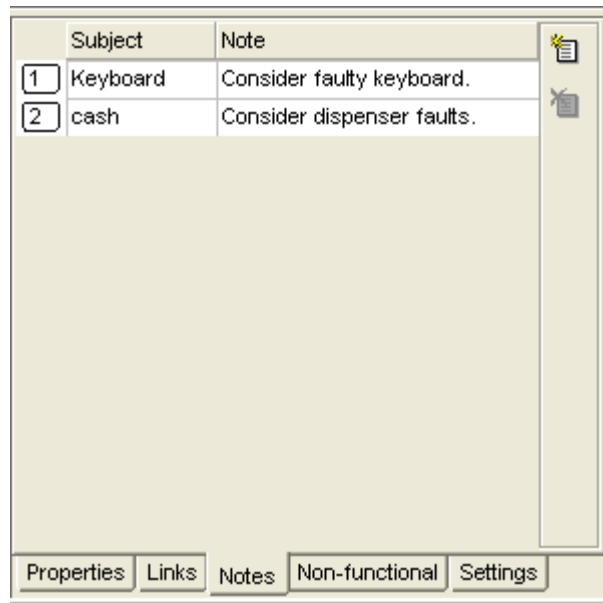

Figure 20 - Project Notes tab screen

Table 3 - Project Notes tab screen

Item	Description
Subject	A piece of text specifying the type of Note. Each Note must have a unique Subject.
Note	A description of the Note itself.

7.5   Custom Properties

Optimal Trace projects can be created with custom properties defined for all different types of elements, e.g. Project, Package, Structured Requirement, Simple Requirement etc.

This means that Optimal Trace projects 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 or
- from 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. See the next section 7.5.1 Custom Properties and Sharing for more on this.

So, to outline how all of this works let's consider Project level custom properties. These appear as in Figure 21 - Project Level Custom Properties below in a specific project level tab. In this case a number are defined at project level including 'Business Case' etc.
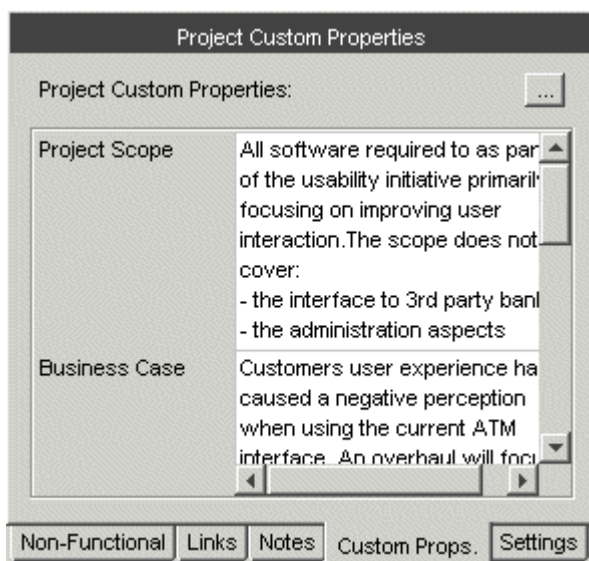

Figure 21 - Project Level Custom Properties

Clicking on the '...' button brings up a 'Custom Properties' screen as shown in Figure 22 - Project Level Custom Property Settings
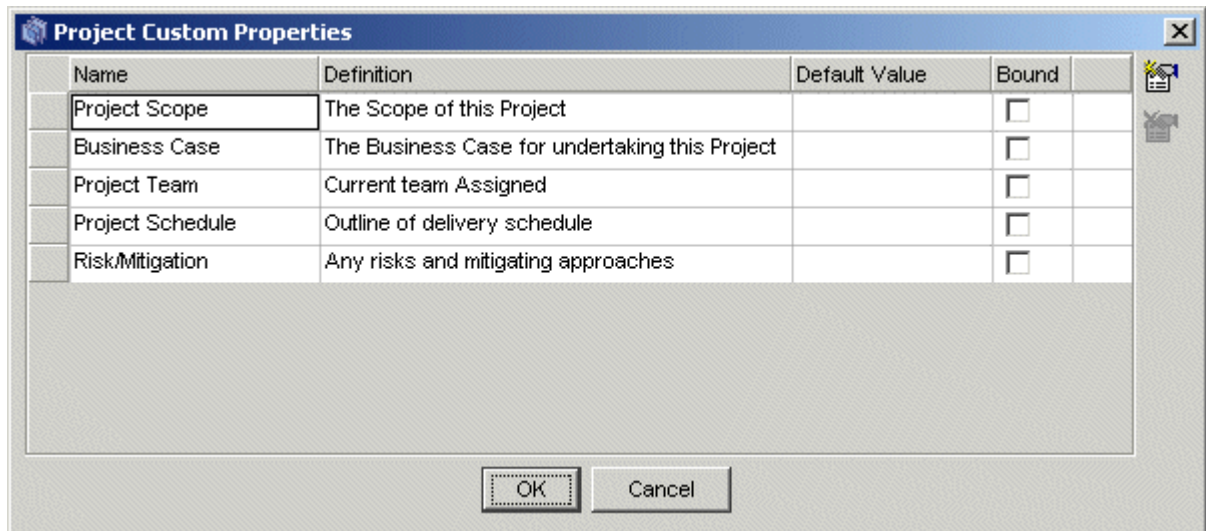

Figure 22 - Project Level Custom Property Settings

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 ⬛ 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. See Section 7.5.2 Modifying Custom Properties and Locking Implications below for locking implications.

> 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. See Section 7.5.2 Modifying Custom Properties and Locking Implications below for locking implications.

To define a Custom Property as Bound, click on the checkbox to the right of the property. A "..." button appears in the rightmost cell of the table for this custom property, and if you click on this a screen similar to Figure 23 - Sample Bound Values below appears. You will then be able to add or remove given bound items by clicking the ⬛ and ⬛ buttons respectively.
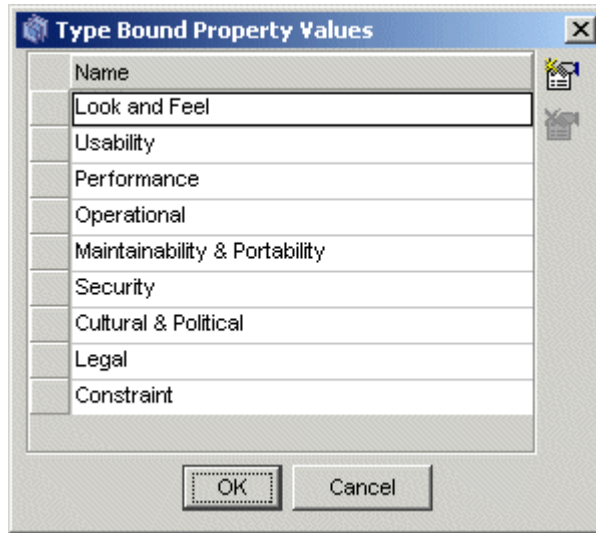
Figure 23 - Sample Bound Values

A sample set of Custom Properties at Item Level appears in Figure 24 - Custom Properties showing at Item Level indicated by the red boundary

Figure 24 - Custom Properties showing at Item Level indicated by the red boundary

7.5.1 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.
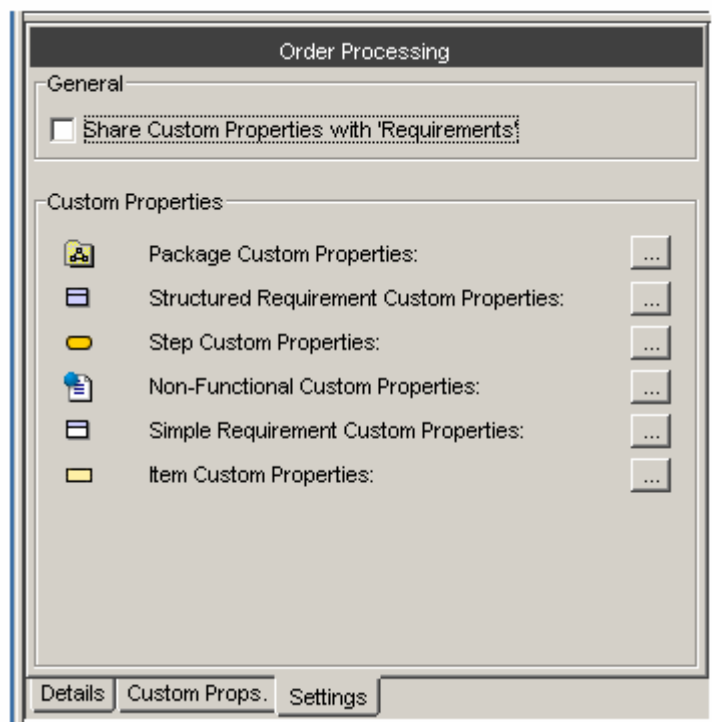
Figure 25 - Package settings

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.

7.5.2   Modifying Custom Properties and Locking Implications

When working online any modifications to Custom Properties result in all dependent elements acquiring a lock. (See section 19.2 Concurrency and locking for more on Locking and multi-user usage).

Consequently you will see a lock icon appear next to any such elements. For projects this appears as. Each element in the Tree is adorned with the green lock icon.

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 as shown in Figure 26 - Message indicating an element is locked below.
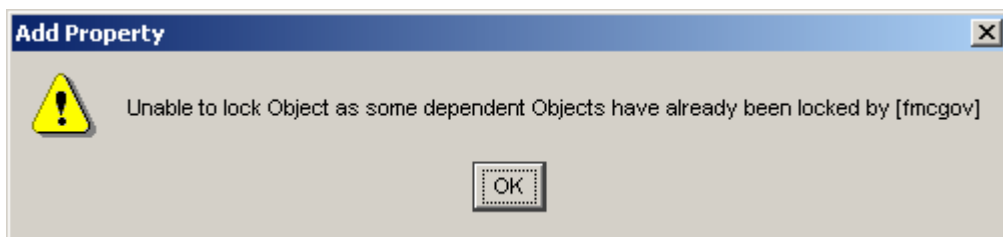
Figure 26 - Message indicating an element is locked

7.6   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 and the screen shown in Figure 27 - Project Setttings Screen appears.
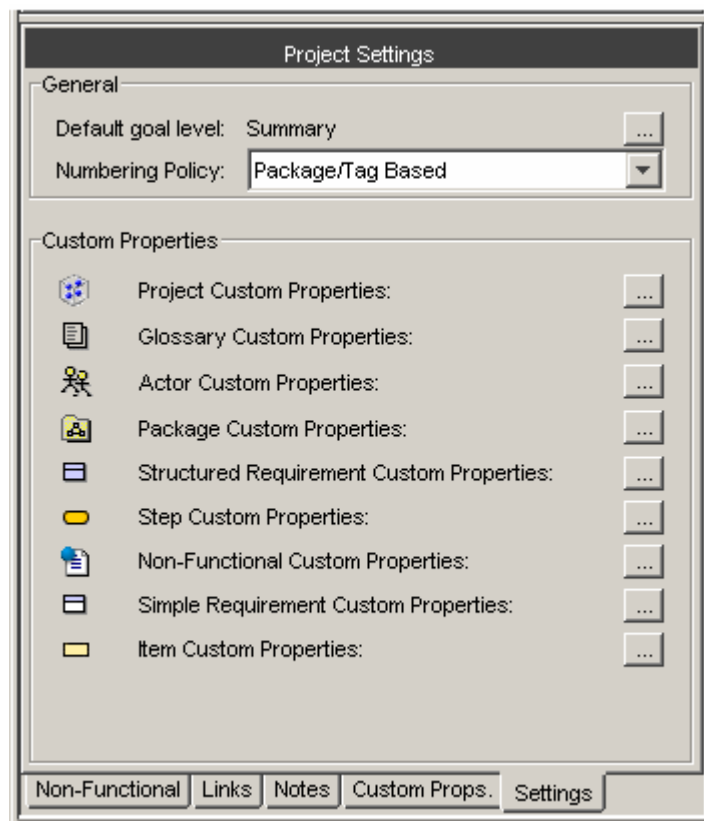
Figure 27 - Project Setttings Screen

There are three sets of settings available for projects and Project Templates.

- ➢ Goal Level
- ➢ Numbering Policy
- ➢ Custom Properties

7.6.1   Goal Levels Settings

To access the Default Goal Level setting click on the ⬚ button adjacent to the 'Default Goal Level' text, and the screen shown in Figure 28 below will appear. See Table 4 below, for details.

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]. Optimal Trace™ Enterprise ships with ready-to-use goal-levels, see Table 12 on page 135 for a list of these default Requirement Goal Levels.

➢ To edit an existing goal level for a Project, select its Name and/or 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 click on the 🗑 button.

➢ To remove a Goal Level, click on the 🗑 button.
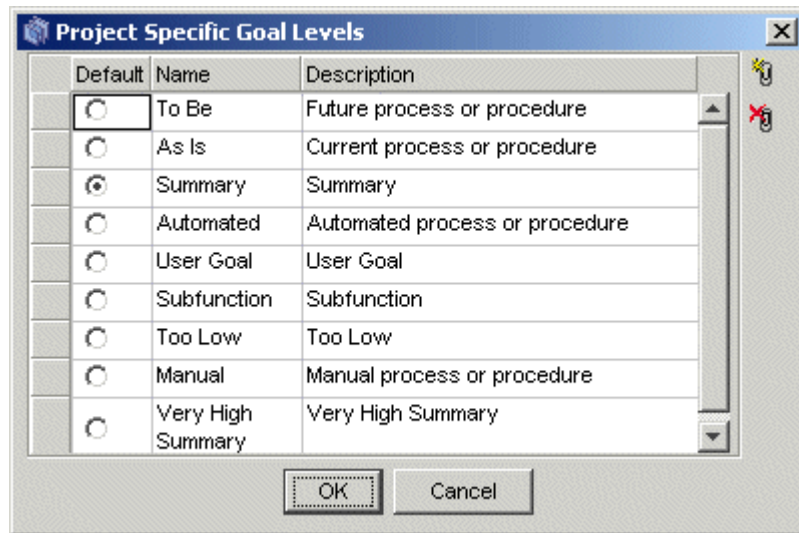
Figure 28 — Project Specific Goal Levels screen

Table 4 - Project Specific Goal Levels screen

Item	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.

7.6.2   Numbering Policy Settings

Optimal Trace projects can be set to have one of three types of numbering policies as outlined in Table 5 - Numbering Policies. Numbering Policies affect the handling of requirement numbering in a given project.

Table 5 - Numbering Policies

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. (see section 7.9.2 Tags for more on Package Tags) **Note:** 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.

7.6.3   Custom Property Settings

Optimal Trace projects can be created with custom properties defined at all element levels.

Custom properties can be created for:

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

Clicking on the '...' button adjacent to each project element brings up a screen as shown in Figure 22 - Project Level Custom Property Settings

See section 7.5 Custom Properties for more on custom properties in general.

7.7   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 on 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 🗏 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 🗏 button.

Entry	Definition
ATM	Automated Transaction Machine
ATM Owner	The organization that owns the ATM
Account	An obligation on the part of the financial institution to pay the Customer, on demand and adhering to the terms of the account agreement, a defined sum of money. Accounts can be either Active, available to support transactions or Inactive, unavailable for transactions.
Card Number	A unique 16-character code associated with the card that allows the Bank System to identify the account.
Customer Number	The bank system's 16-character, alphanumeric Customer identification number. This is unique within the bank.
Transaction Fee	An amount charged by the owner of the ATM for providing the transaction.
Service Organization	The organization that services the ATM, refilling it with cash and performing regular maintenance of the ATM machine.
PIN	Personal Identification Number. An identification number chosen by the Customer used in conjunction with the bank card for security purposes. The PIN can be up to 6 digits in length and must not include any repeated digits. A PIN is used to verify the identity of the Customer when interacting with the ATM.
Sort Code	A 6-digit number that uniquely identifies a bank.
Maintenance Contract	This outlines the service levels required so support and maintain the ATM machines on an ongoing basis.

Figure 29 - The Glossary from the sample 'ATM' project.

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 ▤ button. (See section 7.5 Custom Properties for more on custom properties in general)

7.8   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™ Enterprise 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™ Enterprise will confirm whether you really want to delete the Actor. If you click on the Yes button, 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.

Figure 30 - The list of Actors in the project

> **Note:** Actors can have one or more associated **Custom Properties** defined. To see or modify the current set of custom properties click on the ▣ button. (See section 7.5 Custom Properties for more on custom properties in general)

7.9 Packages Overview

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™ Enterprise. 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 are a mechanism to group related requirements. 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.
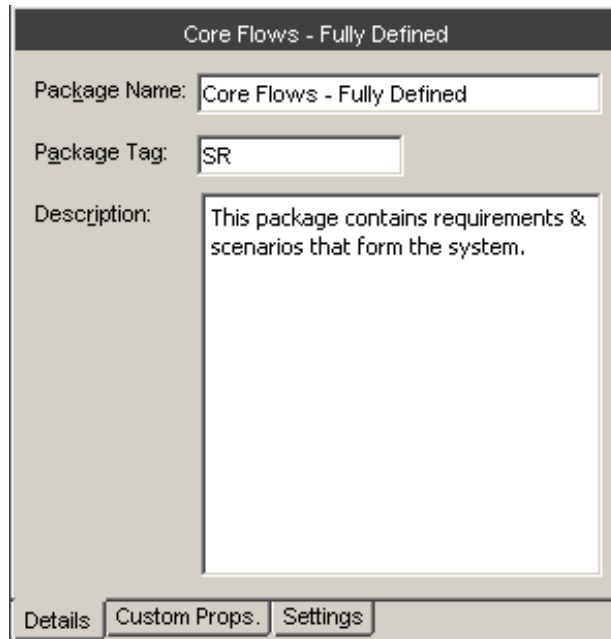
For explicit instruction on creating, deleting and manipulating Packages, see Sections starting at: 12.5 New Package Option.

7.9.1 Package Details

Each Package has the following:

- **Name** - the name of the Requirement, e.g. 'Withdraw Cash'
- **Package Tag** - a tag for all requirements within the package
- **Description** - a fuller description of the objectives of the Requirement

You edit the package details by adjusting the specific values in the Figure 31 - Package Details screen.

Figure 31 - Package Details

7.9.2   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'.

7.9.3   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.

See section 7.5 Custom Properties for a full description of how to add, remove and modify Custom Properties.

7.9.4   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.

See section 7.5.1 Custom Properties and for more information on Custom Properties and sharing properties.

7.10   Structured Requirements Overview

Structured requirements outline objectives or goals (and their detailed scenarios & 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.

For explicit instruction on creating, deleting and manipulating Structured Requirements, see Section: 12 Requirements Menu.

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.

7.10.1   Structured Requirement Properties

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

- **Name** - the name of the Structured Requirement, e.g. '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. See Section 12.14 Steps Menu, for details.

- **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** - the level of abstractness of the Requirement. See Section 7.6.1 Goal Levels Settings, for details about goal levels.

- **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** - the Requirement will guarantee to complete some functionality and this should be specified here.

7.10.2   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.

See section 7.5 Custom Properties for a full description of how to add, remove and modify Custom Properties.

7.10.3   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. See section 7.13 Simple Requirements Overview for more information.

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. See Section 7.2 Project Non-functional Requirements for a full description.

7.10.4   Links

Links can be associated with Requirements as well as with Projects. These provide ability to associate documents, graphics, URLs[2] etc. with the Requirement. Click on the Links tab to access the Links associated with a Requirement. Links at the Requirement level work in

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[2] Uniform Resource Locator, this is a reference to a website and is of the form 'www.xyz.com'

exactly the same way as Project Links. See Section 7.3 Project/Requirement Links, for a full description.

7.10.5   Notes

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. See Section 7.4 Project/Requirement Notes for a full description.

7.11   Requirement Main Success Scenario and Alternate Scenarios

A Structured Requirement consists of 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'.

For more detailed instructions on creating, deleting and manipulating Scenarios and Steps, see Section 12.17 Scenarios Menu and 12.14 Steps Menu respectively.

7.12   A Note on the 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 Figure 32 below.

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.
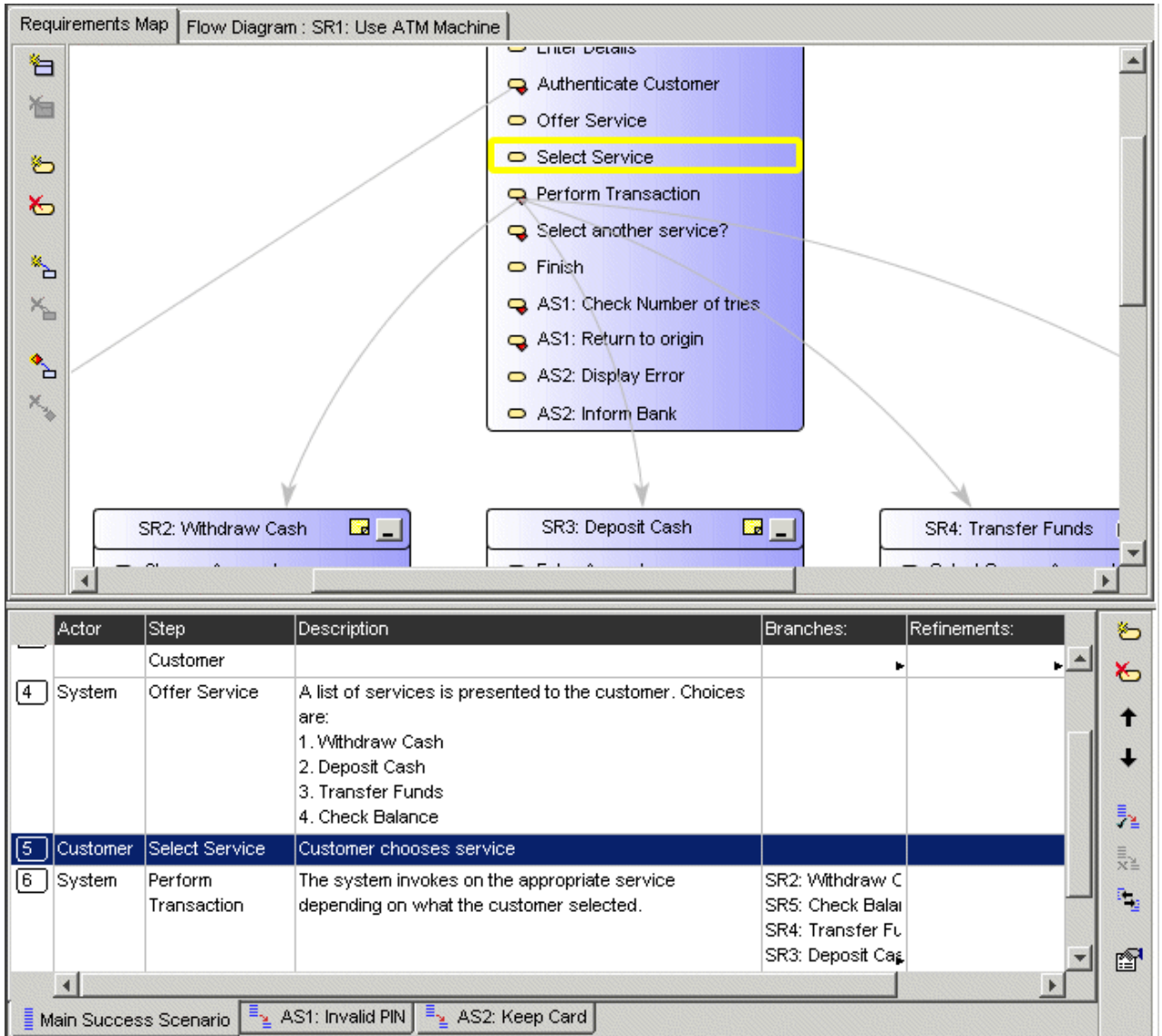
Figure 32 - Requirement Map with Scenarios
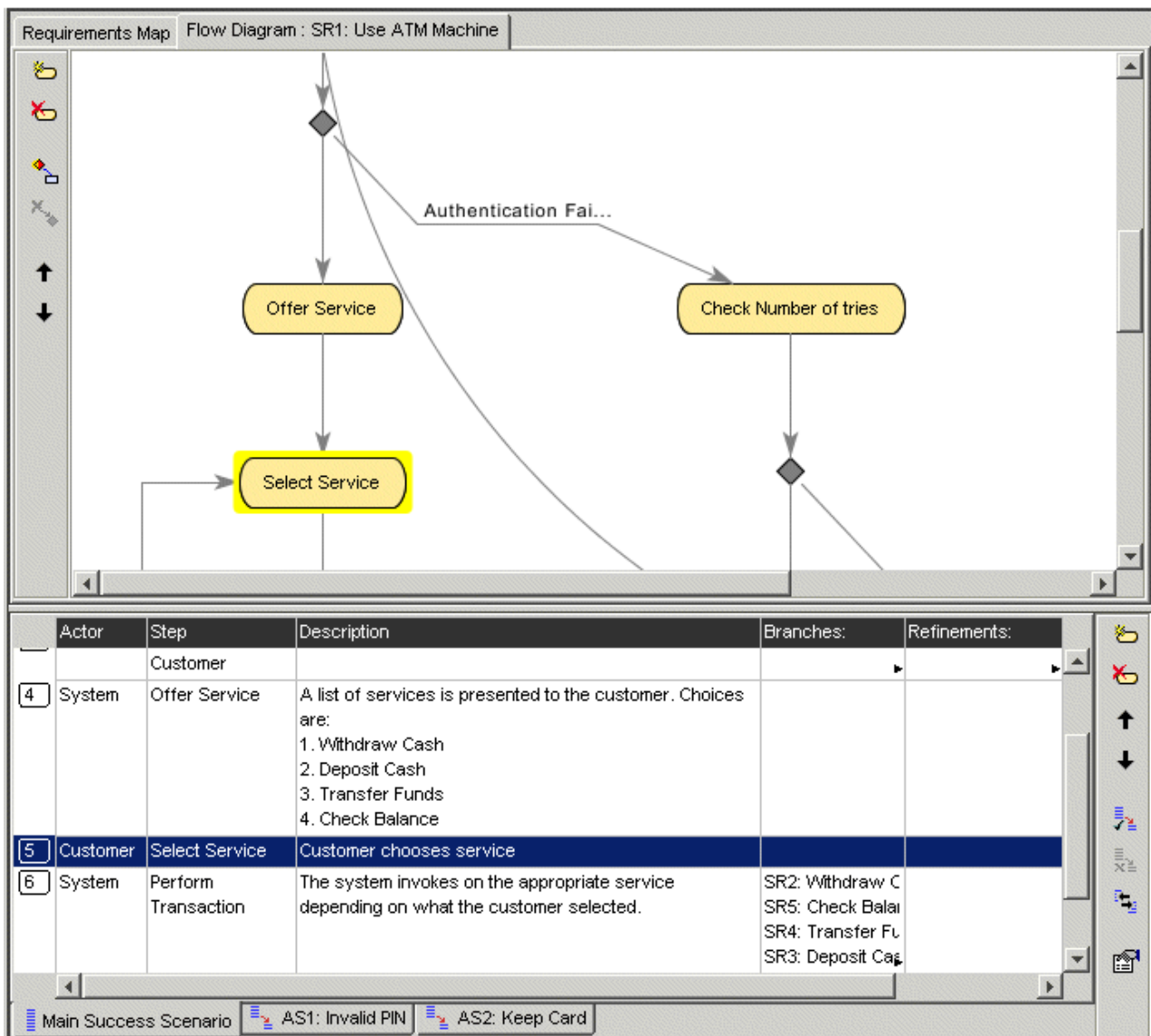
Figure 33 - Requirement Flow Diagram with Scenarios

7.13   Simple Requirements Overview

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.

7.13.1 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, e.g. 'Order Goods'
- **Description** - a fuller description of the objectives of the Requirement

7.13.2 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.

See section 7.5 Custom Properties for a full description of how to add, remove and modify Custom Properties.

7.13.3 Links

Links can be associated with Simple Requirements as well as with Projects. These provide ability to associate documents, graphics, URLs[3] 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. See Section 7.3 Project/Requirement Links, for a full description.

7.13.4 Notes

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. See Section 7.4 Project/Requirement Notes for a full description.

7.14 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.

For more detailed instructions on creating, deleting and manipulating Items, see Section 12.15 Items Menu.

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[3] Uniform Resource Locator, this is a reference to a website and is of the form 'www.xyz.com'

8 Running Searches and Querying Projects

Optimal Trace provides a comprehensive Querying capability.

There are two core ways in which you can Query Projects. These are Simple and Advanced Query.

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

With advanced querying you can:

- 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 or Save the results to a text file

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.

8.1 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, e.g. 'customer', to search for and then click on the 'Run' button. After a few moments, the search results appear. See Figure 34 - Running a Simple Query for 'Order' for an example of querying on the Search Text 'Order' and the attendant results.

You can also click on the 'Clear' button. This results in the current result set being cleared from the Result List.

The options available when running simple queries are outlined in Table 6 - Simple Query Options

Table 6 - 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.
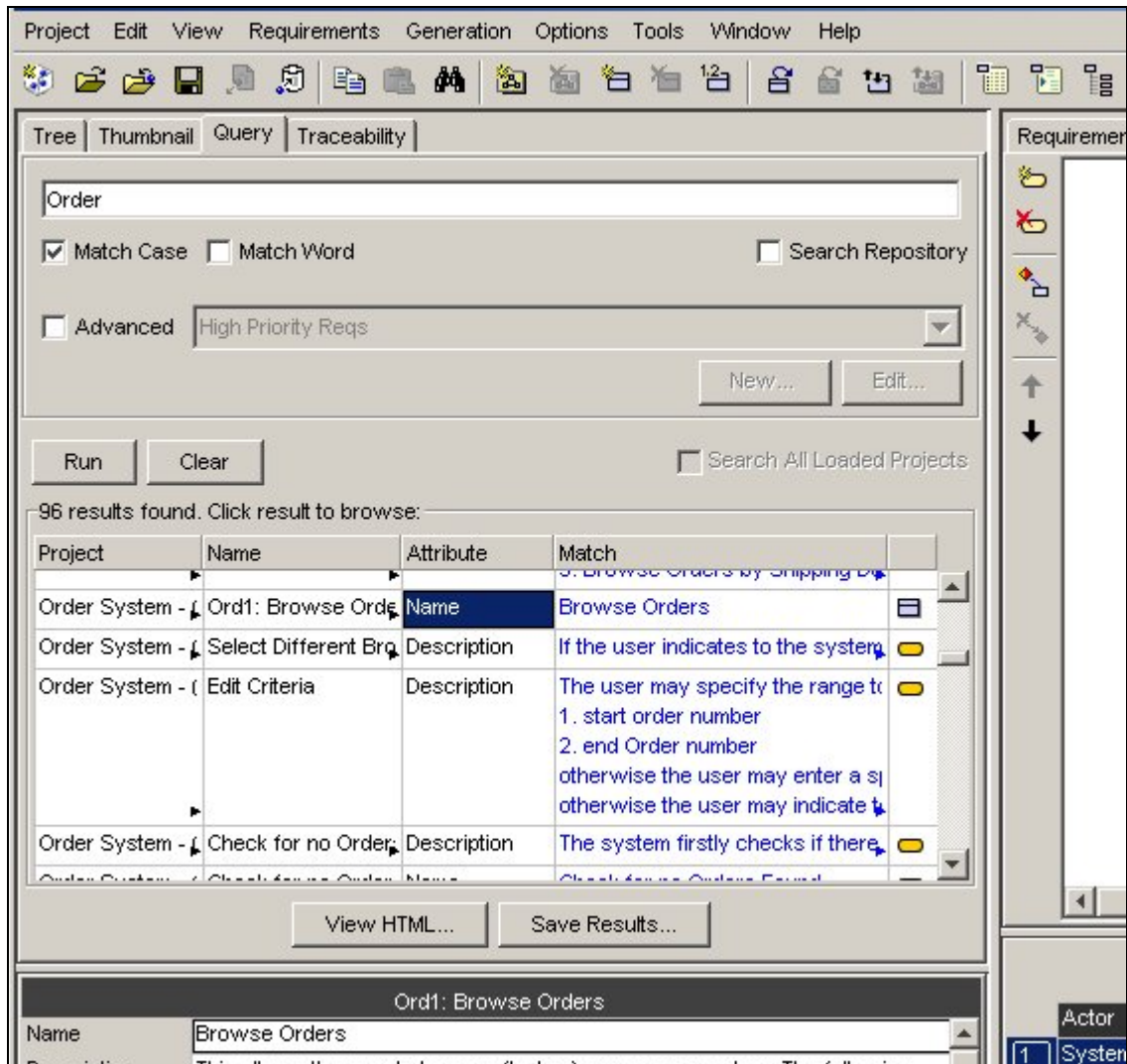
Figure 34 - Running a Simple Query for 'Order'

The Result columns and their meanings are outlined in Table 7 - The Query Result Columns

Table 7 - The Query Result Columns

Column	Description
Project	The Project in which the found artifact lives (this is useful if you are searching across multiple Projects.
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 this 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).

8.2   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 & 2
- Show all Legal Non-functional requirements
- Show Steps that that have no actors

To enable Advanced Queries:

➢ Click on the Query tab
➢ Check the Advanced box

You can create, edit, delete & share queries.

8.2.1   Creating New Queries

To create a new query click on 'New'. At this point the Query Builder screen appears. 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:

➢ Click on the Element List box

➢ Choose one of the elements. The list of elements is all queryable elements

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

➢ Enter the condition to check. See Table 8 - Conditions for Advanced Queries for allowable conditions.

➢ Specify the Value. For Custom Properties that are Bound the Value list box 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.

➢ 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 and are described in Table 6 - Simple Query Options
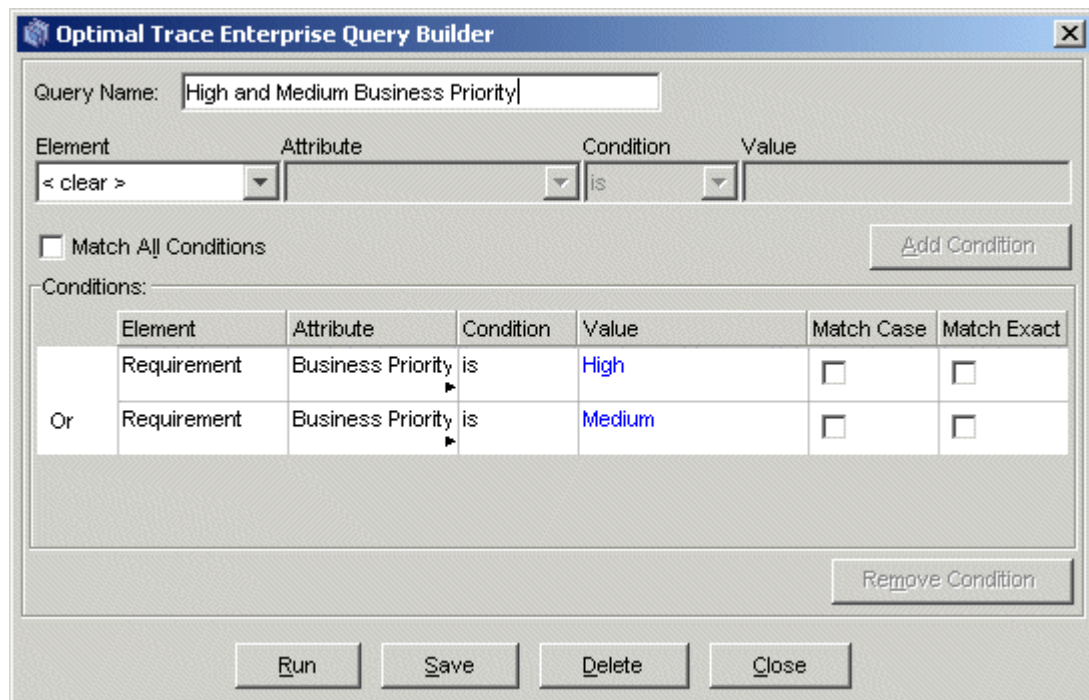

Figure 35 - Query Builder for Advanced Queries

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.

Table 8 - Conditions for Advanced Queries

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

➢ click the 'Remove Condition' button.

From the Query Builder screen you can also run the query directly. This allows you 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.

8.2.2   Editing Queries

To edit a query:

➢ In the Query tab, select the Query you want to edit from the list box. See Figure 36 - Selecting a Query for Editing or Deleting

➢ click the 'Edit…' button

➢ Add or Remove conditions as outlined in section 8.2.1 Creating New Queries

Figure 36 - Selecting a Query for Editing or Deleting

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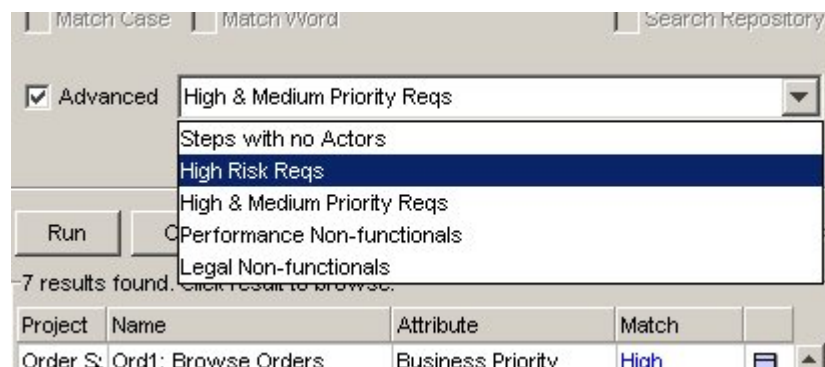
8.2.3 Deleting Queries

To delete a query:

➢ In the Query tab, select the Query you want to delete from the list box. See Figure 36 - Selecting a Query for Editing or Deleting

➢ click the 'Edit...' button

➢ Click the Delete button as shown in screen: Figure 35 - Query Builder for Advanced Queries

8.2.4 Viewing the Query Results as an HTML Report

You can View the results of the query in a Report format by clicking the 'View Results...' 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 Results...'. You can find this file located in the '<Optimal Trace Install Root>\projects\reports' sub-directory.

It has the format: <Query Name>_Output_Report_File.html. For example: 'High & Medium Priority Reqs_Output_Report_File.html'.

A sample query report is shown in Figure 37 - Query Results as a HTML Report

---

Tip: Sharing Query Results with Colleagues by e-mail.

You can attach the <Query Name>_Output_Report_File.html file to a mail and send it to colleagues if you wish to highlight specific aspects of a project using a given query.

Query Report

| Query Name: | High & Medium Priority Reqs |
| Match All Conditions: | false |

Query Conditions Are

Element	Attribute	Condition	Value	Match Case	Match Word
Requirement	Business Priority	is	High	false	false
Requirement	Business Priority	is	Medium	false	false

Results:

Project Name	Name	Attribute	Match	Type
Order System - (Articles)	Browse Orders	Business Priority	High	Requirement
Order System - (Articles)	Create New Order	Business Priority	High	Requirement
Order System - (Articles)	Edit/View Order	Business Priority	High	Requirement
Order System - (Articles)	Delete Order	Business Priority	High	Requirement
Order System - (Articles)	Login to System	Business Priority	High	Requirement
Order System - (Articles)	Browse Customers	Business Priority	High	Requirement
Order System - (Articles)	Create New Customer	Business Priority	High	Requirement

Figure 37 - Query Results as a HTML Report

8.2.5   Saving the 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 MS Excel by default if you have this loaded on your system.

To do this:

➢ click the 'save Results…' button

➢ Specify the name of the Text File.

9   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, Refinements, File Links & Optimal Trace Element Links.

- Branches allow one step (sub-requirement) in a given project; branch either conditionally or unconditionally to a different step or Structured Requirement. For more on creating Branches see section: 12.13 Branches Menu

- Refinements allow a given step, or item to be decomposed into a more detailed requirement either within the same package or across packages. For more on creating Refinements see section: 12.16 Refinements Menu

- 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, excel spreadsheets etc., Visio flows etc. can all be created as links. For more on creating File Links see section: 7.3.1 File & URL (web) based Links

- Optimal Trace 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: For more on creating Element Links see section: 7.3.2 Traceability Links
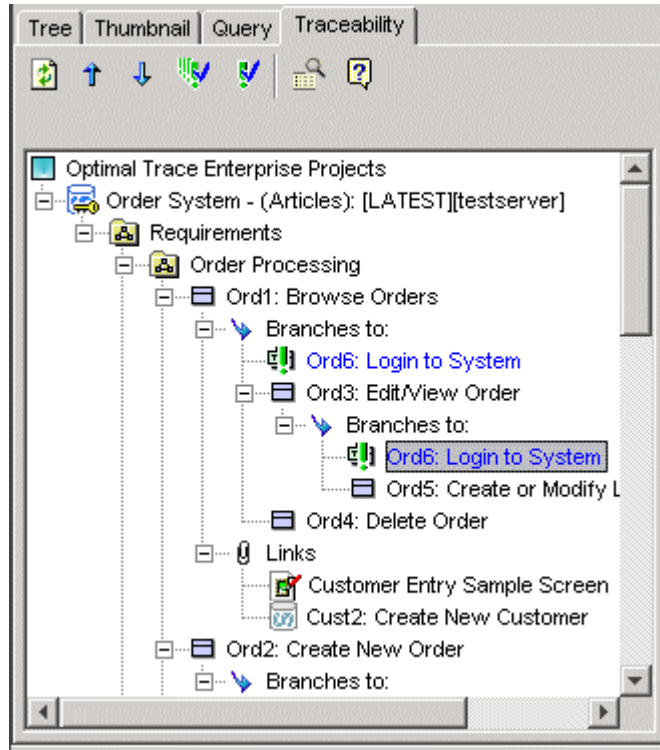
Figure 38 - Traceability Tree with suspect Links and Linked Screenshots

Each Branch, Refinement & Link may have the following state which is visually indicated:

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	NOTE: 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.

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

The next sections outline the options that are available in the Traceability Tree.

9.1 Refreshing the Trace Tree

By clicking the ⟳ button you can 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.

9.2 Navigating the Trace Tree & Loading Projects

Navigating to the Previous and Next Suspect Link(s) is done by clicking the ⬆ and ⬇ buttons respectively.

Where cross-project traces links exist you can automatically load the traced to element (& 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.

9.3 Inspecting & Clearing Suspect Links

As mentioned previously, 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 🔍 button.

In this instance you are presented with a Changes screen. 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.

An example changes screen is shown in Figure 39 - Viewing Changes for a suspect element

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.

Figure 39 - Viewing Changes for a suspect element

Once you have reviewed the changes you may clear either one or all suspect links. This is done by either clicking the ✔ or the ✔ button respectively.

Once you clear the suspect status, the element is locked to avoid conflict & multiple people editing status at the same time. See 19.2 Concurrency and locking for more on Optimal Trace Locking.

Note: Viewing Traceability for single elements. Select the element in the tree area and click on the 📄 button. This brings up a Traceability Screen 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 of Optimal Trace Enterprise 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.

10 Edit Menu

Use this menu for editing purposes.

➢ From the Menu bar, click on Edit
➢ Select any of the options described under the sections below.
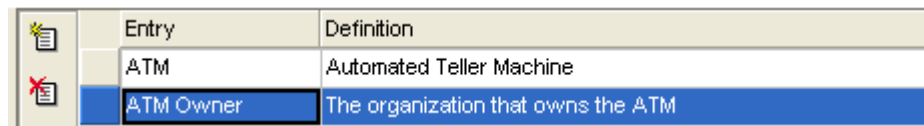
10.1 Copy/Paste Options (within and across Projects)

Use these options to copy or paste elements within and across Projects. Specifically, you can copy and paste the following:

- Actors
- Glossary Items
- Packages
- Structured Requirements
- Steps
- Simple Requirements
- Items

For example, to copy Actors and Glossary items within the Actor or Glossary screen:

➢ Select the specific Actor or Glossary item by clicking on the row button to the left of the item as in the sample screen in Figure 40 below.

Figure 40 - The Glossary screen for copying

Once you have highlighted the Actor or Glossary entry:

➢ Click on the now enabled Copy button 📋 to copy the item to the 'clipboard'.
➢ Click on the Paste button 📋 in the Tool bar and a new entry is placed in the table of entries.

Copying of Structured Requirements, Steps, Simple Requirements and Items is very similar to Actors and Glossary items.

> ➢ Select the Requirement or Step/Item by selecting it in the Tree View of one of the other available views.
> ➢ Click the Copy button and then paste into the appropriate destination.

If you have multiple Projects loaded, you can also paste from one Project into another. This applies to all of the above 'copyable' elements; see Section 10.1 Copy/Paste Options (within and across Projects), for details.

10.2   Multiple Copy/Paste

To copy multiple requirements, packages, steps or items you need to initially select multiple elements.

Optimal Trace uses the standard MS 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 requirements 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.

Note 1: Shortcut Keys

As well as the copy and paste buttons mentioned in this section, you can also use the standard Windows copy and paste shortcut keys:

- **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 2: 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. For more on Custom Properties and sharing see section 7.5 Custom Properties

---

> **Note 3: 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.

10.3   Copy as Link (URI)

To establish Traceability Links within or across projects you ordinarily use the Add New Trace Link functionality. See section 7.10.4 Links for more on creating Trace Links.

There is however an alternative way to copy unique links to Optimal Trace 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. This will bring up a popup menu as shown in Figure 41 - Copy as Link Option. Then click the 'Copy as Link (URI)' menu.
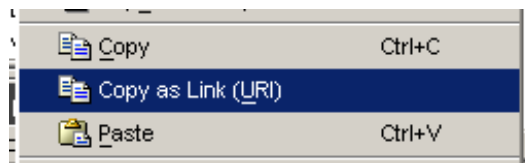
Figure 41 - Copy as Link Option in the 'popup' menu

> **Note:** Invoking on Optimal Trace from any 3rd 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 3rd party tool that supports Invocations can make references back to Optimal Trace up in the same fashion.
>
> To see an example of this, see the generated HTML pages from the Traceability Report. See section 13.5 Generate Reports Option for more detail on the Traceability Report.

10.4   Search Option

Hitting the Search button brings up the Query tab. See section: 8 Running Searches and Querying Projects for full details on running Simple and Advanced Queries.

10.5   Undo/Redo Options

Use these options to undo/redo any actions you make, before saving.

> ➢ Click on Edit, then Undo/Redo, and Optimal Trace™ Enterprise will undo/redo your last action.

11 View Menu

The View menu provides a set of capabilities to alter the graphical views displaying in Optimal Trace.

Use this menu to view a Package's or Packages' Requirements in different views.

➢ From the Menu bar, click on View

11.1   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
- Glossary

➢ Select this option by clicking on the ▦ button.

The screen shown in Figure 42 - Show-hide Columns appears and clicking the checkbox adjacent to the specific column entry makes that entry visible or invisible.

Note that the Step and Item tab will contain any Custom Property columns that apply to the part of the project that you have currently selected in the tree.
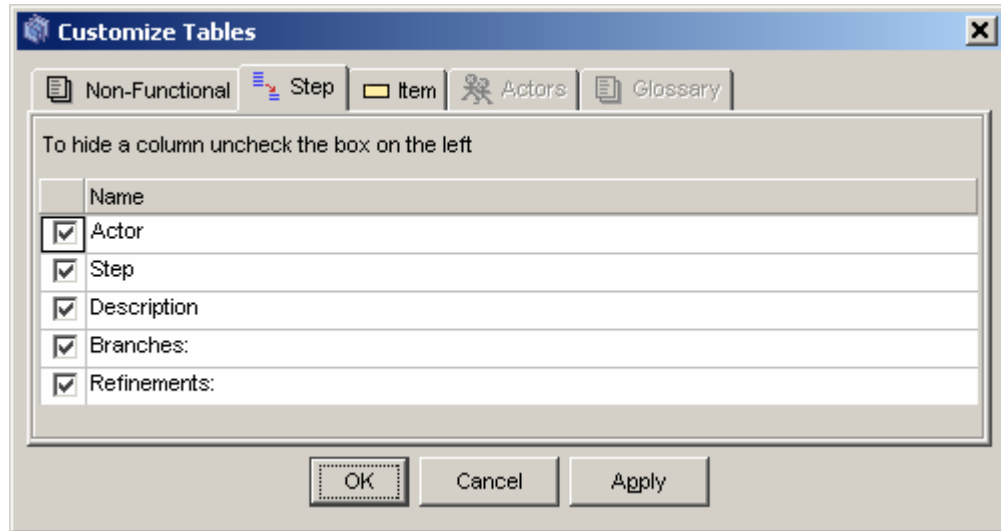
Figure 42 - Show-hide Columns

11.2   Show Current Package Contents Option

Use this option to view the most recently selected Package in your Project.

11.3   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.

11.4   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.

11.5   Show Cross Package Branches and Refinements Option

Use this option only when you have selected either one of the options described in Sections 11.1 and 11.3 above.

11.6   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™ Enterprise 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. A sample set of Requirements looks like this:
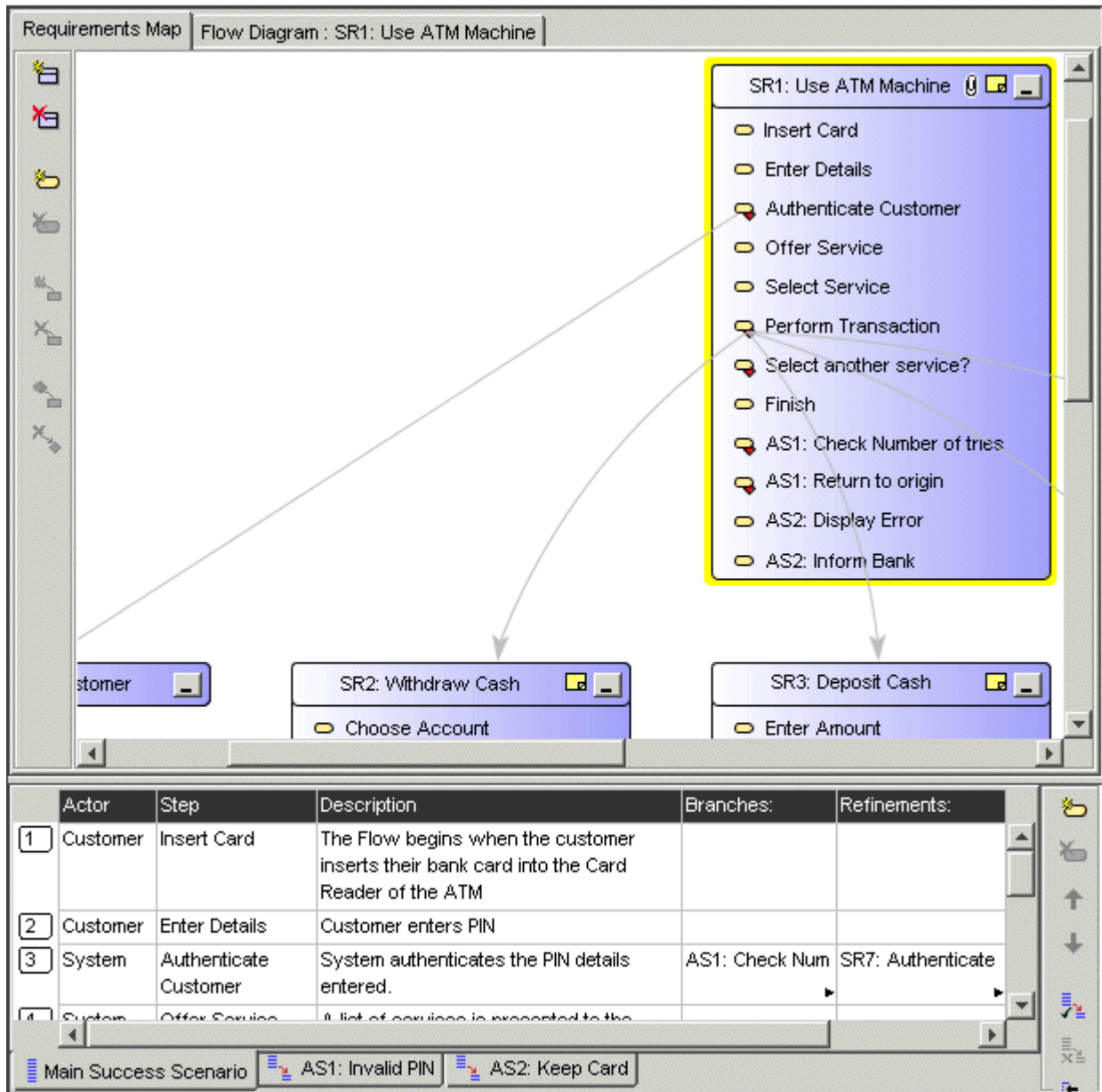
Figure 43 - Sample set of fully expanded Requirements

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.
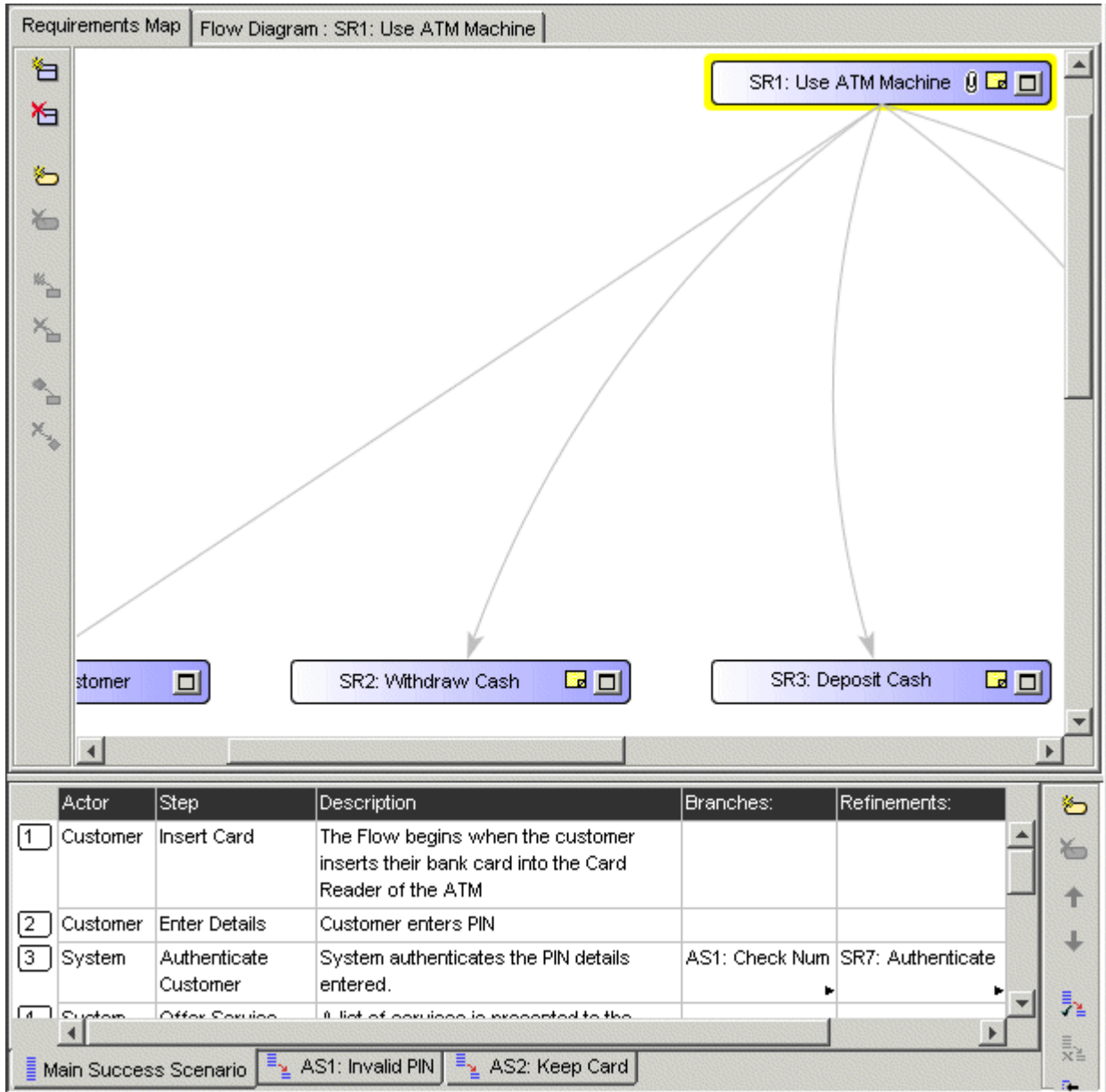
Figure 44 - Sample set of fully collapsed Requirements

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12 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 etc.

12.1   New Structured Requirement Option

Use this option to define a new Structured Requirement. The first stage in defining a Requirement is to choose a Package in which to house the new Requirement.

> ➢ Select a Package by clicking on its icon in the Project's Tree View

If you have not defined any Packages, select the default 'Requirements' Package.

Having selected a Package, you can create a Structured Requirement:

> ➢ Click on the button in the Tool bar.

12.2   New Simple Requirement Option

Use this option to define a new Simple Requirement. The first stage in defining a Requirement is to choose a Package in which to house the new Requirement.

> ➢ Select a Package by clicking on its icon in the Project's Tree View

If you have not defined any Packages, select the default 'Requirements' Package.

Having selected a Package, you can create a Simple Requirement:

> ➢ Click on the button in the Tool bar.

12.3   Delete Requirement Option

Use this option to delete a Requirement. This will delete the Requirement currently selected, be it a Structured Requirement, or a Simple Requirement.

➢ Select the Requirement in the Tree View and click on the ⊠ button.

If the Requirement has Steps or Items you will be prompted to confirm the deletion. See sections 12.14 Steps Menu, and 12.15 Items Menu for details about Steps and Items.

12.4   Multiple Requirement Deletion

To delete multiple requirements or packages you need to initially select the requirements and/or packages within the Tree.

Optimal Trace uses the standard MS 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.

12.5   New Package Option

Use this option to create a Package.

➢ Click on the ⊞ button in the Tool bar.

12.6   Delete Package Option

Use this option to delete a Package.

➢ Select the Package in the Tree View and click on the ⊠ button.

If the Package contains sub-Packages or Requirements you will be prompted to confirm the deletion.

12.7   Multiple Package Deletion

To delete multiple requirements or packages you need to initially select the requirements and/or packages within the Tree.

Optimal Trace uses the standard MS 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.

12.8　Renumber Requirements Option

Use this option to renumber your 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™ Enterprise 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. See Section 6.4 Baselines for more on baselining projects.

When renumbering is applied, all of the Requirements across all the Packages in the Project are numbered according to the current numbering policy. (See section 7.6.2 Numbering Policy Settings for more on Project Numbering Policies). If any Simple Requirements have been re-numbered, their Items will also be renumbered to reflect the new Simple Requirement number.

To apply renumbering to a Project:

➢ Click on the button.

Since renumbering is an occasional activity and considering the implications of renumbering, Optimal Trace™ Enterprise prompts you for confirmation of this action. Once you confirm, the renumbering is applied to all Requirements.

Note: Renumbering of scenarios is handled automatically within Optimal Trace™ Enterprise and no gaps are allowed to appear when deleting scenarios; see Section 12.17 Scenarios Menu for more details on scenarios.

12.9　Move Requirement and Move Package Option

Use this option to move Requirements and Packages elsewhere in the Project or to other Projects. There are two ways in which you can move Requirements and Packages: drag and drop or by clicking buttons on the Tool bar.

➢ **Drag and drop**:

   o　In the Tree View Click on the Requirement or Package that you want to move.

   o　Drag the Requirement or Package to the new location by holding down the mouse button at which point the cursor will change to (move Requirement) or (move Package). When you are at 'move-to' location in the tree, let go the mouse button and the Requirement or Package will be placed at that location.

> ➢ **Using the Tool bar**:

- o Click the Requirement or Package that you want to move.

- o On the Tool bar click on the ⬚ button (to move a Requirement) or the ⬚ button (to move a Package) whereupon the screen shown in Figure 45 below will appear.

- o Select the specific Package that you want to move the Requirement or Package to and click on the Apply button.

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 and orphan (un-shared) if its custom property definitions are different that that of its new parent.

12.10 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.

Optimal Trace uses the standard MS 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 move. All requirements or packages in between the initially selected element and final element are marked for moving. Once the elements are selected then follow the normal procedures outlined above for moving either using the drag and drop technique or using the toolbar button option.

Alternatively to move non-sequential single elements use the CTRL key while selecting each desired element and move as per normal.
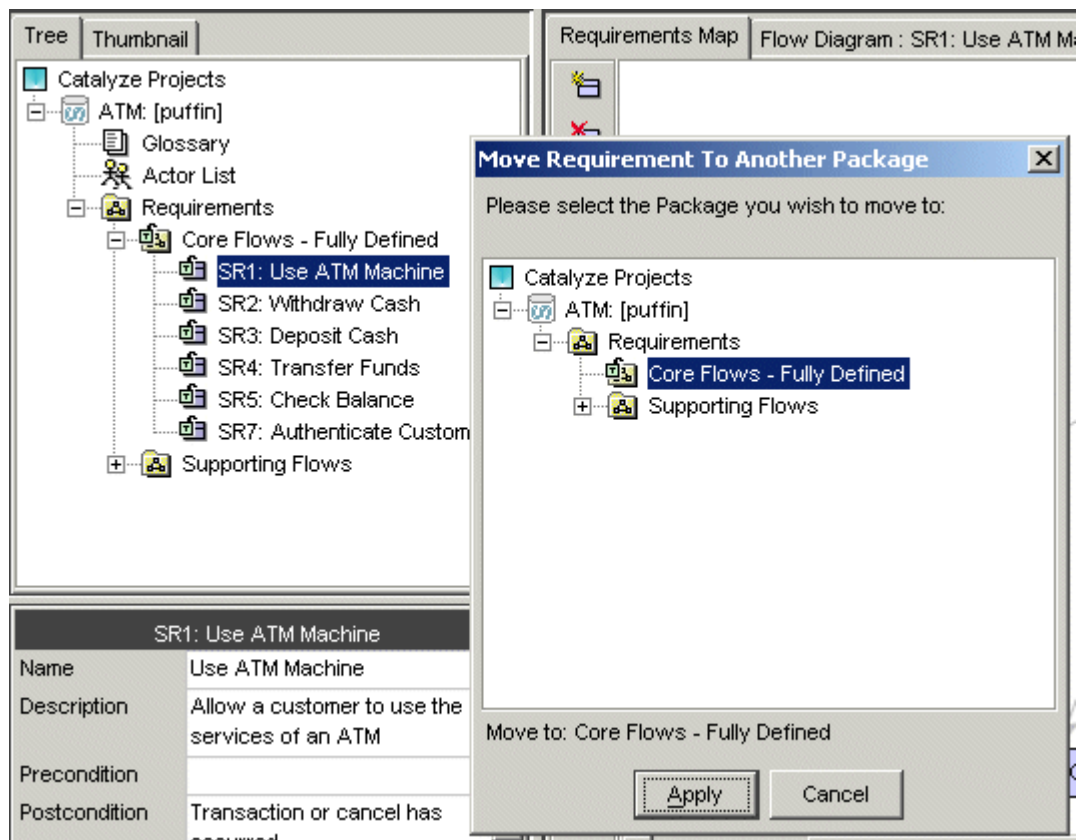
Figure 45 - The Move screen — to the right above, titled 'Move Requirement To Another Package'

> **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. See section 19.3 Optimal Trace Locking Rules for the full list of locking rules.

12.11   Reposition Requirements… Menu

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

To reposition a given requirement, first select that requirement in the tree. Now click the button in the toolbar or click the 'Reposition Requirements…' menu option. You can now reposition the requirement within the package by using the up and down arrows.
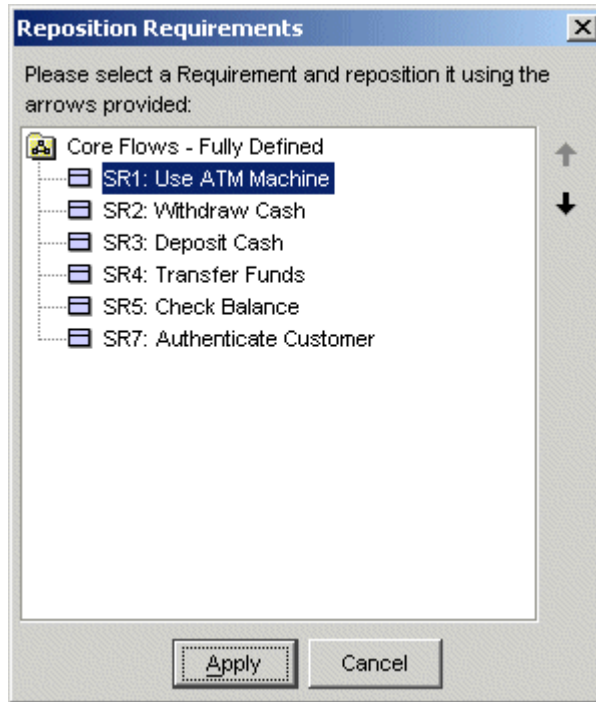
Figure 46 - Repositioning a requirement in a package

12.12   Reposition Packages… Menu

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

To reposition a given package, first select that package in the tree. Now click the ⬚ button in the toolbar or click the 'Reposition Packages…' menu option. You can now reposition the package with respect to its sibling packages by using the up and down arrows.

12.13   Branches Menu

Use this menu to branch from Step to Step and from Step to a Structured Requirement.

In addition to branches within a given Structured Requirement, Optimal Trace™ Enterprise allows branching between Structured Requirements. The mechanism to branch to another Structured Requirement is very similar to that used for branching to Steps:

> ➢ Click on the Step that the branch originates from.
> ➢ From the Menu bar, click on Requirements
> ➢ Click on Branches

Branches are denoted in Optimal Trace with a directed arrow. The Arrowhead indicates the Step or Structured Requirement that is being branched to.

12.13.1 Create a New Branch Option

Use this option to:

- ❑ Branch from a Step to an existing Step/Structured Requirement or

- ❑ To 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 on a Step (either in the Flow Diagram or the Requirements Map) that you want the branch to originate from.

- ➢ Now click on the button in the central vertical toolbar adjacent to either the Flow Diagram or Requirements Map and the screen in Figure 47 below will appear.
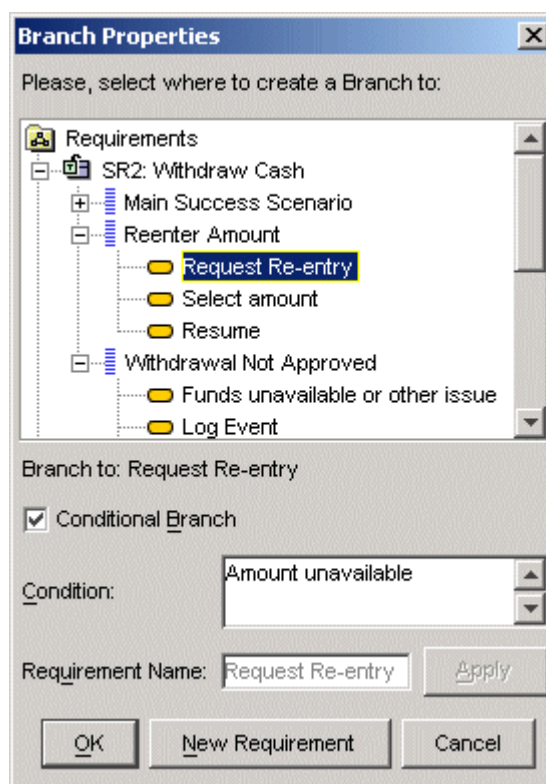
Figure 47 – Create New Branch screen

The Figure 47 – Create New Branch screen shows each of the scenarios within the Structured Requirement and highlights the particular Step where your branch will go to in order to complete the branching.

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. A conditional branch is indicated by clicking the 'Conditional Branch' checkbox.
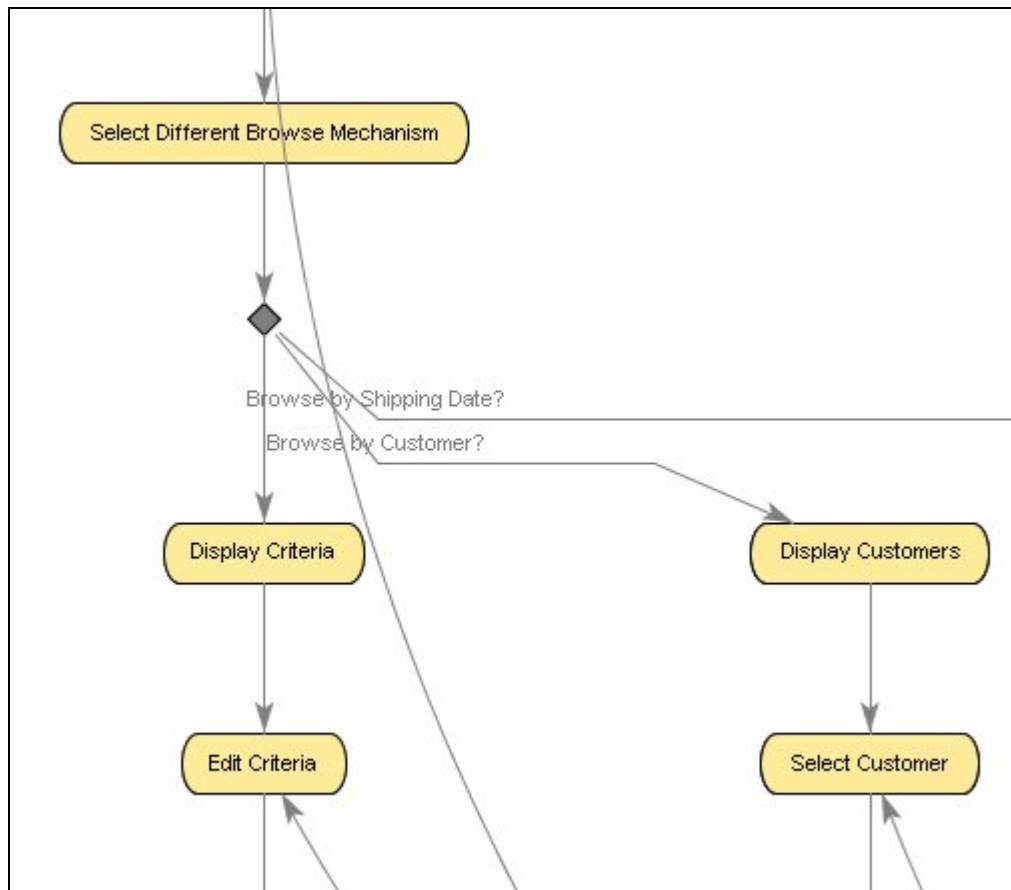
Figure 48 – Branching to a Step with condition

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.

12.13.2   Edit Branch Option

In order to edit the details of a branch you first 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. See Figure 49 - Selecting a Branch for Editing for an example of a selected branch. You may either edit the branch details in the bottom left branch detail area or by clicking the 'Requirements >> Branches >> Edit Branch...' menu option
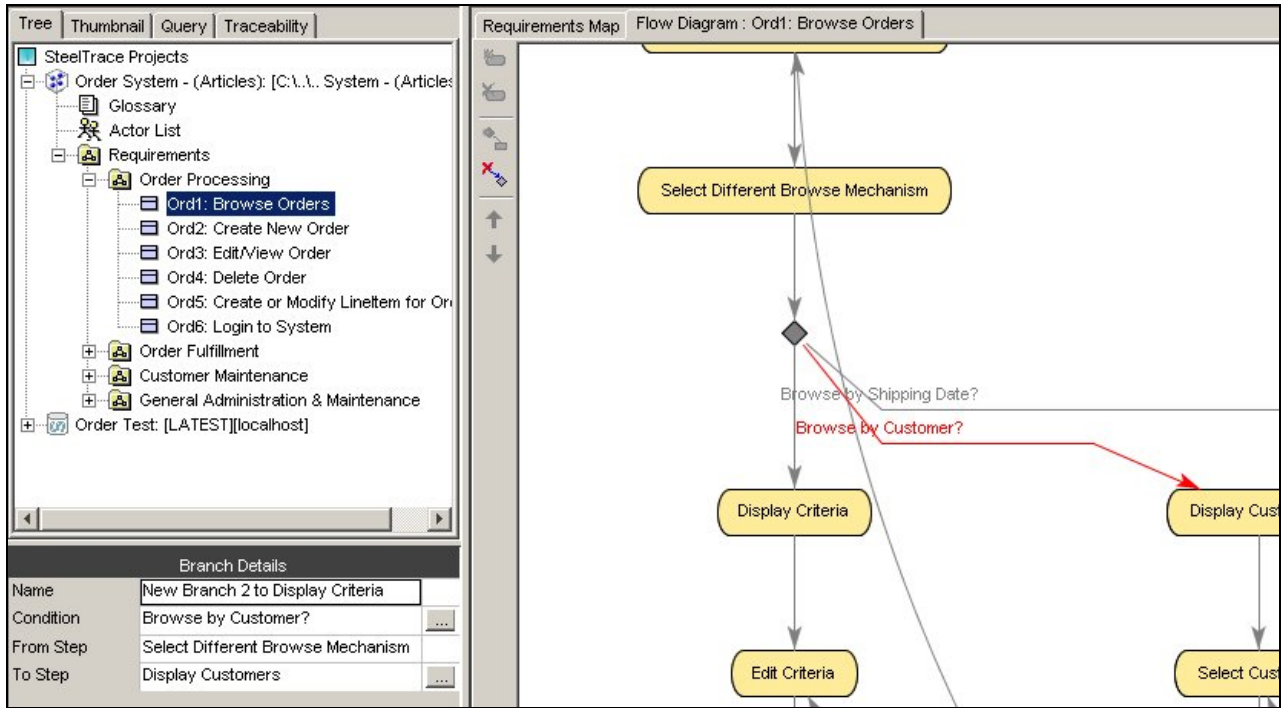
Figure 49 - Selecting a Branch for Editing or Deleting

12.13.3   Delete Branch Option

Use this option to delete the selected branch. In order to delete a branch you must select the branch line either in the Flow Diagram or Requirements Map. See Figure 49 - Selecting a Branch for Editing for an example of a selected branch.

12.14   Steps Menu

Use this menu 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 tree.

> ➢ From the Menu bar, click on Requirements
> ➢ Click on Steps

Each Step has the following attributes:

- The Actor that is starting or initiating the Step (e.g. 'customer')
- The Name of the Step (e.g. 'insert ATM card')

- A detailed description of the Step.

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

The scenarios and Steps appear in the textual representation of Optimal Trace™ Enterprise, as shown in Figure 50 below.

Figure 50 - Scenarios and Steps

12.14.1   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', the latter meaning 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 ⬛ button in the toolbar to the right of the scenario brings up the Custom Property editor screen.

See section 7.5.1 Implications for a full description of how to add, remove and modify Custom Properties.

12.14.2   Add Step Option

Use this option to add a new Step to a Requirement. To this, click the 📂 button.

12.14.3   Delete Step Option

Use this option to delete the selected Step from a Requirement. To this, click the [icon] button.

12.14.4   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.

Note: When you move the step, both the graphical area in the Flow Diagram and the Textual areas are kept in lockstep.

12.15   Items Menu

Use this 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 tree.

> ➢ From the Menu bar, click on Requirements
> ➢ Click on Items

Each Items has the following attributes:

- The Name of the Item
- A detailed description of the Item

12.15.1   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 [icon] button in the toolbar to the right of the item list brings up the Custom Property editor screen.

See section 7.5.1 Implications for a full description of how to add, remove and modify Custom Properties.

12.15.2   Add Item Option

Use this option to add a new Item to a Requirement. To this, click the ⬚ button.

12.15.3   Delete Item Option

Use this option to delete the selected Item from a Requirement. To this, click the ⬚ button.

12.15.4   Move Item Up/Down Options

Use this option 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.

12.15.5   Renumber Items

Use this 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.

> **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.

12.16   Refinements Menu

Use this 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™ Enterprise 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. (See section 7.9.2 Package Tags for more on Package Tags.) For an example of a Project Template that uses this approach, see the 'Feature Driven Development' template in section 6.1.2 Create from Project Template

➢ From the Menu bar, click on Requirements

➢ Click on Refinements

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.

12.16.1 Create a new Refinement Option

Use this option to:

- ❑ refine from a Step or Item to an existing Requirement or
- ❑ 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:

➢ Click on a Step or an Item in the Requirements Map view. This will be the step/item that 'refines'.

➢ Now click on the 🔧 button in the central vertical toolbar adjacent to Requirements Map and the screen in Figure 51 – Create New Refinement screen will appear.
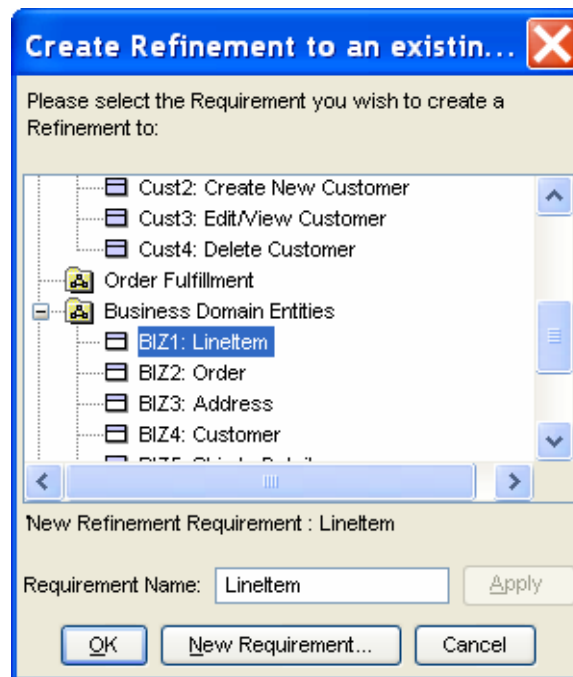
Figure 51 – Create New Refinement screen

The Figure 51 – Create New Refinement screen shows each of the packages and requirements where you can refine to.

If you want to create a new Requirement to refine to, click the 'New Requirement' button. This will result in the new Requirement being created and selected as the refined to requirement.

12.16.2   Delete Refinement Option

Use this option to delete an existing Refinement. To do this, first select the refinement that you want to delete by clicking on it in the Requirement Map. Once selected, the refinement line changes to a red color. Now click the ![icon] button.

When you click the delete refinement button you may also delete any refined to Requirements.
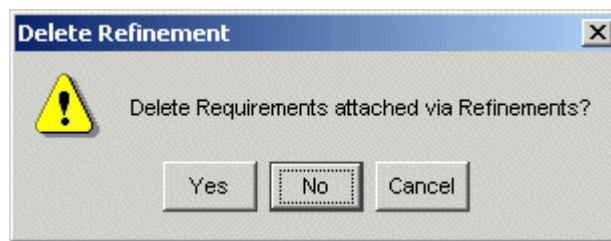
Figure 52 - Prompt for deletion of refined Requirements

12.16.3   Refine Requirement Option

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.

12.17   Scenarios Menu

Use this menu for scenario purposes.

➢ From the Menu bar, click on Requirements

➢ Click on Scenarios

12.17.1   Create New Scenario Option

Use this option to create an Alternative Scenario in a Structured Requirement. Alternative scenarios provide an optional series of Steps to the Structured Requirement's Main Success Scenario. This is why they are referred to as an Alternative Scenarios.

12.17.2   Delete Scenario Option

Use this option to delete an Alternative Scenario.

12.18   Reposition Scenarios... Option

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 or change the order of 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 🖳 button in the toolbar or click the 'Reposition Scenarios...' menu option. You can now reposition the scenario within the requirements by using the up and down arrows.
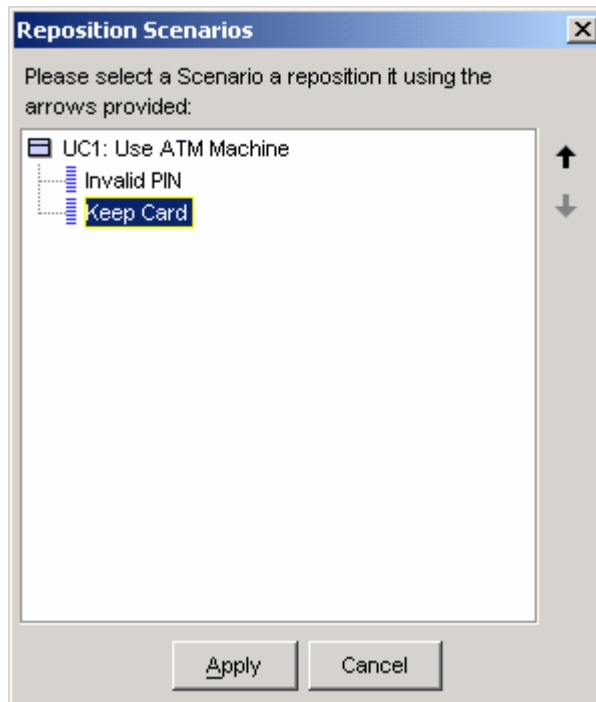
Figure 53 - Repositioning a scenario in a requirement

13 Generation Menu

Use this menu for document generation purposes.

➢ From the Menu bar, click on Generation

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™ Enterprise facilitates generation of Microsoft Word documents, preserving non-Optimal Trace™ Enterprise data within these documents. Optimal Trace™ Enterprise also facilitates **round tripping** of changes made to Optimal Trace™ Enterprise data within these same word documents, back into the Project.

13.1   Generate Requirements Document Option

Use this option to generate requirements documents in Microsoft Word 2000, 2002, 2003 and 2007 formats; see Sections 14.1.1 Tool Settings, and 15 Tools Menu, for details.

To generate a Word document detailing requirements using Optimal Trace™ Enterprise:

➢ Click on the 🔲 button, and the Document Generation screen will appear, see Figure 54 below. See Table 17 below, for details.

Note: When you generate MS Word 2000, 2002/XP, 2003 documents, you should set the following options in your copy of MS Word.

➢ On the Tools menu, click Macro, and then click Security to open the Macro Security dialog box.

➢ Select either Low or Medium security level.

➢ On the Trusted Sources tab, click to turn on both the "Trust access to Visual Basic Project" and "Trust All Installed Add-Ins And Templates" checkboxes.

➢ Click OK to apply the settings.

When you generate MS Word 2007 documents you to configure MS Word 2007:

> ➢ Click on the Office Button, select 'Word Options', hit 'Save' and then set 'Save files in this format' to ' **Word Macro-Enabled Document Format (.docm)**'.

> ➢ Click on the Office Button, select 'Word Options', select 'Trust Center', select 'Settings', select 'Trusted Locations' and add the '<OT APP Data>\docgen\vba' as a new trusted location.

> ➢ Click on the Office Button, select 'Word Options', select 'Trust Center', select 'Settings', 'Macro Settings', and select 'Disable all macros except digitally signed macros'.

> ➢ Select the Office Button, select 'Word Options', select 'Trust Center', select 'Settings', select 'Developer Macro Settings' and tick 'trust access..'

Note: Document Generation Issues. Microsoft has in the most recent versions of Word defaulted the trust and other security settings to high. If you have any difficulty generating document you can find a full checklist for diagnosing issues at:
http://frontline.compuware.com/products/ci/
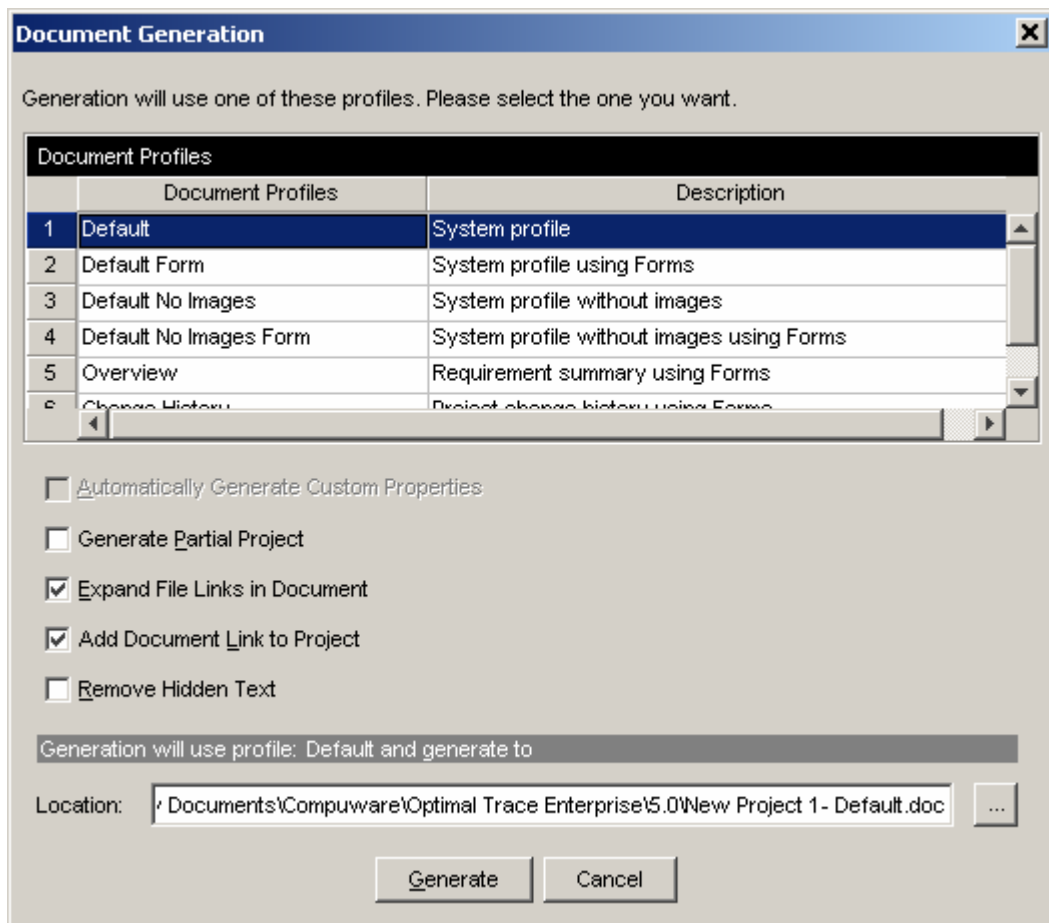
Figure 54 - Document Generation screen

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™ Enterprise 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:

❑ **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. See section 14.5 Outputting specific Custom Properties in Documents for more on customizing document profiles with Custom Properties.

❑ **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 Documents.** Check this box if you wish to expand all file links in the generated document. For more on creating File Links see section: 7.3.1 File & URL (web) based Links. The types of files to be expanded are based on a list of file extensions as specified in the Optimal Trace Tool Options. See section: 14.1.1 Tool Settings for more on how to configure this.

❑ **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 uncheck 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. See Section 19.3 Optimal Trace Locking Rules for more on locking rules.

❑ **Remove Hidden Text.** When a document is generated Optimal Trace inserts hidden text surrounding the document content. This is used by Optimal Trace 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 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 etc. By removing the text reversal of documents is not possible

➢ Click on the Generate button to produce 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 above 'Add Document Link To Project' option was selected. See Section: 7.3.1 File & URL (web) based Links, for more details on Project Links.

Note: A note on Forms Documents

What are Microsoft Word Forms?

These are Word documents where only certain areas are editable. In Optimal Trace's case, these editable areas will generally consist of data values originating from the Project.

Why would I use them?

To protect against accidental damage to the hidden XML tags in Optimal Trace generated documents. In particular, we would recommend these types of documents for non technical users who wish to edit Optimal Trace documents and then reverse these changes back in to the Optimal Trace project. As long as they keep the document Protected (see the Optimal Trace menu), they can safely edit the data fields without fear of doing any damage.

Are there any issues involved in using Word Forms?

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

2. 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.

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

4. Sometimes, when tabbing through the form fields in a documents, the focus & 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.

What profiles in Optimal Trace generate Forms documents?

Default Form, Default No Images Form, Overview, and ChangeHistory.

13.1.1   Launching the document after generation

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

13.2   Update Requirements Document Option

Use this option to update a document you previously created, e.g. to reflect changes you may have made to the Project. A list of generated documents will appear, see Figure 55 below.

Note: Partial Documents cannot be updated.

![COMPUWARE logo]

> **Note 2**: 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 the Select button.
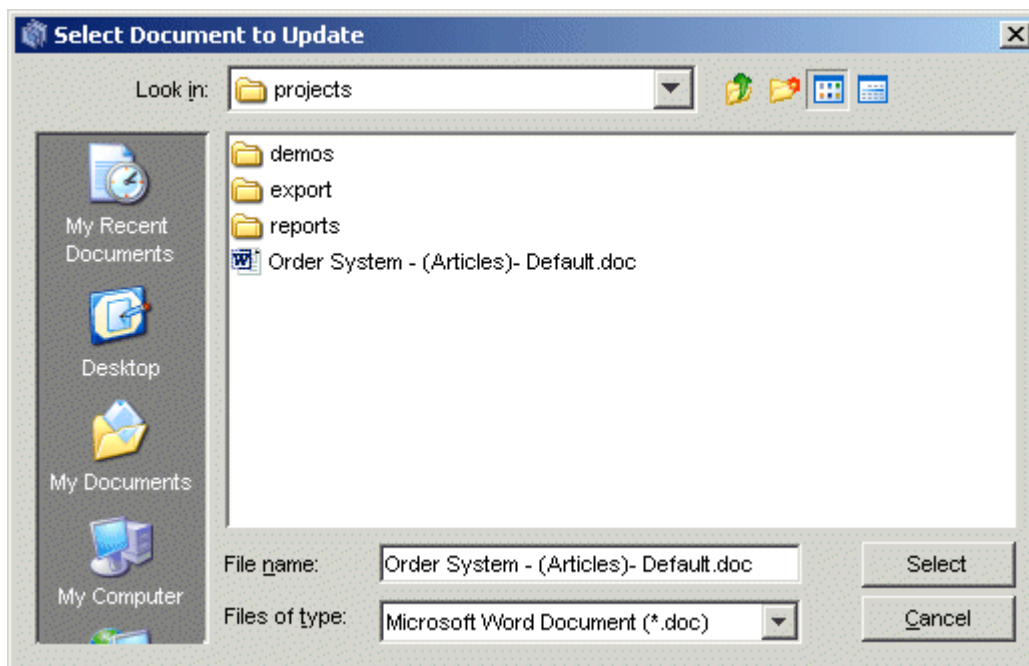
Figure 55 – List of documents generated

> **Note:** It is important that you update the correct document. If Optimal Trace™ Enterprise 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 Optimal Trace™ Enterprise encounters a problem during the document update an error screen will appear, like the one shown in Figure 56 below.
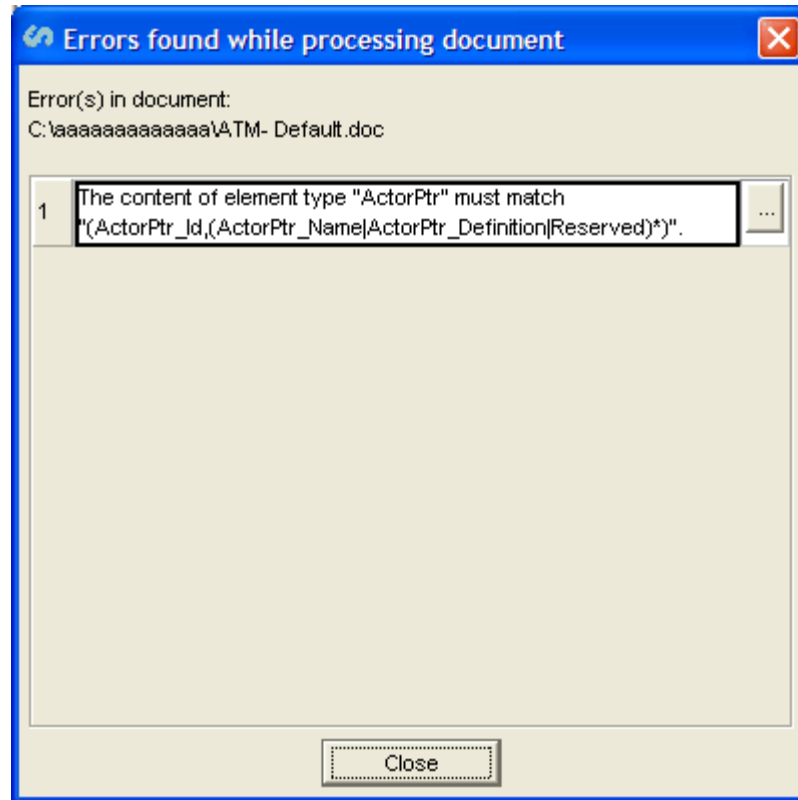
Figure 56 - Update Document Error screen

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 the '...' button, all the hidden text in the document will be displayed. Most of this hidden text consists of XML tags.

13.3   Editing the Requirements Document

From time to time you will want to modify an Optimal Trace™ Enterprise generated document outside of the Optimal Trace™ Enterprise environment. Optimal Trace™ Enterprise provides full support for such edits and provides a facility for round-tripping the changes back into a Project. See 13.4 Reverse Requirements Document Option, for details.

Note: Partial Documents cannot be reversed.

13.3.1   Using the Optimal Trace menu in Microsoft Word

When Optimal Trace generated documents are opened in MS Word, a special menu is inserted into MS 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 MS Word documents and then reabsorbing those changes back into an Optimal Trace project.
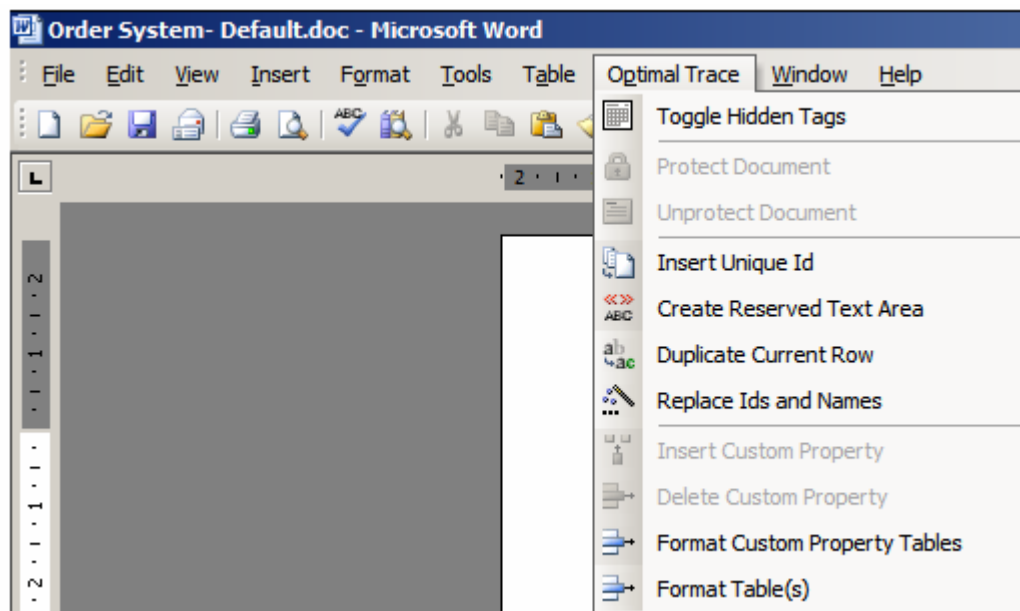
Figure 57 - The Optimal Trace menu showing in Word

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

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 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.
Unprotect Document	Normal Editing	Microsoft 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 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 e.g. 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, 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.* See section 14.5.1 Adding Custom Properties for details on usage.
Delete Custom Property	Editing a Profile	*Disabled for generated documents.* See section 14.5.2 Delete Custom Properties for details on usage.
Format Custom Property Tables	Editing a Profile	*Disabled for generated documents.* See section 14.5.3 Format Custom Property Tables for details on usage.
Format Tables	Editing a Profile	*Disabled for generated documents.* See section 14.5.4 Format Table(s) for details on usage.

13.3.1.1 Inserting/deleting new Steps in MS Word

Inserting new steps in a scenario within 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.

Note: To delete steps, simply select the row you wish to delete and hit delete as you would with any normal word table.

13.3.1.2 Inserting/deleting new Items in MS Word

Inserting new items in a Simple Requirement within 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.

Note: To delete items, simply select the row you wish to delete and hit delete as you would with any normal word table.

13.3.1.3 Inserting/deleting new Glossary Items in MS Word

Inserting new glossary items in 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.

13.3.1.4　　　　Inserting/deleting new Actors in MS Word

Inserting new actors in 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.

> **Note:** To delete actors, simply select the row you wish to delete and hit delete as you would with any normal word table.
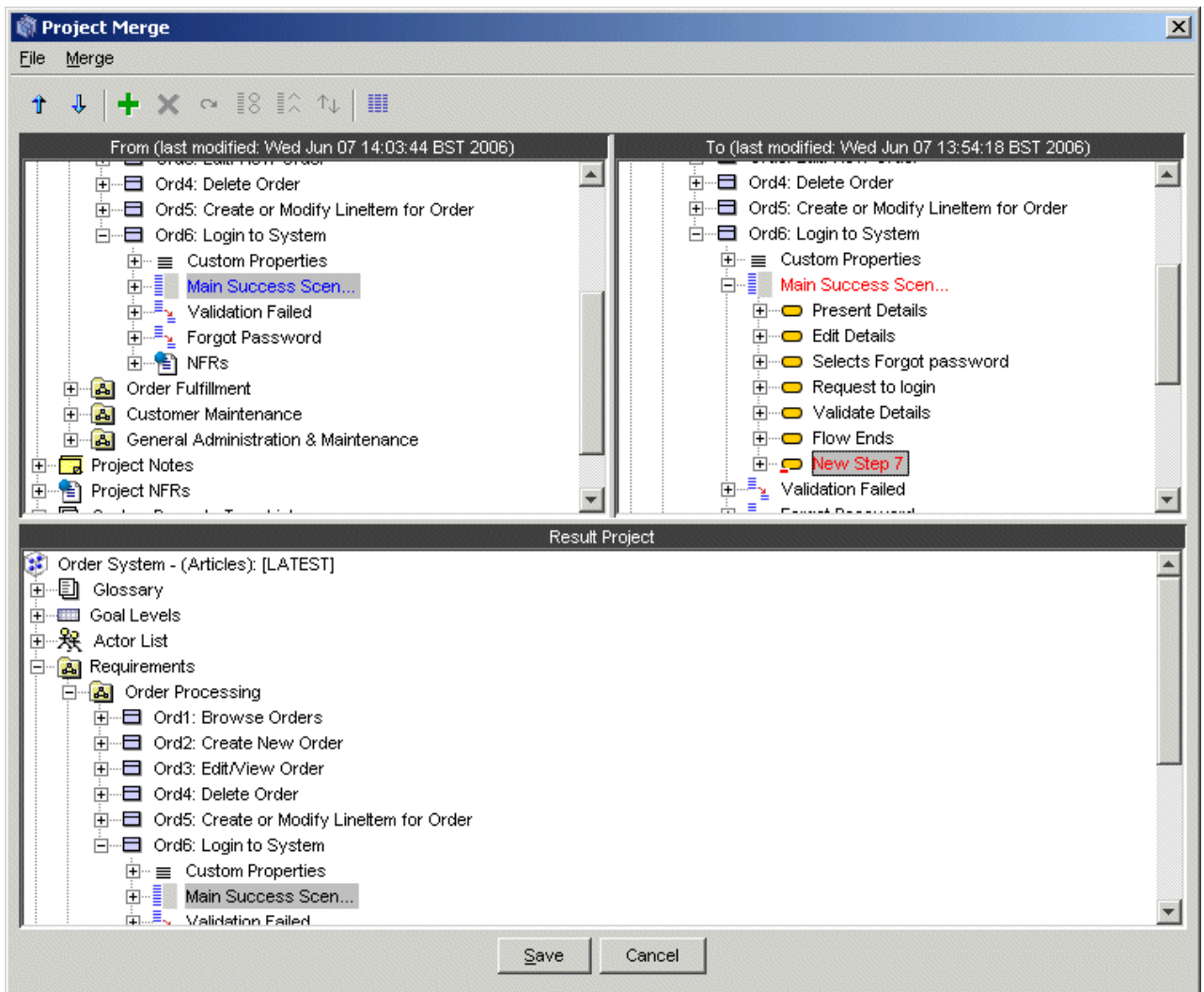

Figure 58 - Round-tripping with visual merge after inserting new Word elements

13.3.2　How Optimal Trace™ Enterprise encodes Project data

Just how Optimal Trace™ Enterprise encodes Project data, is described briefly in the text below.

When Optimal Trace™ Enterprise 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™ Enterprise 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 Optimal Trace menu) you can toggle between the hidden and non-hidden state. So there are two distinct portions to each field generated by Optimal Trace™ Enterprise:

- 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, this is enclosed with: `<name_of_field>  value </name_of_field>`

13.3.3   Modifying Existing Elements

Optimal Trace™ Enterprise works with documents using hidden tags to wrap generated data and it is possible to change the values of the data within those tags.

Note: When running a **spell check** in Microsoft Word you should not display any hidden text. Hidden text can be displayed/hidden by clicking on the Windows ¶ button.

You might for example find the following in the document:

```
Allow a customer to use the services of an ATM
```

If you use the spelling check within Microsoft Word the word 'customer' will be flagged as incorrect. You would want to change this to the correct spelling resulting in:

```
Allow a customer to use the services of an ATM
```

As long as you do not adjust the enclosing tags, changes can be made to any elements within Word and subsequently saved for merging back into the Project; see Section 13.4 Reverse Requirements Document Option, for details on reversing Optimal Trace™ Enterprise generated documents back into Optimal Trace™ Enterprise.

Note: About Ids

When viewing hidden text, in generated word documents you will see many examples of entries similar to the following:

```
<Requirement_Id>27205259710765</Requirement_Id>
```

These are special numbers that Optimal Trace™ Enterprise uses to track individual elements. Under no circumstances should you modify these numbers, as doing so will cause failure in subsequent updates and reversing.

13.4 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™ Enterprise 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.

Note 2: 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.

Note 3: It is not possible to reverse a document that has been generated with the 'Remove Hidden Text Option'

➢ Once you have selected the document, click on the Reverse button.

If Optimal Trace™ Enterprise detects problems with the changes made to the document, an error screen will appear (see Figure 59 below), describing the actual problem encountered and the specific element causing the problem.
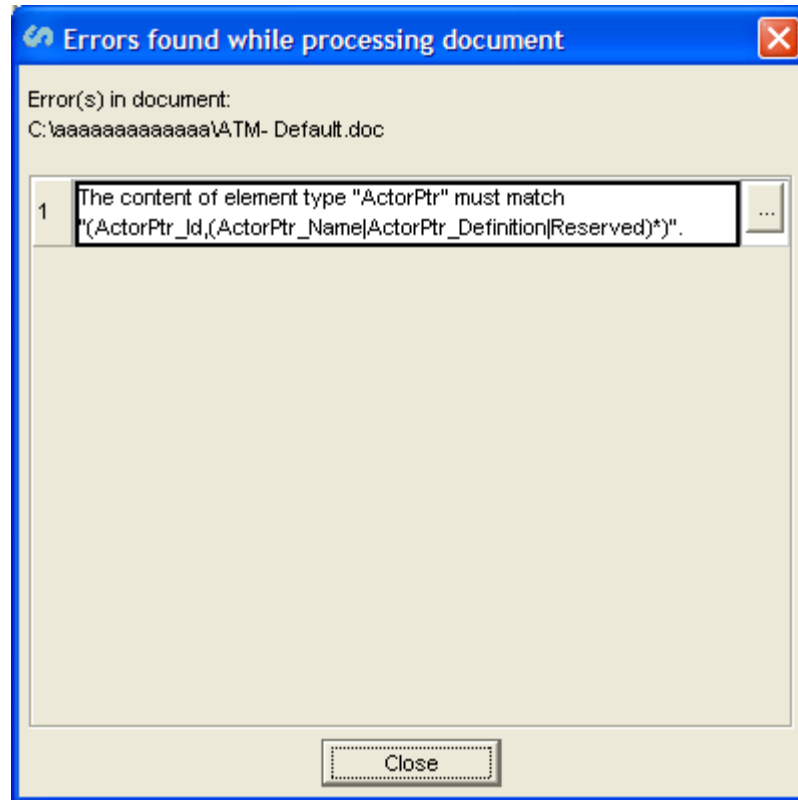
Figure 59 - Sample Document Error screen

> ➤ Click on the [...] button will open the actual document and attempt to find the erroneous element.

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.

See section 19.4 Merging Projects for full details on how to work within the Visual Merge screen.

13.5   Generate Reports Option

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™ Enterprise ships with some ready-to-use HTML reports, which are based on Report Profiles; see Table 10 below, for details.

To generate a report:

➢ From the Menu bar, click on Generation

➢ Click on Generate Reports, and the screen shown in Figure 60 below will appear; see Table 9 below, for details.

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

➢ Click on the Generate button.

A Link is automatically inserted into the Project Links area; see Section 7.2, for details.

➢ Click on the ⌐ button you to access a specific directory.
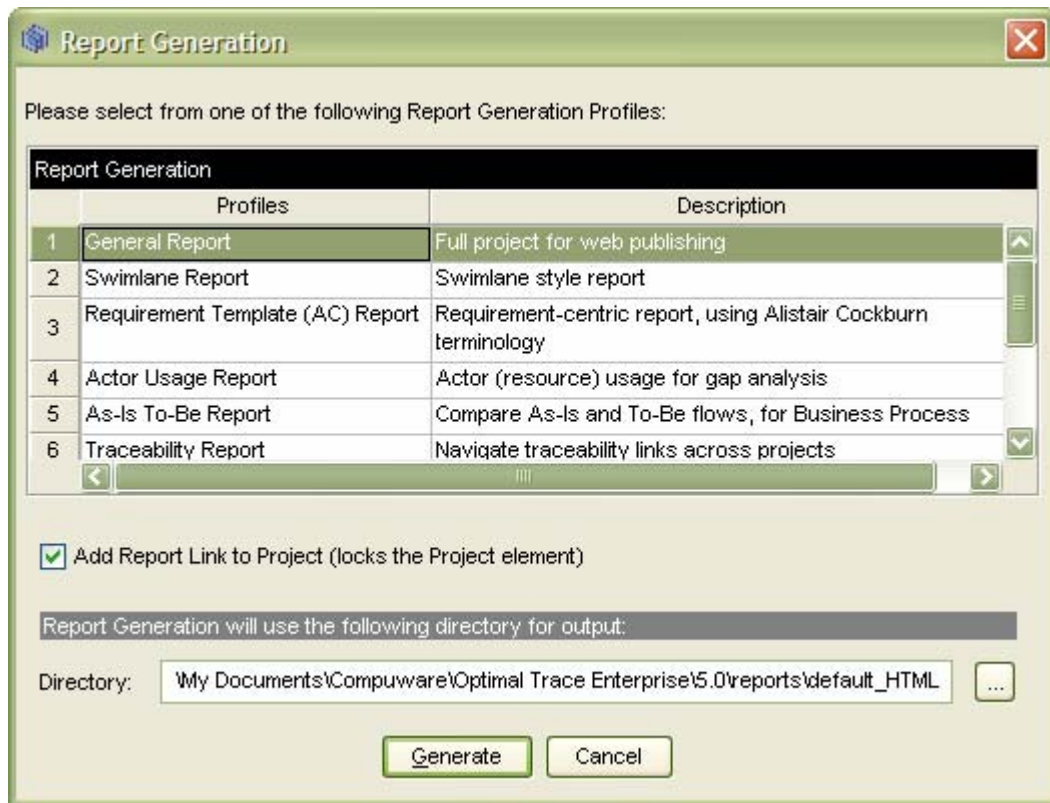
Figure 60 – Report Generation screen

Table 9 – Report Generation screen

Item	Description
Profiles	Displays the name of the report profile. Profiles allow you to generate certain elements from your Project and to adjust the branding & content.
Description	Displays a description of the report profile.

Directory	Optimal Trace™ Enterprise automatically defaults to a directory under the Projects directory called HTML (i.e. defaults to '/reports/reportname-html').

Table 10 – List of Generate able Reports shipped with Optimal Trace™ Enterprise

Report Profile	Description
General Report Generates to directory: ...\reports\default_HTML	Generates a frames based requirements document in HTML format, complete with hyperlinks to all elements of the project.
Swimlane Report Generates to directory: ...\reports\swimlanes_html	This report outputs your project with each scenario displayed with actors/resources on the vertical axis and the steps correlating with actors on the horizontal. This report is extremely useful for identifying steps with no associated resource and resource oriented gap analysis.
Requirement Template (AC) Report Generates to directory: ...\reports\Use-Case-Cockburn-Style_HTML	This report outputs any Optimal Trace project with style and terminology from Alistair Cockburn applied. It is also a very useful report to show a very compact HTML based view of the project.
Actor Usage Report Generates to directory: ...\reports\ResourceUsage_HTML	Generates an actor oriented report 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.
As Is – To Be Report Generates to directory: ...\reports\As-Is-To-Be-Report_HTML	Generates a report in HTML format 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 report.
Traceability Generates to directory: ...\reports\TraceabilityReport_HTML	Generates a report showing all Trace Relationships across the project. The Trace relationships include all refinement, branch and link references. When clicking a given reference the specific element is selected within the Optimal Trace environment.
Complexity and Completeness Report Generates to directory: ...\reports\Complexity	This report runs through the current project and outlines a complexity metric (as well as other summary stats) at the project level by totting up a summary of number of steps, items etc. Additionally it looks at each package, number of alternative scenarios and analyzing lack of completeness by highlighting for example steps without actors, packages with no non-functional requirements etc.
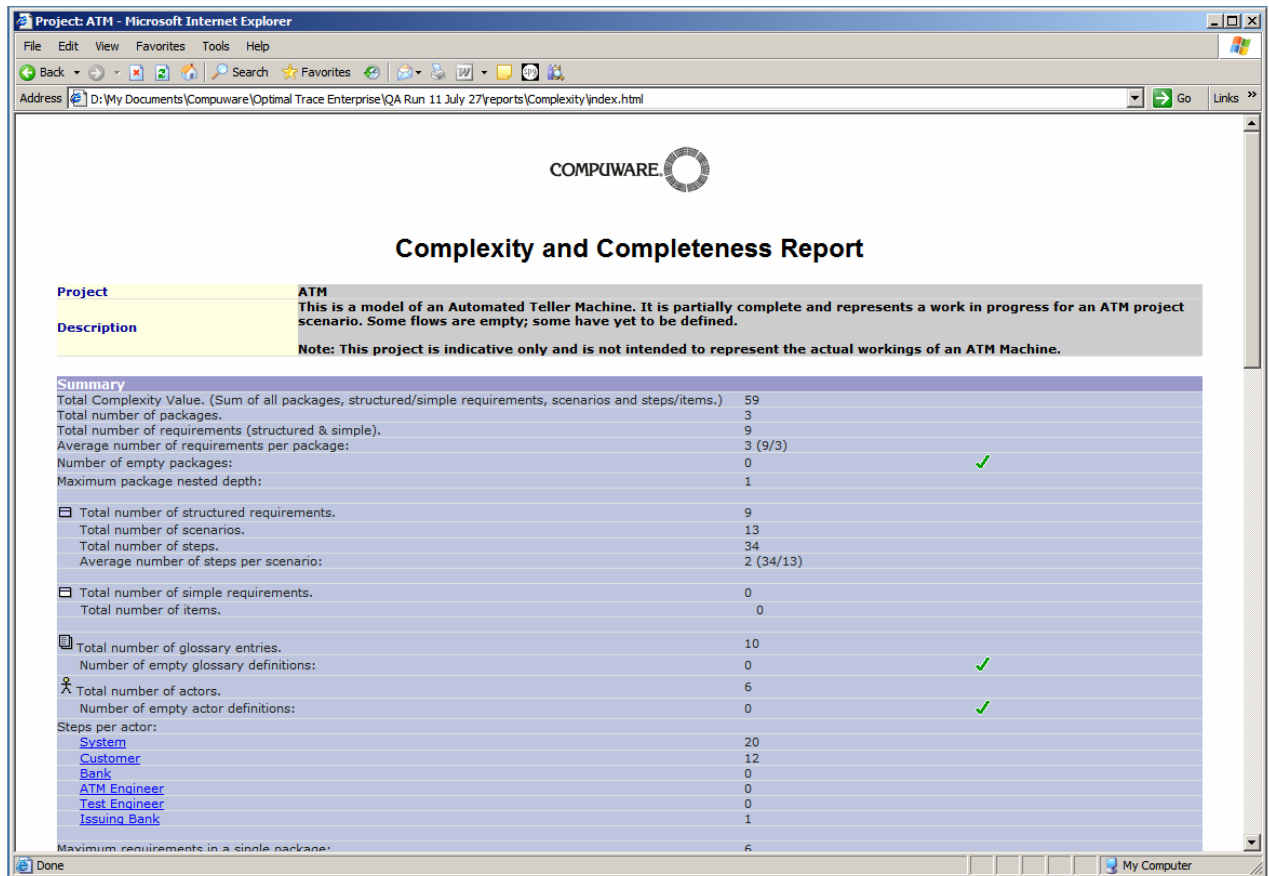
Figure 61 - Complexity Report run on the demo project 'Order System - (Articles)'

13.5.1   Launching the report after generation

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 view the report.

Note: Most systems will default HTML reports to be viewed in IE or another installed Browser. Similarly if you have Excel installed, it is likely that the Text based reports will show in Excel.

14 Options Menu

Use this menu for viewing and modifying tool options.

- ➢ From the Menu bar, click on Options
- ➢ Click on General Options, and the screen shown in Figure 62 below will appear.

14.1   General Options

Use this option to maintain your Project's tool, Requirement and Server settings, all of which are described in the sections below.

14.1.1   Tool Settings

Enter the tool settings as per Table 11 below.

- ➢ Click on the Save button.

Figure 62 – General Options – Tool Settings screen

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Table 11 - Tool Settings

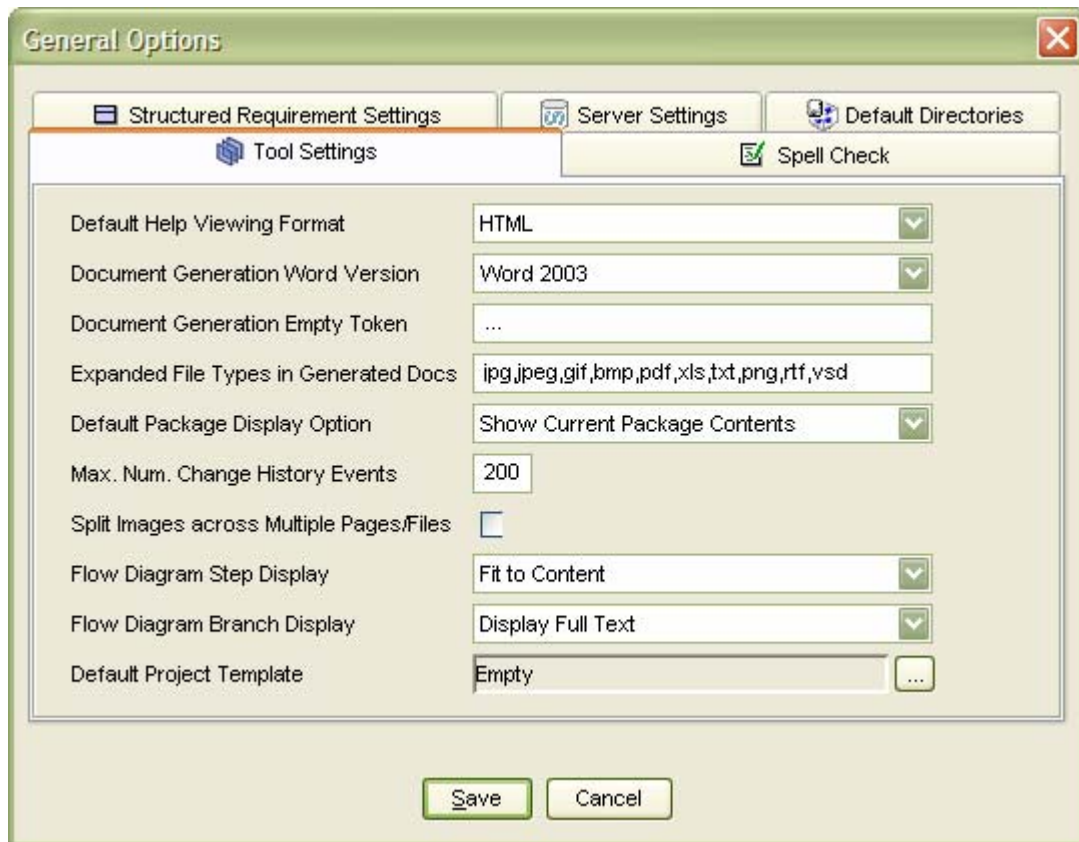| Item	Description
Default Help Viewing Format	This is a drop-down menu. To select an option from the list, simply click on it. The options are: • PDF • HTML
Document Generator Word Version	The version of Microsoft Word to use for document generation. See Section 13 Generation Menu, for more details on document generation. This is a drop-down menu. To select an option from the list, simply click on it. The options are: • Word 2007 • Word 2003 • Word 2002 (XP) • Word 2000
Document Generation Empty Token	This allows you specify a value for empty fields when generating MS Word documents. The default token is '...' but this can be changed as required.
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 - Excel Spreadsheets: xls - Text files: txt - Visio files: vsd If modifying this list ensure you separate the extension file types with a ',' (comma)
Default Package Display Option	This is a drop-down menu. To select an option from the list, simply click on it. The options are: • Show Current Package Contents • Show Current and Sub-Package Contents • Show Contents of All Packages
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. See section 15.1 View All Change History Option for more on Viewing Change History
Split Images across multiple pages/files	This option is used to 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.

Flow Diagram Step Display	This option is used to specify that steps should be drawn as either: 'Fixed' or 'Size to Fit'. 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.
Flow Diagram Branch Display	This option is used to specify that condition text in Flow Diagrams should be either: 'Fixed' or 'Size to Fit'. 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.
Default Project Template	This is the default template that will appear selected when created new projects in Optimal Trace. You will want to set this if you are using a given specific template for your projects.

14.1.2   Structured Requirement Settings

Enter the Structured Requirement settings as per Table 12 below.
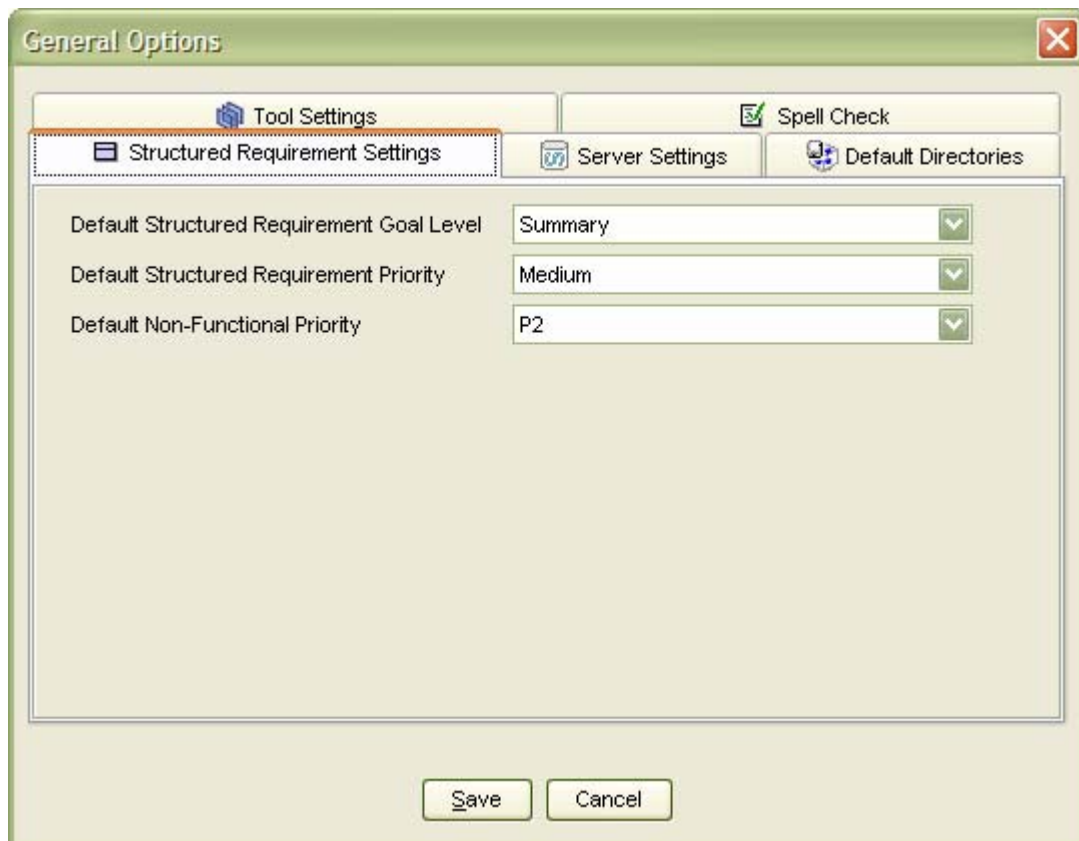
➢ Click on the Save button.

Figure 63 - General Options – Structured Requirement Settings screen

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Table 12 - Requirement Settings

Item	Description
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. See Section 7.6.1 Goal Levels Settings for more details. This is a drop-down menu. To select an option from the list, simply click on it. The options are: • Very High Summary • Summary • User Goal • Subfunction • Too Low • As Is • To Be • Manual • Automated
Default Structured Requirement Priority	The default Structured Requirement priority - each new Structured Requirement inherits this priority level. This is a drop-down menu. To select an option from the list, simply click on it. The options are: • Highest • High • Medium • Low • Lowest
Default Non Functional Req. Priority	The default Non-functional requirement priority - each Non-functional requirement has a default priority. See Section 7.2 Project Non-functional Requirements, for details. This is a drop-down menu. To select an option from the list, simply click on it. The options are: • P1 • P2 • P3 • P4 • P5

14.1.3 Server Settings

Enter your Server settings as per Table 13 below.

➢ Click on the Save button.
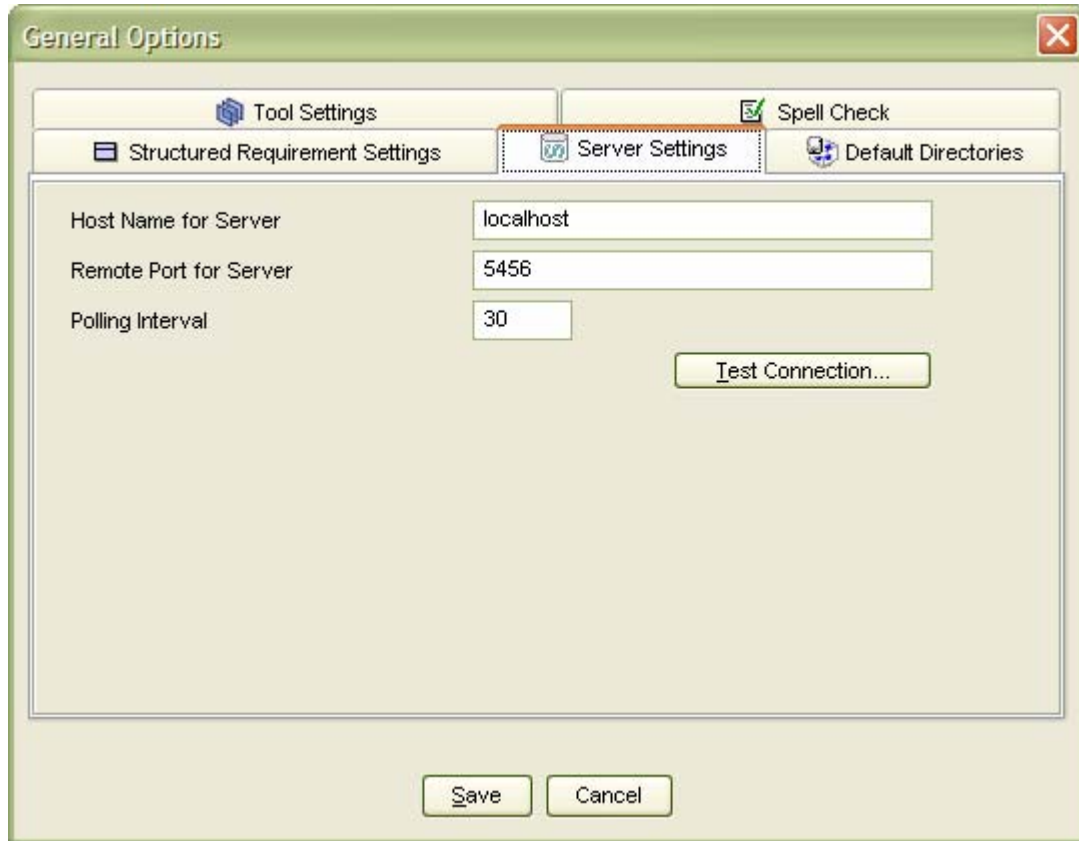
Figure 64 - General Options – Server Settings screen

Table 13 - Server Settings

Item	Description
Host Name for Server	Enter the host name for the Repository Server. On a standard network this will be the machine name where Optimal Trace™ Enterprise Server is running. If your Repository 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 this.
Remote Port for Server	Enter the port number that the Repository Server is running on. Ensure that this number matches the setting on the Optimal Trace Server. See the Optimal Trace Server help file for more details on setting this. By default both the server and client side settings are set to 5456.
Polling Interval	This is the time setting 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.

If you want to test the connection to the server hit the 'Test Connection…' button. This will 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.

14.1.4   Default Directories Settings

This area allows you specify where your Document Profiles, Report Profiles etc. are stored. For Enterprise deployments it is useful to centralise storage of custom project and document templates on a centralised file server.

Enter your Template Setting as per Table 14 - Project Template Settings

  ➢ Click on the Save button.
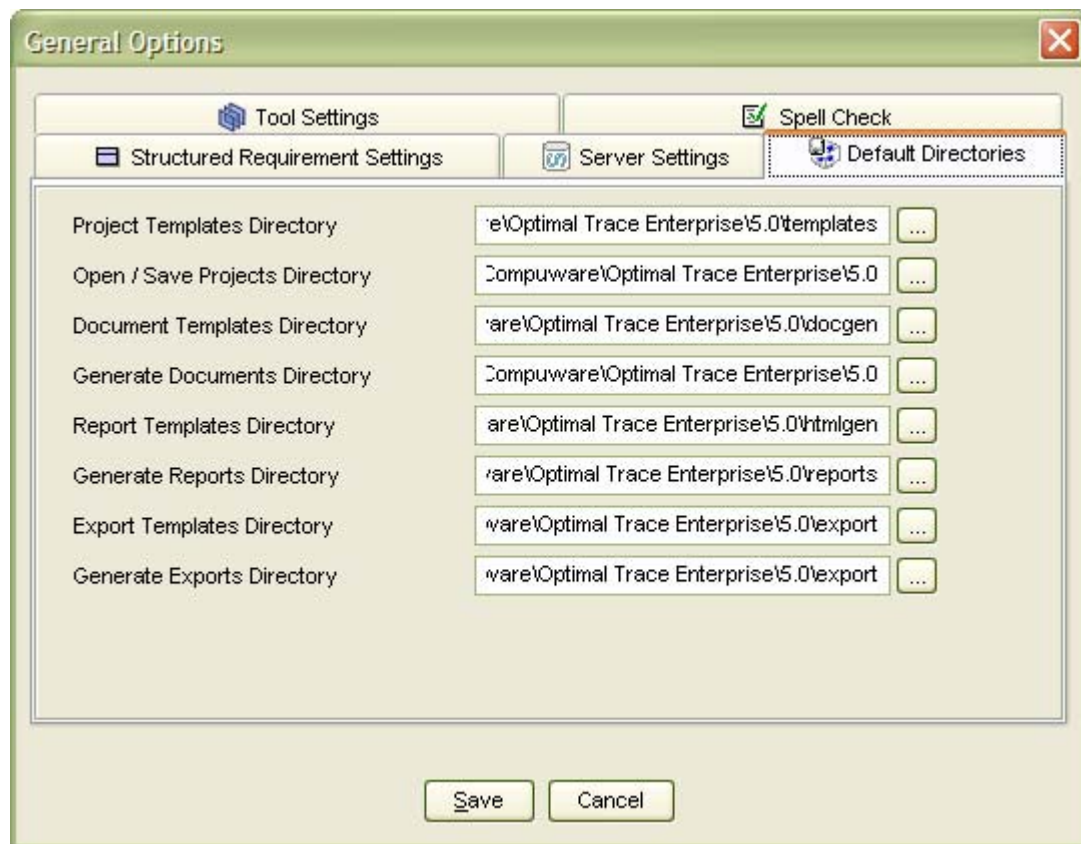
Figure 65 - General Options – Project Template Settings screen

Table 14 - Project Template Settings

Item	Description
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.
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.

| 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.
Export Reports 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.
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.
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.
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.

14.1.5   Spell Check
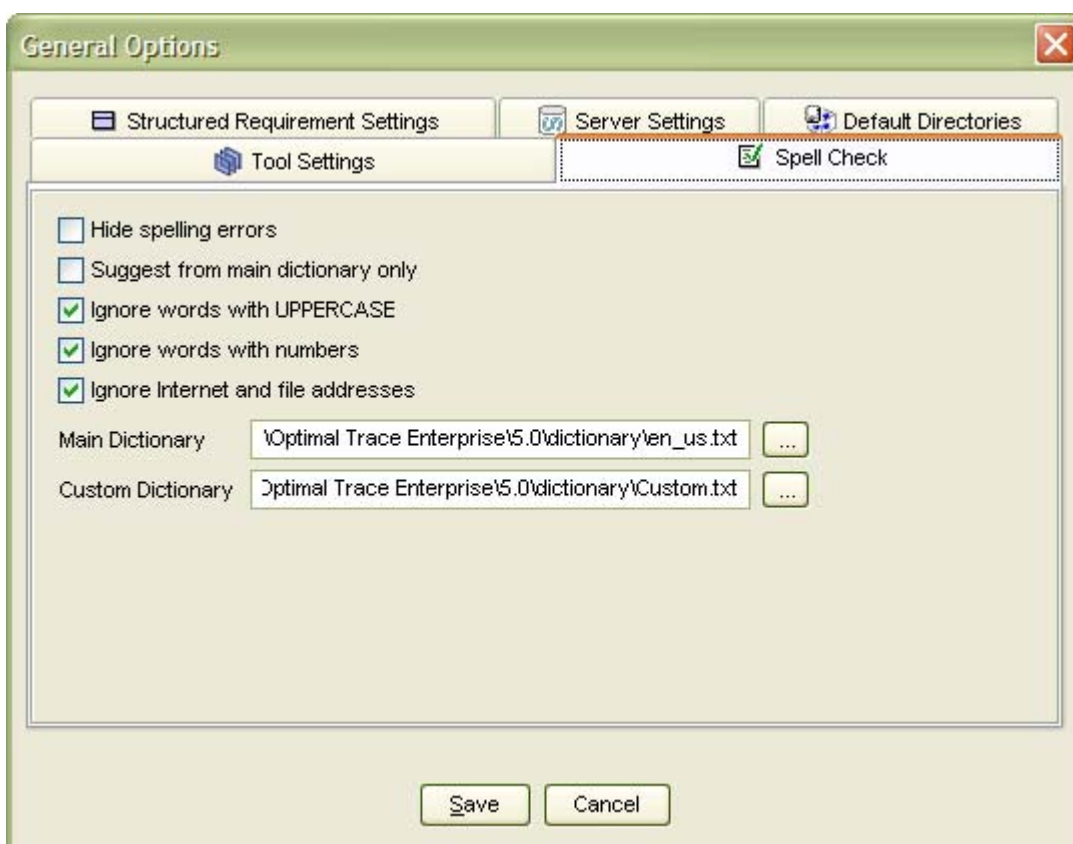
Figure 66 - General Options — Spell Check screen

This area allows you to configure how the spell check operates in Optimal Trace.

Table 15 Spellcheck Options

Item	Description
Hide Spelling Errors	This allows you to set whether or not spelling errors are automatically highlighted in Optimal Trace.
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.
Ignore Words with UPPERCASE	This dictates whether or not words in UPPERCASE are ignored during spell check.
Ignore words with numbers	Check this box if you would like the spell checker to ignore words that contain numeric characters.
Ignore internet and file addresses	Check this box if you would like internet and file addresses to be ignored during spell check.
Main	This allows you to specify the location of the main dictionary to use when checking spelling.
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.

14.1.5.1   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 supported by the Aspell spelling system 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:

1. Download and install the Aspell installation from (1) Download and install the full installation from http://ftp.gnu.org/gnu/aspell/w32/Aspell-0-50-3-3-Setup.exe
2. Download and install the specific language dictionary from http://aspell.net/win32. For example for French language download and install from http://ftp.gnu.org/gnu/aspell/w32/Aspell-fr-0.50-3-3.exe
3. 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).
4. Configure the Optimal Trace main spelling dictionary to point to the file generated in step 3.
   (a) Copy the newly created fr_fr.txt file from "C:\Program Files\Aspell\bin" to "C:\Documents and Settings\<USERNAME>\Application Data\Compuware\Optimal Trace Enterprise\<installed version>\dictionary" and in the General Options Dialog in Spell Check tab choose fr_fr.txt as the Main Dictionary.

   (b) Or in the General Options Dialog in Spell Check tab choose "C:\Program Files\Aspell\bin\fr_fr.txt" as the Main Dictionary.

14.2 Document Settings

Use the Document Settings screen shown in Figure 67 below, to maintain your Projects document profiles and any elements and templates associated with them. See the headings below, for details.
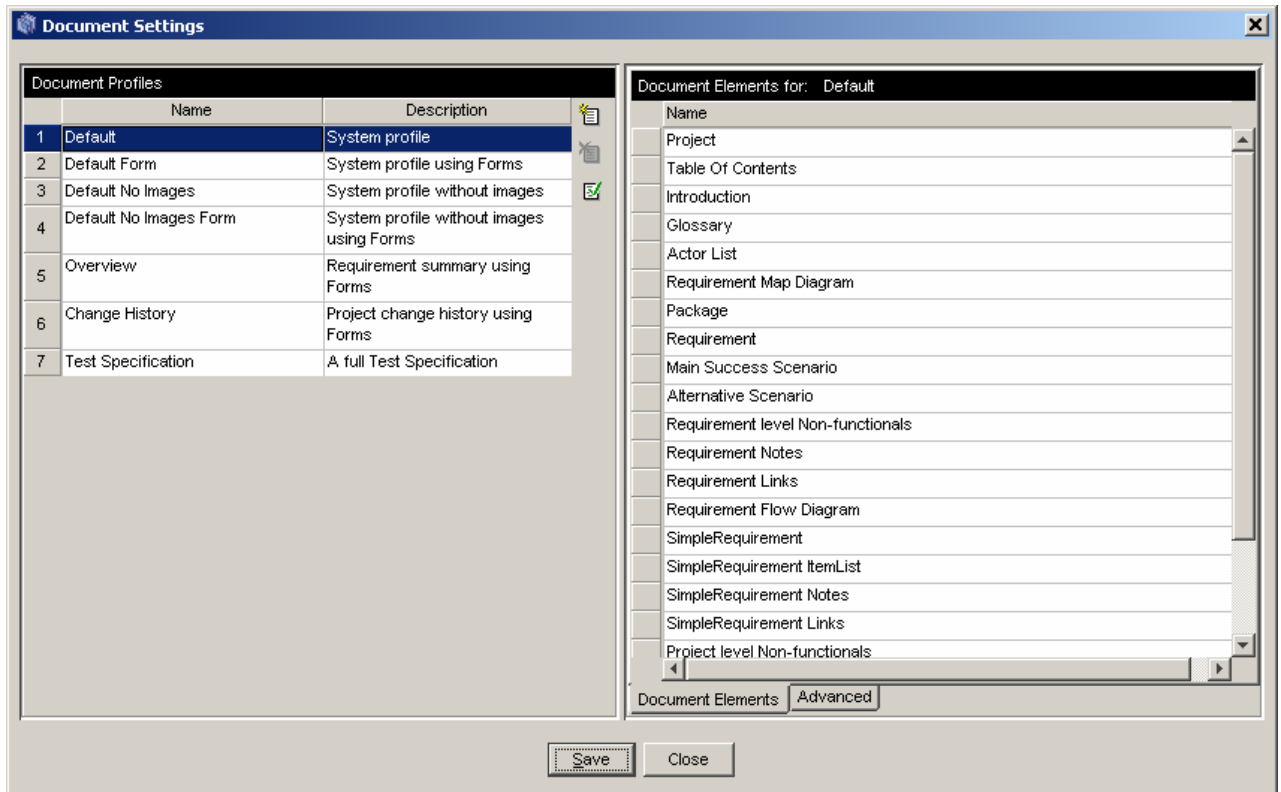

Figure 67 - Document Settings

Table 16 - Document Settings

Item	Description
Document profiles pane	
Name	Displays the names of your documents' profiles, e.g. Test Profile. To edit a document profile's name, click on its name in the text box to select it for editing. Then key in or edit the existing name.
Description	This is an optional longer description of your documents' profiles. To edit a document profile's description, click on its description in the text box to select it for editing. Then key in or edit the existing description.
Document Elements pane	
Incl.	You can check this Include box when a profile, other than the 'Default' profile is selected.
Name	Displays the names of the elements associated with your documents' profiles, e.g. Glossary. You cannot edit an element's name from here.

Advanced (Document Templates for: 'Default') pane	
File	Displays the names of the templates 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 Windows path to the template shown in 'File'. To edit a path, click on its description in the text box to select it for editing. Then key in or edit the existing description. Alternatively use the ⬚ option.
⬚	Click on this icon, and a Windows Explorer screen will appear. Use it to move to the template you want to associate with your profile.
�W	Click on the Word icon to edit the template.

14.2.1   Document Profiles pane

Use the Document Profiles pane shown in Figure 67 above, to maintain your Projects' document profiles and any elements and templates associated with them.

Enter your document profile details as per Table 16 above.

➢ To add a new document profile click on the Add a new document profile 🗐 icon.
➢ To delete a document profile, click on the Delete a document profile 🗐 icon.
➢ To validate a new document profile, click on the Validate a new profile document profile 🗹 icon.
➢ To save the document profile, click on the Save button.

Note: 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, however Optimal Trace™ Enterprise ships with some ready-to-use document profiles, see for Table 17 below, for details.

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 etc.

- 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.

14.2.2   Document Elements pane

Click on the Document Elements tab on the screen shown in Figure 67, to access the Document Elements pane, which allows you to maintain your Projects document profiles' elements.

Enter your document elements details as per Table 16 above.

➢ Click on the Save button.

14.2.3   Advanced (Document Templates) pane

Use the Advanced tab on the screen shown in Figure 67 above, to access the Document Templates pane shown in Figure 68 below, which allows you to maintain your Projects document profiles' templates.

Enter your document templates details as per Table 16.

➢ Click on the Save button.

When you have entered the name, and optionally the description of the profile then you may specify the templates that are to be used with the profile.

Note: Each profile has a set of Microsoft 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, uncheck the Includes box to the left of the template you want to omit. Optimal Trace™ Enterprise ships with some ready-to-use document templates; see Table 17, for details.

Here are some of the typical reasons for modifying a document template:

- **To use a customer's branding** - within 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. See Section 13.3 Editing the Requirements Document, for details about tags. Each of these tags specifies the data that will be generated from an Optimal Trace™ Enterprise Project.

Note: Compuware offers services to build custom profiles for your specific needs. For more

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details contact Compuware.

Table 17 - List of Document Settings shipped with Optimal Trace™ Enterprise

Document Profiles	
Template	**Meaning**
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 Word forms. Basically outputs all Project data and is branded with an Optimal Trace logo. To navigate through Word forms, press tab or page-down. For further information on forms, please refer to Microsoft help.
Default No Images	System profile without images.
Default No Images Form	System profile without images, using 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 (see section 15.4 Test Generation) and is primarily used by the QA and test stakeholders.

Document Elements			
Element	**Is Required**	**Dependency**	**Meaning**
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 Word Table of Contents. If this element is included Optimal Trace automatically inserts the TOC 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			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
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 Non-functional Requirements	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 Non-functional Requirements			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 Word Table Of Figures, for any images which exist in the document.
Document Templates			
Style Template			This .dot file is the Word template upon which the generated documents are based. It contains the front-page logo, styles, fonts, headers + footers, etc.

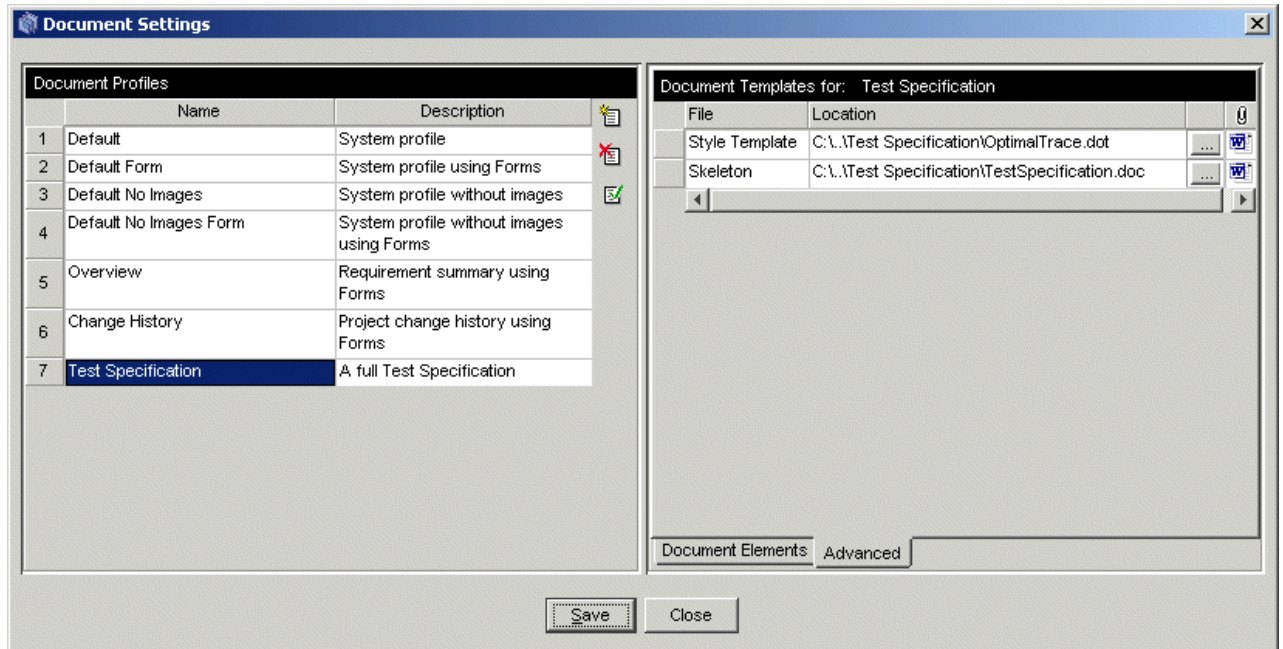| Skeleton			This .doc file is the Word document containing 'skeleton' versions of the Document Elements described above. These skeletons are copied into the output document and populated during the generation process.

Figure 68 - Document Settings - Test Specification Profile (Advanced Area for changing Detailed Format)

14.3   Changing the Document Logo

From the Document Settings screen select the profile desired. Using the "Advanced" tab edit the *Style Template.* To change the logo, remove the Compuware logo and paste the desired logo in its place. Subsequent document generated using this profile will contain the new logo.

14.4   Changing the Header and Footer

To change the header and footer of the output document, 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. See Figure 69

> ➢ Select the "View->header & Footer" menu item any changes made will be reflected in subsequent generated documents.

> ➢ Now delete the carriage returns to revert to a one page style document
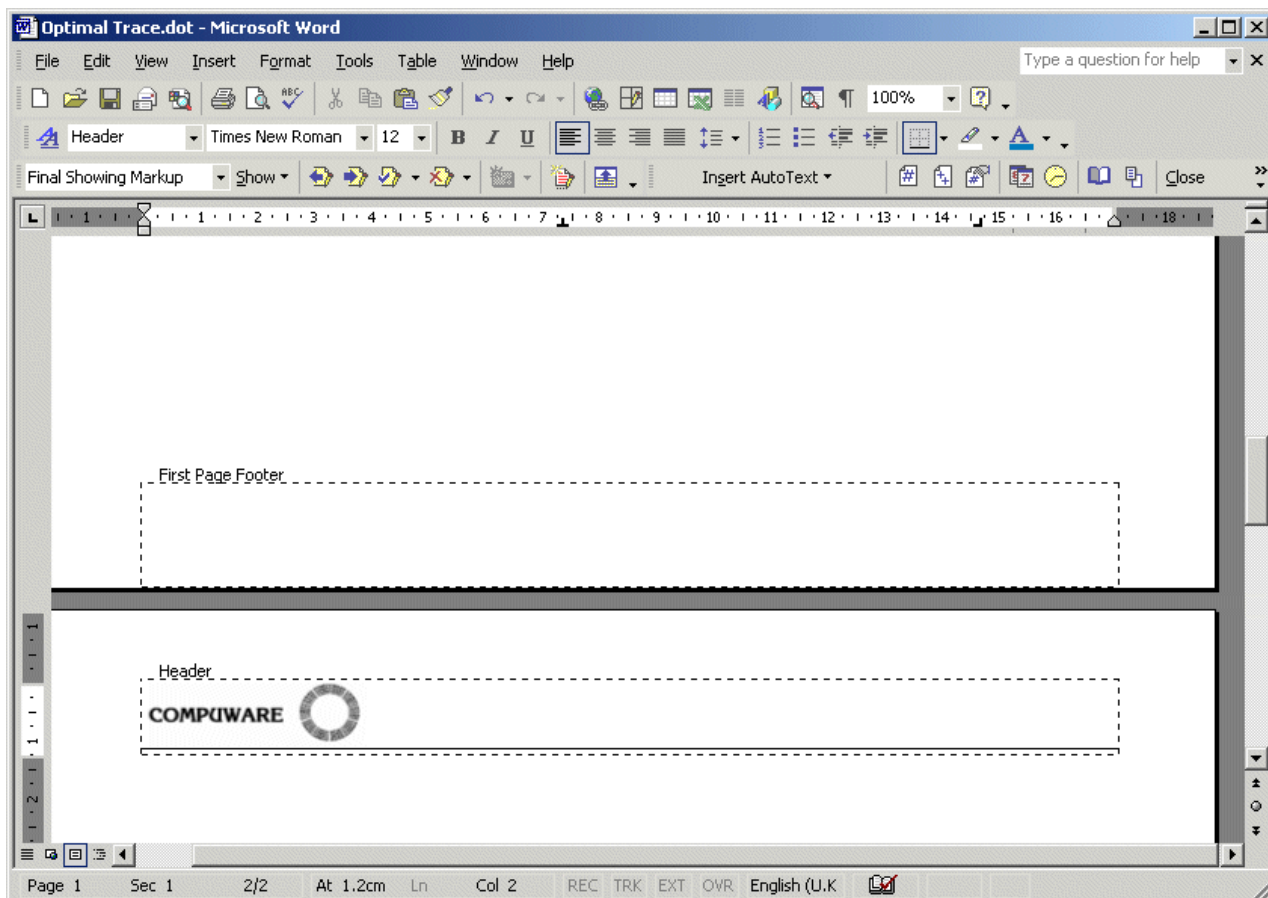
Figure 69 - Changing the Header and Footer

14.5   Outputting specific Custom Properties in Documents

Although Optimal Trace 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.

➢ Edit the Skeleton document by clicking on the ▣ in the 'Advanced' tab of the selected Document Profile.

You may at this time Add and Remove Custom Properties from the Profile. Additionally you may format tables.

14.5.1   Adding Custom Properties

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**
◆ **Non-functional Requirements**

Firstly position your cursor over the area that can accept custom properties. From a Word perspective, these areas always correlate with MS Word tables. A Word table exists for each of the Custom Property enabled elements.

Once you have positioned your cursor in a relevant MS Word table, in the Optimal Trace menu, click on the 'Insert Custom Property' menu option.

If your cursor is incorrectly positioned you will receive a message informing you of this. See Figure 70 - Cursor position bad for Custom Property entry

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.
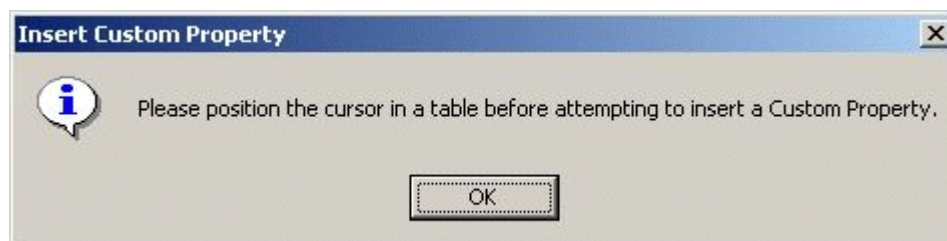

Figure 70 - Cursor position bad for Custom Property entry

You now enter the name of the Custom Property in the text entry area. The name must be exactly as appears in the originating Optimal Trace project. Additionally please note that the name is **case sensitive**, hence you should ensure that the names match exactly.

A screen appears prompting you to insert the name. See below Figure 71 - Inserting a Custom Property for an example of this.

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'.
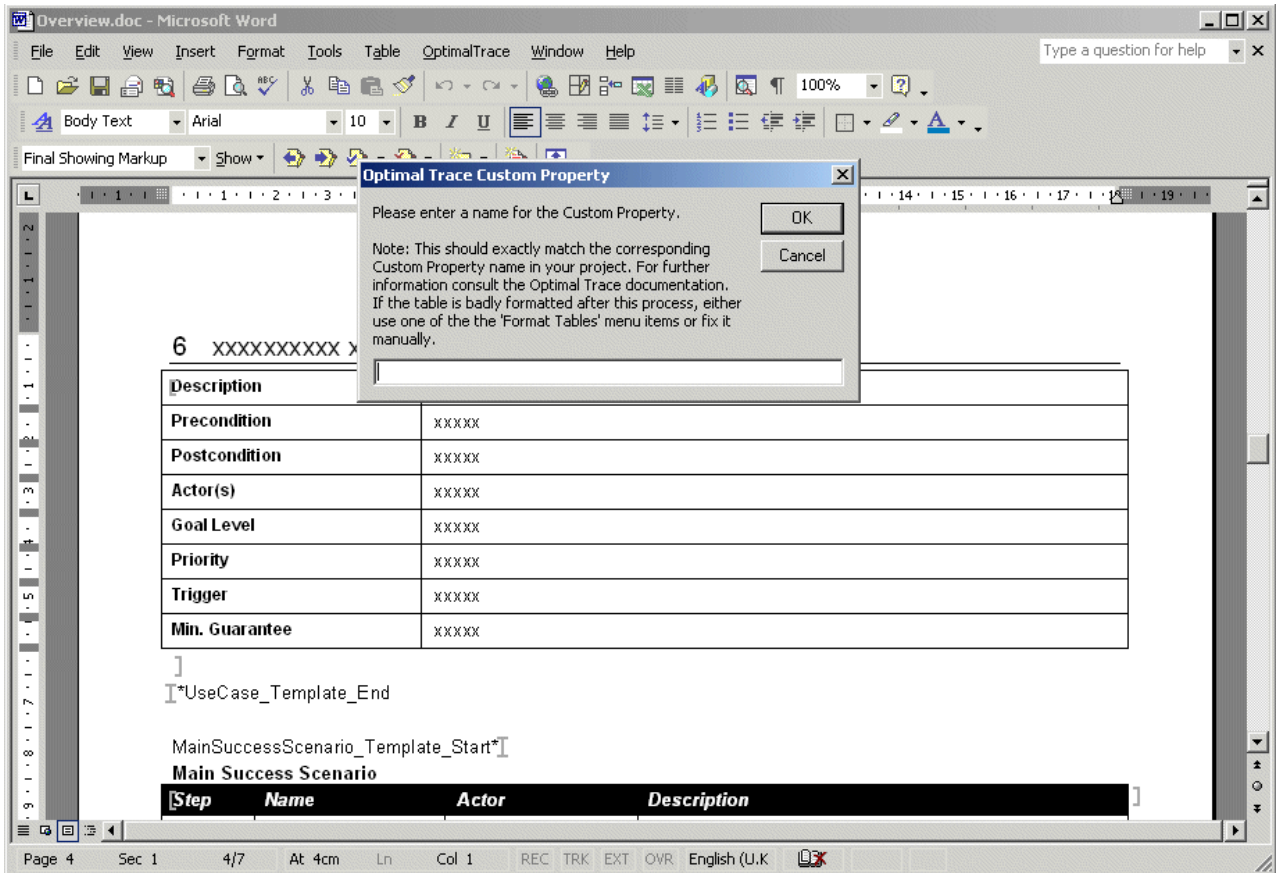

Figure 71 - Inserting a Custom Property for a Requirement

14.5.2   Delete Custom Properties

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

Once you have positioned your cursor in the relevant MS Word table, select the Optimal Trace menu and click on the 'Delete Custom Property' menu option.   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. See Figure 70 - Cursor position bad for Custom Property entry

14.5.3   Format Custom Property Tables

This option will re-format any tables in the document which 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 MS 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.

14.5.4   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, hit ctrl-A and then use this option.

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15 Tools Menu

Use this menu to access Optimal Trace™ Enterprise's tools.

> ➢ From the Menu bar, click on Tools

15.1 View All Change History Option

Use this option to audit what changes were made and by whom. This allows you 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.

See Section 6.4 Baselines, for details on how to baseline projects.

To view the changes:

> ➢ Click on Tools
> ➢ Click on View All Change History Option, and the screen shown in Figure 72 will appear.

You can also save the change history to a CSV file. These files can then be opened in Excel so that you can perform more advanced filtering or sorting depending on your needs. Click on the 'Save as' button to do this.

The number of changes displayed can be adjusted by setting the configurable option under 'Options >> General Options...' See 14.1.1 Tool Settings for more details.

Figure 72 - View All Change History screen

15.2   View Element History

You can also review a specific element's change history. Select the element in the Tree area and click on the [icon] 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 and opened in Excel.

15.3   View Traceability Tree Option

Optimal Trace 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 on the [icon] 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 Optimal Trace or non-Optimal Trace elements.

Where cross-project traces (links) exist you can automatically load the traced to element (& 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.

The options available in the Traceability Tree are identical to the Traceability Tab and are outlined in full detail in section: 9.2 Navigating the Trace Tree & Loading Projects

15.4   Generate Test Cases Option

In typical organizations, software testing accounts for between 30% and 50% of development cost.

The following capabilities are provided to support test generation in Optimal Trace Enterprise:

- ❑ 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.

Note: Test Types. To understand how Optimal Trace generates test plans, it is useful to outline the types of test artifacts that are generated. These are three test types; Project Level Non-Functional Test, Functional Test and Associated Non-Functional tests.

Project Level Non-Functional Tests

These tests result from iterating through the non-functional Requirements defined at the project level in the Optimal Trace 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.

15.4.1   Generating Test Cases for the entire Project

To generate test cases for the full project.

- ➢ Select the project in the Tree view

➢ Click on the [icon] button in the toolbar (or menu option), and the screen similar to that shown in Figure 73 appears.
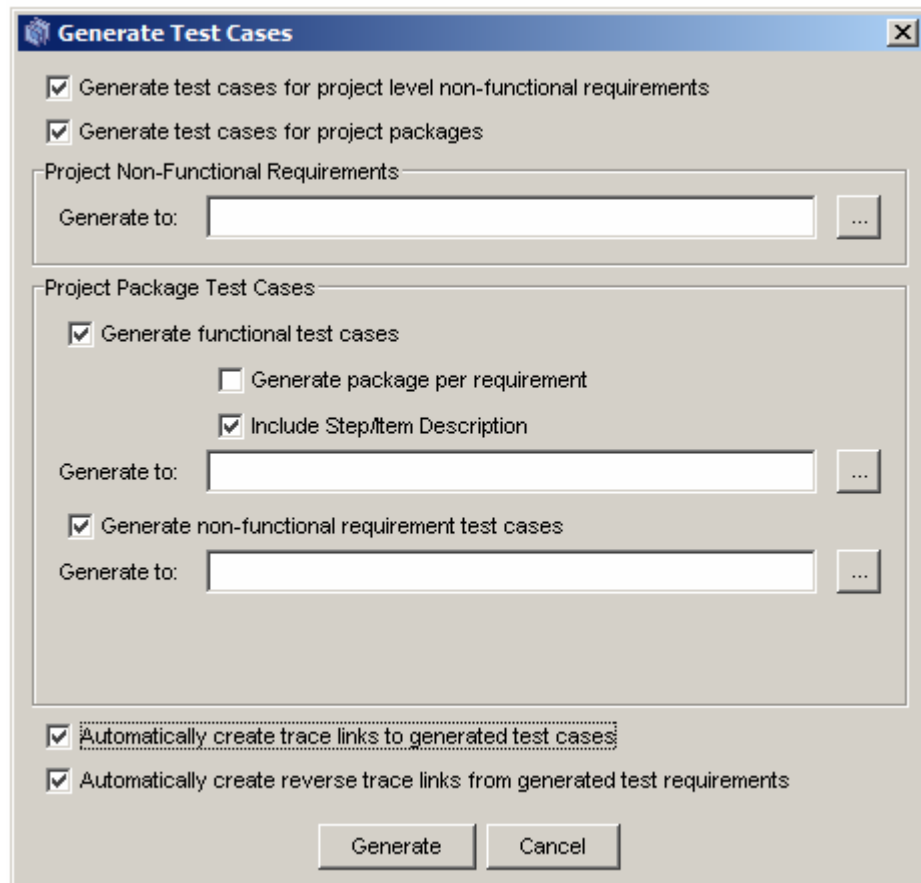

Figure 73 - Generating full Project Test Cases

15.4.1.1 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.
➢ Once you check this you specify the location of where the tests will be created by clicking the '...' button adjacent to the 'Generate to' field in the area titled 'Project non-functional requirements'
➢ A screen appears (see Figure 74) 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
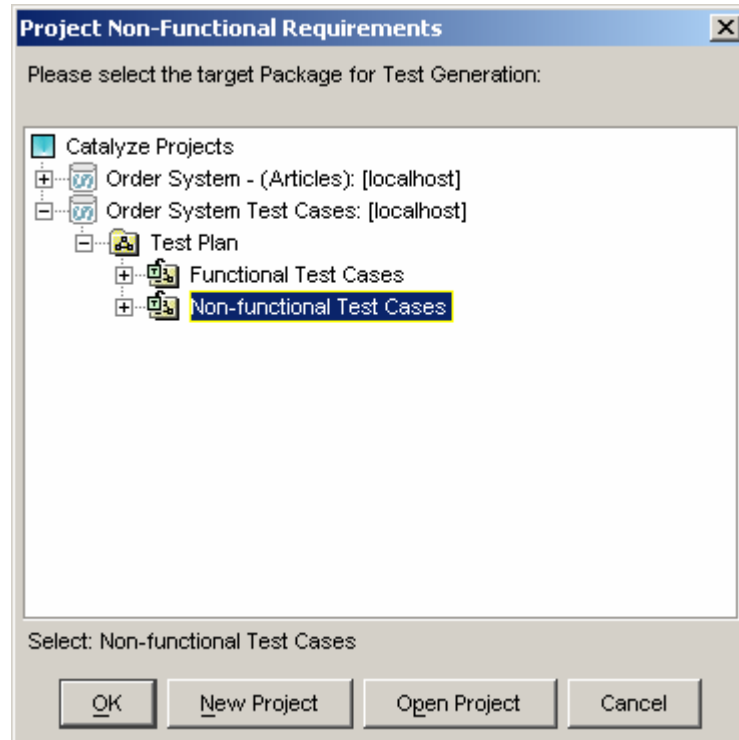
Figure 74 - Specifying the location for generated Test Cases

You may also elect to create a New Project or open an existing project at this time. See sections 6.1 New Project Option and 6.2 Open Project Option for more on these options.

15.4.1.2   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.

See section 15.4.2 for more detail on how Optimal Trace generates test cases for discrete requirements.

For functional test generation you may check two additional options, these are:

- 'Generate Package per Requirement'. This allows you 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.

15.4.1.3 Associated Non-functional Tests

➢ Check the 'Generate non-functional requirement test case' box to generate tests for each Non-Functional Requirement associated with the structured requirement.

> **Note:** In Optimal Trace 5.0, Non-Functional Requirements are deprecated. Users wishing to capture Non-Functional type requirements, should use Simple Requirements instead. See section 7.13 Simple Requirements Overview for more information.
>
> We recommend you uncheck this setting.

➢ 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 (see Figure 74) 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

15.4.1.4 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. (See section 7.3.2 Traceability Links for more on creating Optimal Trace Trace Links.).

Two options exist, 1. Create forward Trace Links to the generated Test Cases and 2. Create Reverse Trace Links from the generated Test Cases back to the originating Requirements. Check the 'Automatically create trace links to generated test cases' to auto-create forward links and check 'Automatically create reverse trace links from generated test requirements' to auto-create reverse links.

15.4.1.5 Generation

Once you hit 'Generate', a result screen is presented as in Figure 75 - Test Generation Results screen. You can observe from the results screen how:

▪ Each structured requirement maps to one or more Functional Test Cases in the destination location

▪ Each simple requirement is treated as a discrete test case in the destination location. Each Test Case generated becomes a Structured Requirement in the destination project.
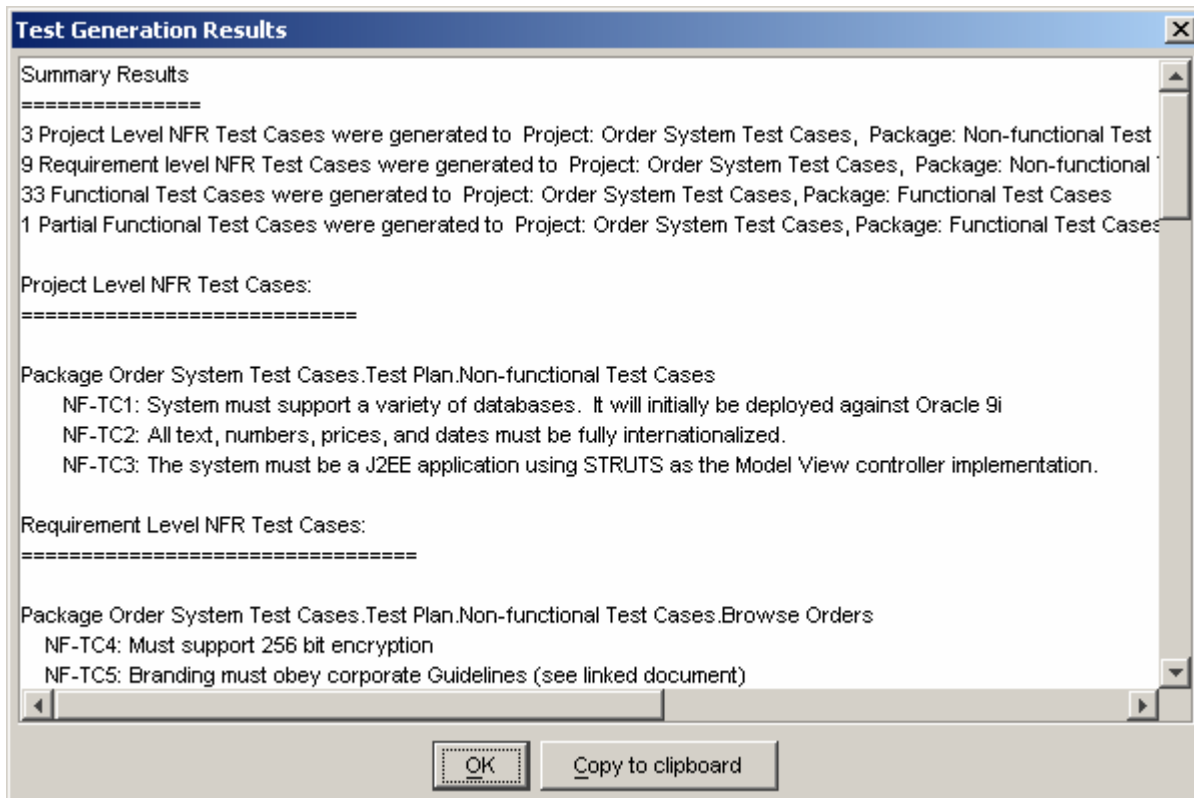
Figure 75 - Test Generation Results screen

15.4.2   How Optimal Trace interprets Tests from Structured Requirements

The core of the Optimal Trace Test Generation capability revolves around generation of functional test paths.

Note: Test Path Algorithm

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 set 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 alt 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.

15.4.3   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.

15.5   Merge Two Projects Option

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, e.g. Offshore Development Scenarios where locations are not connected by WAN and where two databases are being kept in synch.

To invoke the merge tool for two Projects:

➢ Click on Tools, then Merge Two Projects, and the screen shown Figure 76 will appear.
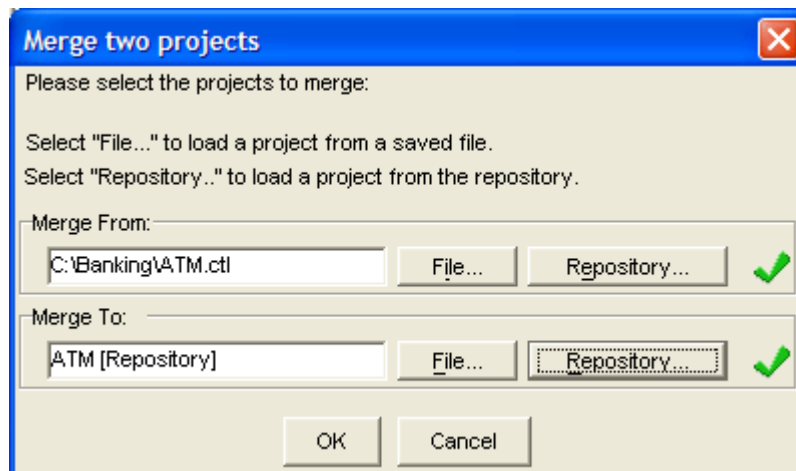

Figure 76 - Specify Two Projects to Merge screen

You can 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™ Enterprise will validate that the Project is correctly formatted and place a green tick next to the Project's name, as in Figure 76. Once you have the two Projects specified:

➢ Click on the OK button to begin the merge

➢ The Project Merge screen then appears. See section 19.4 Merging Projects for full details on Project Merging

15.6   Spell Check

The spell check option allows you to check the spelling in the current section of the project, or in the entire project.
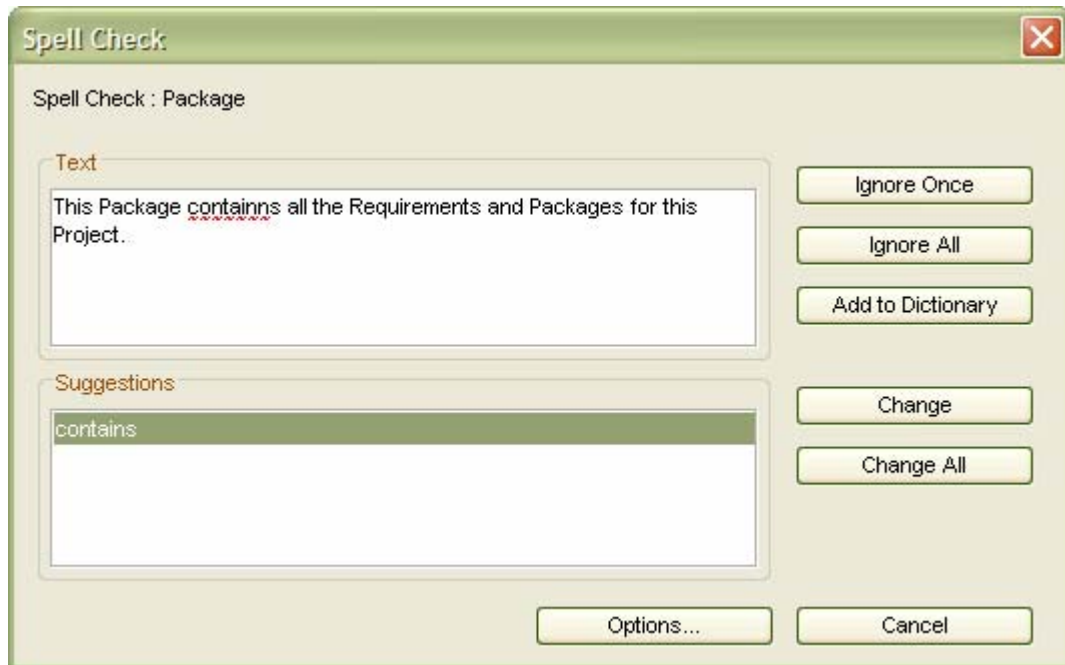

Figure 77 - Spell Check Dialog

The spell check dialog will highlight any incorrectly spelt words, and will suggest an alternative spelling. On this dialog the user has the following options:

- 'Ignore Once' this tells the spell check tool to ignore this instance of this spelling.
- 'Ignore All' this tells the spell check tool to ignore all instances of this spelling in the project.
- 'Add to Dictionary' this 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' will replace the current instance of the word with the selected word in the 'Suggestions' list.
- 'Change All' will replace 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.

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16 Window Menu

Use this menu to view which windows are already open and to open new windows.

- ➢ From the Menu bar, click on Window
- ➢ Click on New Window, and a new window will appear, where the list of currently open windows is displayed below the New Window menu item (Figure 78).
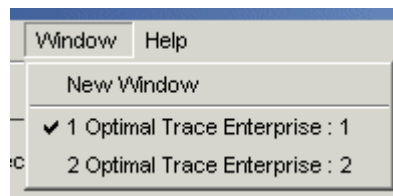
Figure 78 - Opening New Windows

Note: There are occasions where you might want to view different parts of the same Project or different Projects simultaneously.

Optimal Trace™ Enterprise offers the ability to open multiple Optimal Trace™ Enterprise windows, which share the same Project data. This option is used for:

- • Viewing areas of one or more Projects through several windows, assured that any changes made to one window are reflected across all windows.
- • Copying and pasting from one area of a Project to another area of the same Project.
- • Copying and pasting from one Project to another Project.

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17 Help Menu

Use this menu to access the Help file and to view Optimal Trace™ Enterprise content, Warranty, and Disclaimer information.

> ➢ From the Menu bar, click on Help, and the options described in the sections below will be made available.

17.1   Optimal Trace Help File Option

Use this option to access the Optimal Trace help documentation.

Depending on the setting entered under 'Options >> General Options…', (see section 14.1.1 Tool Settings for more) you will be presented with help either in PDF or HTML (web based) format.

17.2   About Option

Use this screen to learn about the Optimal Trace™ Enterprise application. This displays a screen with Optimal Trace™ Enterprise content, Warranty, and Disclaimer information. It may also refer to other products.

18 Optimal Trace Integrations into UML

Optimal Trace™ Enterprise provides separate plug-in integrations into the leading UML design tools; Compuware's OptimalJ, IBM/Rational Rose, Borland Together and Enterprise Architect. This means that you can be sure that the requirements are reflected correctly within the target design tool.

Detailed requirements specify what the system must do, whereas how the system will satisfy those requirements is typically reflected in a system design. In Object Oriented software development this design is typically captured in the UML (Unified Modeling Language) as use case diagrams, activity diagrams. It is important that the design matches the requirements.

Traceability from requirements to design and code is facilitated using the UML design tool plug-ins.

For full details about how Optimal Trace integrates see the relevant integration help files for OptimalJ, Borland Together or IBM/Rational Rose.

18.1.1 How Optimal Trace™ Enterprise maps to UML

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 Enterprise.

When exporting to UML Optimal Trace™ Enterprise maps elements; see Table 18, for details.

Table 18 - UML Optimal Trace™ Enterprise elements mapping

Icon	Meaning	UML equivalent	Note(s)
	Structured Requirement	Use Case	Optimal Trace Structured Requirements are semantically equivalent to the Use Case notion espoused in the UML
	Simple Requirement	Use Case	Optimal Trace Simple Requirements are semantically equivalent to the Use Case notion espoused in the UML
	Package	Package	
	Glossary Item	[Not mapped]	No UML equivalent
	Actor	Actor	
	Step		No UML equivalent
	Item		No UML equivalent

	Refinement	Represented as a Requirement Generalization relationship. • Optimal Trace™ Enterprise Requirement with Step => UML Super Use Case • Optimal Trace™ Enterprise Refined to Requirement => UML Sub Use Case	No UML equivalent for Refinement. Closest semantic equivalent is Requirement generalization
	Conditional Branch to a Requirement	Represented as an <<extend>> association between the participant Requirements. • Optimal Trace™ Enterprise Requirement with Step => UML Extended Use Case • Optimal Trace™ Enterprise Requirement that is branched to => UML Extending Use Case	
	Non-conditional Branch to a Requirement	Represented as an <<include>> association between the participant Requirements. • Optimal Trace™ Enterprise Requirement with Step => UML Use Case that is including • Optimal Trace™ Enterprise Requirement that is branched to => UML Included Use Case	

For full details about how Optimal Trace integrates see the relevant integration help files.

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19 Multi-User Support in Optimal Trace Enterprise

Optimal Trace™ Enterprise 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 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™ Enterprise 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.

19.1   Configuring Optimal Trace™ Enterprise to work through a Optimal Trace™ Server

If you want to create or edit a remote Project, you must tell Optimal Trace Enterprise where to find the Repository.

> ➢ From the Menu bar, click on Options

> ➢ General Options

> ➢ Server Settings, see Section 14.1.3 Server Settings for details.

Note 1: A given client can be set to point at a different Server by adjusting the server setting in the Options screen.

Note 2: If you do not already have a Repository Server on your network, you will need to install a copy of Optimal Trace™ Enterprise Server before you can use any of the Optimal Trace™ Enterprise collaboration facilities. See the Optimal Trace Enterprise Server user guide for full details on configuring a server.

19.2   Concurrency and locking

Typically, applications allow for only one user to edit a file at any point in time. For example, a 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™ Enterprise'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 remain 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; see Section 6.2 Open Project Option, for details. 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 (Figure 79).

> **Tip:** 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 on the other hand start editing a requirement you will acquire a 'lock' on the element and an unlocked padlock icon 🔓 appears next to your requirement.
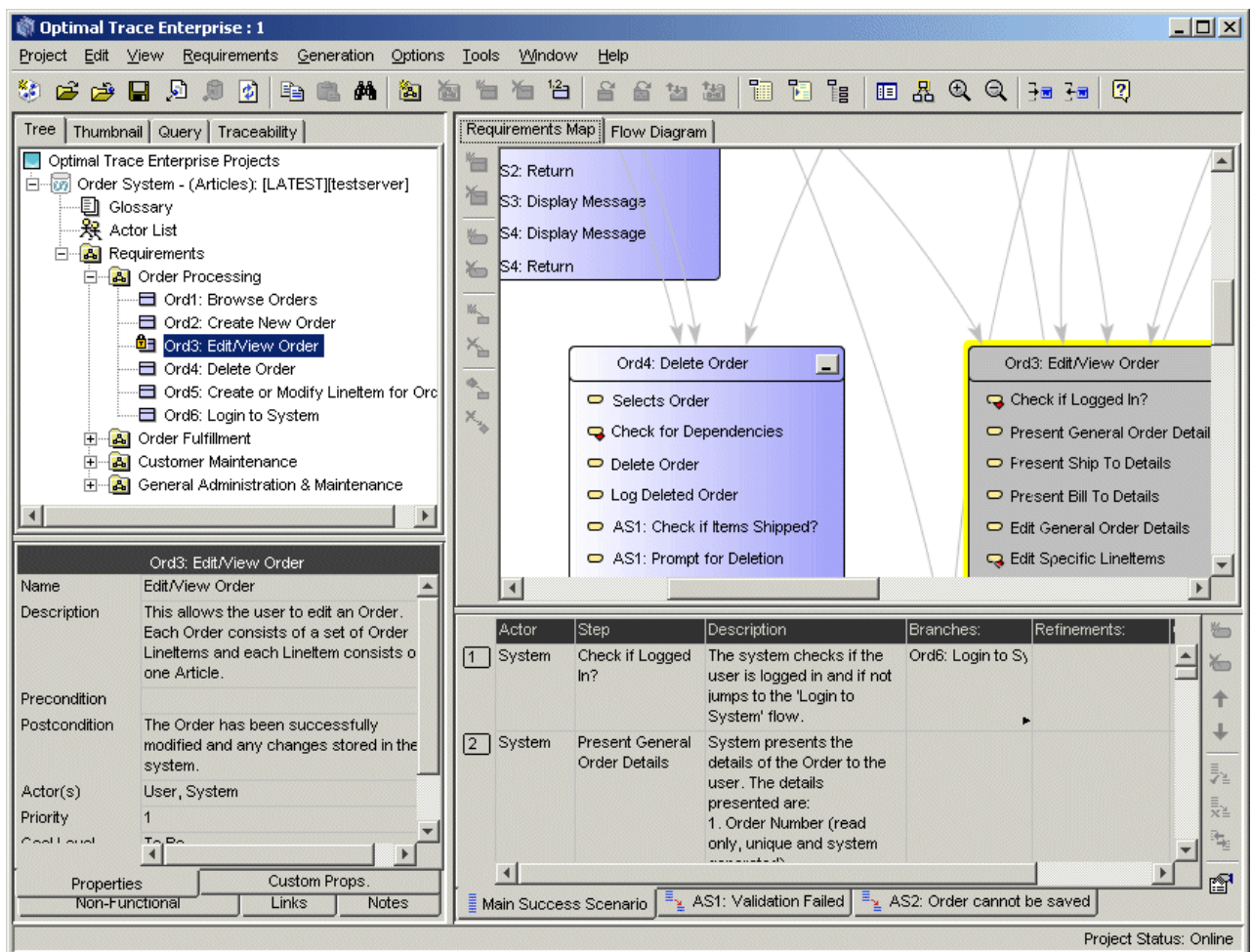

Figure 79 - A Requirement locked for editing

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. See the padlock opposite the Requirements number 'SR2', 'Withdraw Cash', indicating that someone else is editing that particular Requirement and it is locked.

19.3   Optimal Trace Locking Rules

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

Action	Effect
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	The 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
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)

Action	Effect
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, etc on a Requirement	Requirement and all reachable objects. If a users deletes a scenario with refined from steps we need to lock the refined to Requirement and so on…
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)
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.

19.4   Merging Projects with Optimal Trace Enterprise

The merge tool takes two Projects, labeled **From** and **To** and combines them into one Project labeled the **Result Version**, which will then 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 which exist 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'.

In the instance where the two merging Projects have the same name, the object that was edited most recently (evaluated based on Project timestamps) is chosen. In the instance where the two merging Projects have different names (e.g. merging two different Projects together), the choice of object is left to the user to choose via the Merge Tool.

There are additional rule that apply to every element of the project. These are outlined in detail in section
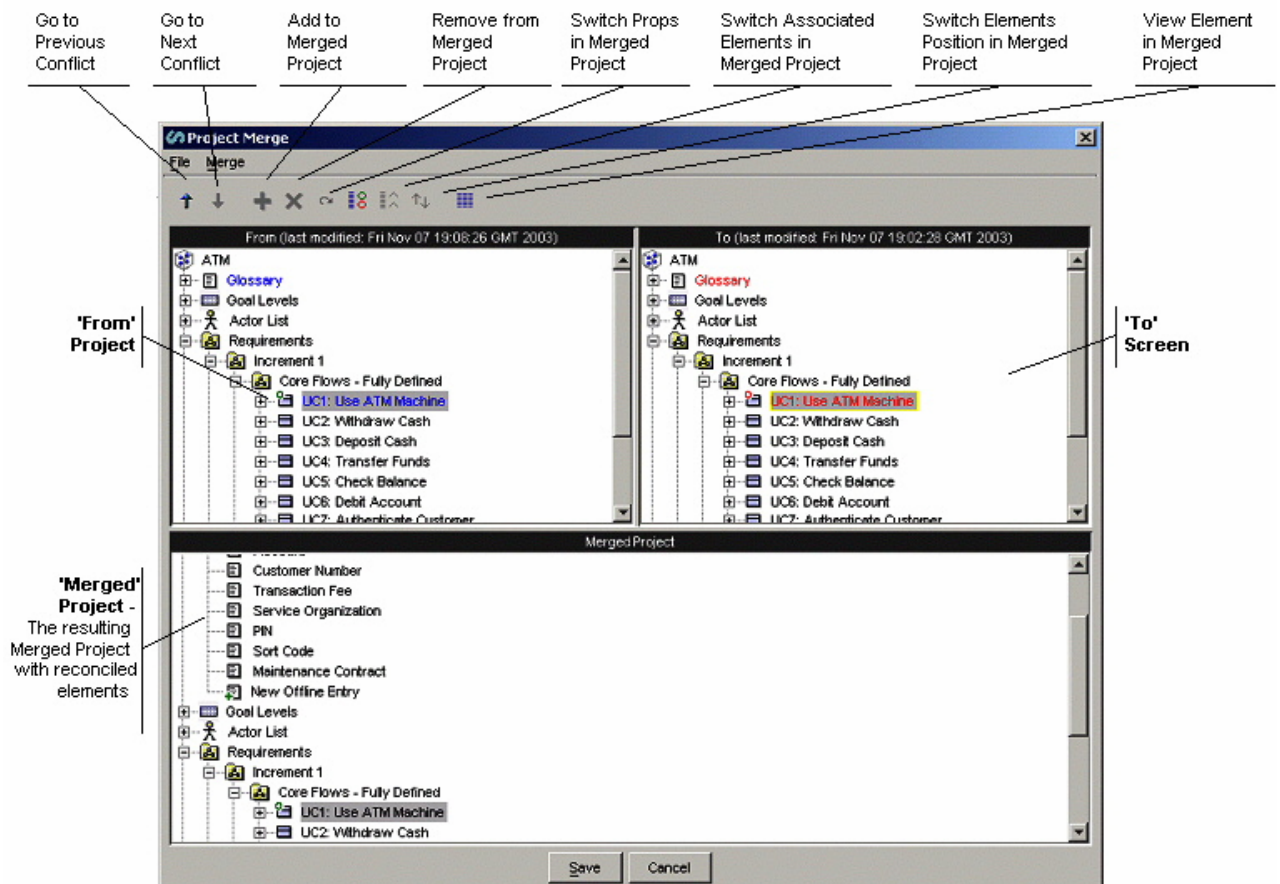
Figure 80 - The Project Merge screen showing general layout

The Merge Screen shown in Figure 80 shows all conflicts (differences) graphically so that you can decide how to resolve them on a one-to-one basis. When the Optimal Trace™ Enterprise Merge Screen initially shows, for every conflict detected, it accepts for inclusion in the Merged Project the most recently changed element.

In order to move up or down between conflicts on the Project Merge screen you may use the Up (↑) and Down (↓) buttons.

Click on the ▦ button to view the selected object's properties in the Result Project (with the exception of Packages) and the screen shown Figure 83 in will appear.

When Conflicts occur in the Merge Screen there can be one of a number of reasons. The next table outlines the meaning of the Visual Cues (Icons) that appear and explains the Conflict States when a specific button is enabled.

It should be noted that icons appear in the From and To projects as per the normal Tree View of the Optimal Trace™ Enterprise application, effectively **without any adornments such as pluses or circles**. In this instance, this signifies that an object of this type was found in each of the **From** and **To** and these were found to be identical, hence there is no change in the result Project.

Button Enabled	Element Adornment	Meaning	Description
+	-	"Add to Merged Project"	This means that the selected Element is available for addition to the merged project. Upon clicking this button, the selected element is added to the Merged Project.
✕	+	"Remove from Merged Project"	This means that the selected Element is available for removal from the merged project. Upon clicking this button, the selected element is removed from the Merged Project.
⬚	⬚ or ⬚	"Switch Properties in Merged Project"	This means that the selected Element has changes. These changes are at the 'property' level so for example in the case of a package this might be a name or description. Clicking this button brings up the list of detailed property differences. You can change which version of the properties are accepted into the Merged Project by hitting 1 or 2 once the detail screen shows.
⬚	⬚ or ⬚	"Switch Associated Elements in Merged Project"	This means that another Element that is Associated with this Element has changed (e.g. a Step Element can be associated with an Actor Element). You can change which Element is Associated with this Element by hitting the 1 or 2 buttons once in the details screen.
↑↓	⬚ or ⬚	"Switch Associated Elements in Merged Project"	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. **Note: Position switching is only allowed if no new elements are added/removed and if the number of elements are the same**
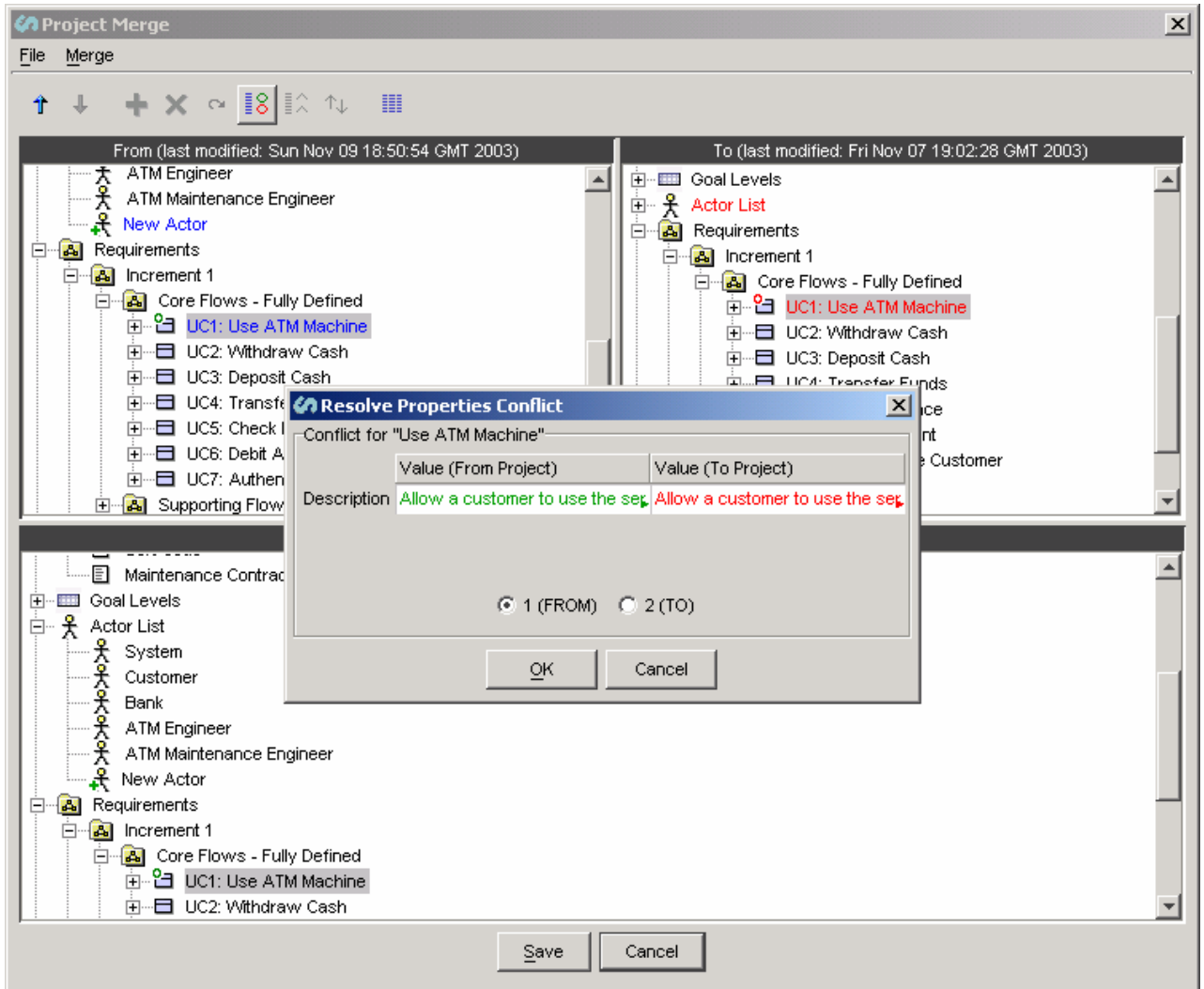
Figure 81 - Viewing a Property Conflict on this object's properties
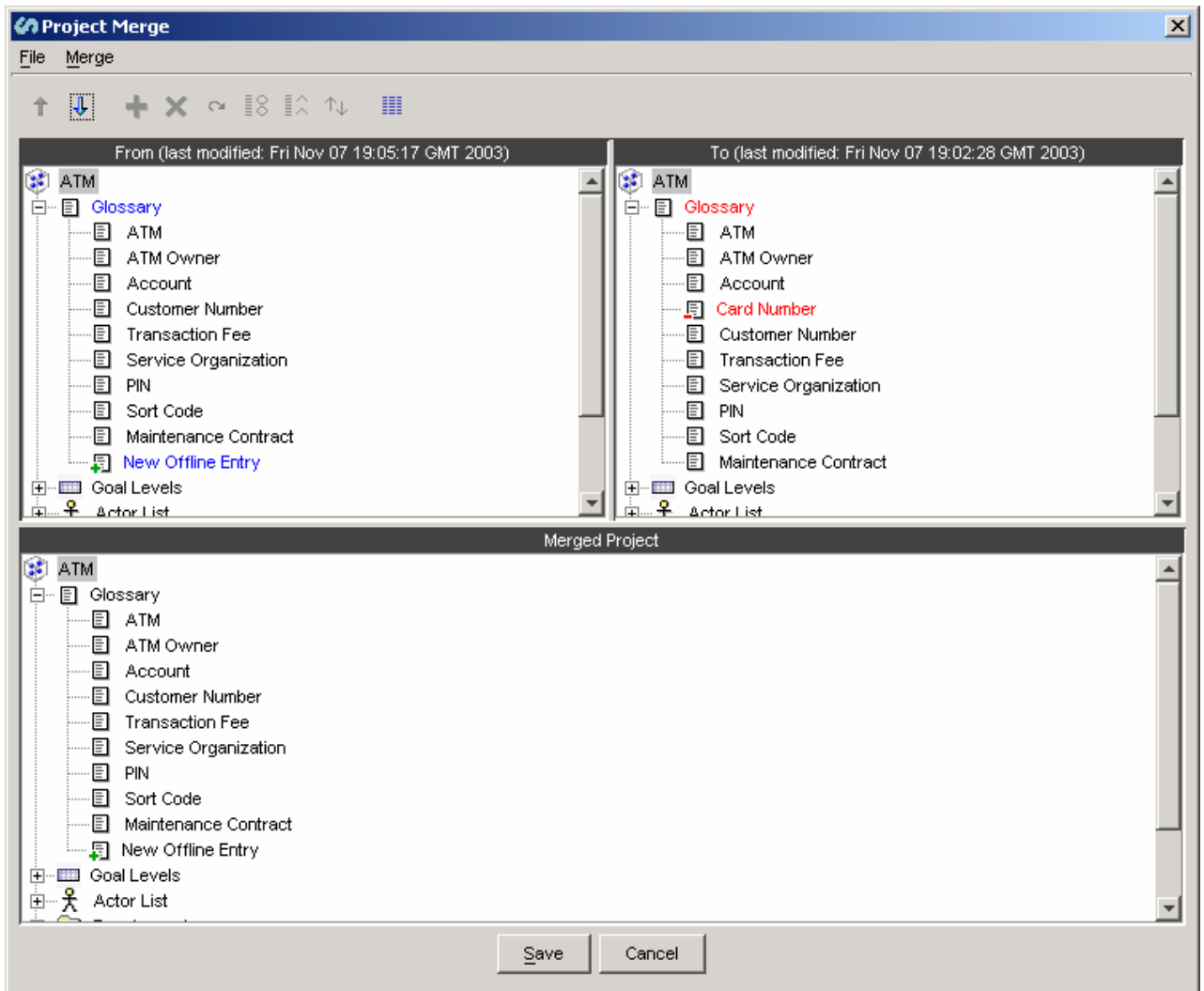
Figure 82 - Resolve an Addition or Subtraction in the Glossary
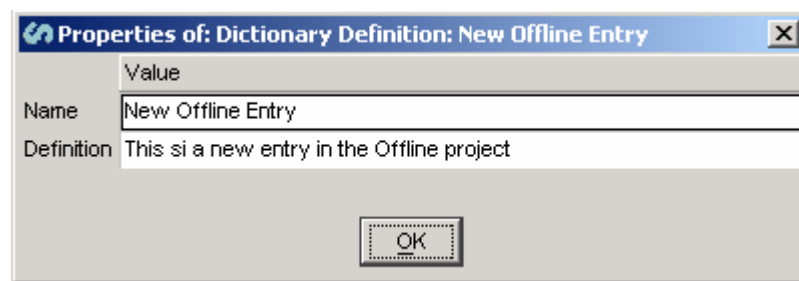
Figure 83 - Glossary Entry Properties

Once all outstanding merge conflicts have been resolved you can save the resulting merged Project (i.e. Merged Project):

> ➢ Click on the Save button on the Project Merge screen (Figure 80) and the two Projects with the result reflected as the 'Merged Project'.

19.5   Security and Access Control on Projects

Optimal Trace Enterprise 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.
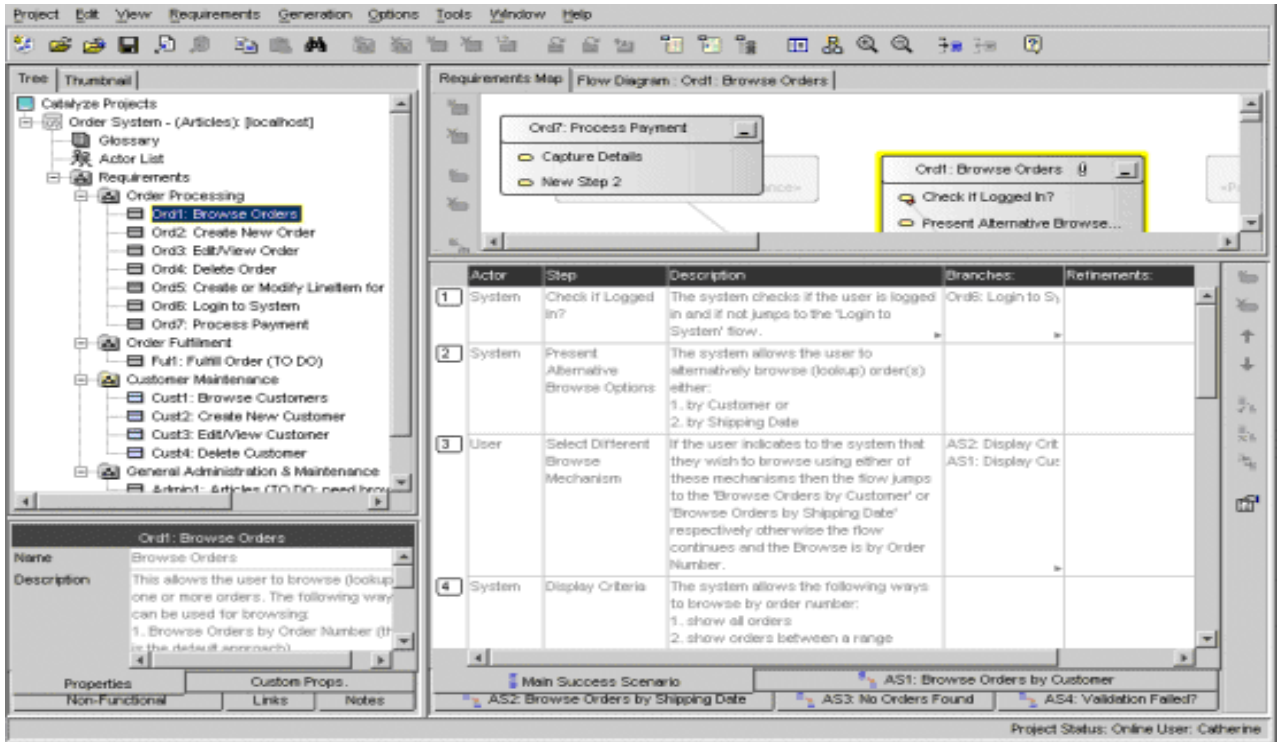
Some common usage scenarios where you might consider applying permissions are:

❑ 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.

An example screen showing a partially editable project is shown below in Figure 84 - Partially Editable Project.

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 help file.

Figure 84 - Partially Editable Project

20 Troubleshooting

When Optimal Trace™ Enterprise encounters problems a screen appears outlining the detail of the problem, e.g. see Figure 85.
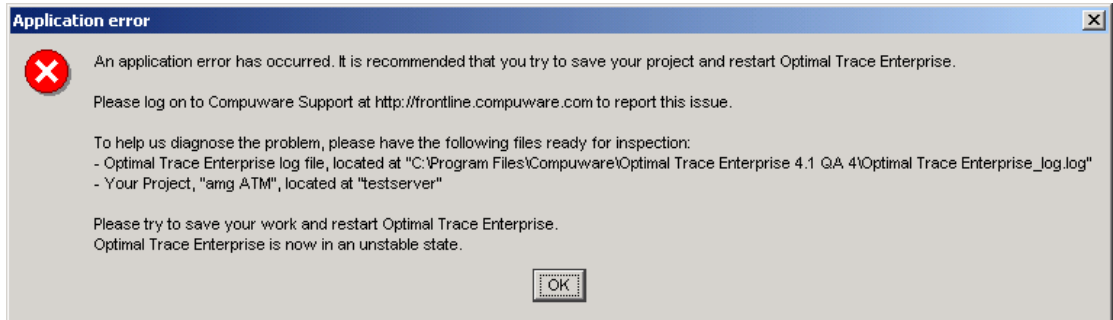
Figure 85 - Sample Optimal Trace™ Enterprise Error screen

When a problem does occur Optimal Trace recommends that you save any open Projects and close Optimal Trace™ Enterprise:

> ➢ Click on the OK button on the error screen
> ➢ 🖫 Click on the Save Project icon in the Tool bar.

Optimal Trace™ Enterprise 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 Optimal Trace™ Enterprise again, and open the Project, and normally you can be confidant that your application has recovered.

A second file, 'Optimal Trace Enterprise_log' is always maintained in the "C:\Documents and Settings\<userprofile>\Application Data\Compuware\<OptiomalTraceVersion>\" directory. This is a text file generated by Optimal Trace™ Enterprise and used to collect useful information and error conditions.

In all instances where an error screen such as the one shown in Figure 85 appears, you should report the circumstances and description of the failure to Optimal Trace support. See Section 1.4 Contacting Optimal Trace Customer Support, for details. You should also include, if possible:

- The Project .ctl file causing the problem. If the project is a repository project take the project offline.
- The 'Optimal Trace Enterprise_log' file.

Note: If you are working with Optimal Trace Enterprise Server, ask your System

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Administrator to check the Server logs and to send them also, to Optimal Trace support.

21 Licensing and Upgrading Optimal Trace™ Enterprise

This section describes how you license and upgrade the Optimal Trace™ Enterprise application.

21.1   Evaluating Optimal Trace Enterprise

Optimal Trace can be evaluated for a specific period of time without a license key. When you first run Optimal Trace Enterprise you do not require a license therefore.

The evaluation period is calculated from the time of first usage, in other words from the initial running of Optimal Trace

Once this period of time elapses you **must** either purchase a full license or else apply for an extension key. See section 1.4 Contacting Optimal Trace Customer Support for more details on how to contact Compuware support.

21.2   Licensing the application fully or using an extended evaluation license key

Aside from the initial evaluation period as outlined in the previous section, Optimal Trace™ Enterprise requires a license to run. Optimal Trace 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 >> Index…' menu option.

21.3   Upgrading from a previous release

If upgrading from Optimal Trace 4.1, you will need to install new licenses for Optimal Trace 5.0 into the LAU in order to run Optimal Trace 5.0. See section 1.4 Contacting Optimal Trace Customer Support for details on how to contact Compuware support.

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Appendix A ©Optimal Trace™ Enterprise Shortcut Keys

This appendix contains Optimal Trace™ Enterprise Shortcut Keys details for your convenience.

Table 19 - Optimal Trace™ Enterprise Shortcut Keys

Option	Shortcut Keys
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 Optimal Trace™ Enterprise	Ctrl+E
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

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Option	Shortcut Keys
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

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Appendix   B Glossary of Terms

This appendix contains a Glossary of Optimal Trace™ Enterprise Terms as used in this document and their relationship to each other (Table 20 below).

Table 20 – Glossary of Terms

Item	Sub-item	Description
Software		The software Packages provided by Compuware and third party suppliers.
	Optimal Trace™ Enterprise	The requirements capture and management tool for teams of Business Analysts, Systems Analysts and Project Managers.
	Optimal Trace™ Enterprise Server	Optimal Trace's Repository manager for Projects and qualified assets that manages communication between other tools and the Repository database on a Repository Server machine.
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 (customers etc.) or other systems (data feeds etc.)
Project		A set of requirements (i.e. collections of Requirements, Actors, Glossaries, Notes, Links, functional requirements, Non-functional requirements, etc.).
	Local Project	A Project that is stored locally (e.g. on your hard-disk); typically a single user installation.
	Repository Project	A Project that is stored in the Repository requiring a 'live' connection to it. It may be may be in another country. Typically provides for multiple concurrent users with a common goal.
	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.
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.
	Item	An Item is essentially a name and a description. Items allow for a tabular set of information associated with a simple 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).

Item	Sub-item	Description
	External Requirement	A Requirement that is triggered by an external Actor.
	Internal Requirement	A Requirement that is not triggered by an Actor and is invoked by either an 'extends' or 'includes' relationship.
	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.
Scenario		Any sequence of actions (Steps). Optimal Trace™ Enterprise allows for two types of scenario, i.e. Main Success Scenario (MSS), Alternative Scenario (AS).
	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.
	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.
	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.
	Concrete Step	A concrete Step is a Step that does not have any refinements.
	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.
	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.
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™ Enterprise ships with some ready-to-use document profiles, see Table 17 above, for details.
	Template	Generate Project documents using preformatted templates, via the documents Profiles facility.
Goal Level		Requirements can be classified as being of a certain goal-level thus clarifying to a large extent the audience of the Requirement. See 'Default Requirement Goal Level' in Table 12 on page 135, for details. *The concept of Goal-Levels is borrowed from the work of Alistair Cockburn [1].*
Round-tripping		If you have been working with copies of Optimal Trace™ Enterprise generated documents, away from the Project, you can re-incorporate any changes you have made into the Project copies. This is called 'round-tripping in Optimal Trace™ Enterprise.

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