
PeopleTools 8.61: Change Impact Analyzer

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Preface

Understanding the PeopleSoft Online Help and PeopleBooks

The PeopleSoft Online Help is a website that enables you to view all help content for PeopleSoft applications and PeopleTools. The help provides standard navigation and full-text searching, as well as context-sensitive online help for PeopleSoft users.

Hosted PeopleSoft Online Help

You can access the hosted PeopleSoft Online Help on the [Oracle Help Center](#). The hosted PeopleSoft Online Help is updated on a regular schedule, ensuring that you have access to the most current documentation. This reduces the need to view separate documentation posts for application maintenance on My Oracle Support. The hosted PeopleSoft Online Help is available in English only.

To configure the context-sensitive help for your PeopleSoft applications to use the Oracle Help Center, see [Configuring Context-Sensitive Help Using the Hosted Online Help Website](#).

Locally Installed PeopleSoft Online Help

If you're setting up an on-premises PeopleSoft environment, and your organization has firewall restrictions that prevent you from using the hosted PeopleSoft Online Help, you can install the online help locally. Installable PeopleSoft Online Help is made available with selected PeopleSoft Update Images and with PeopleTools releases for on-premises installations, through the [Oracle Software Delivery Cloud](#).

Your installation documentation includes a chapter with instructions for how to install the online help for your business environment, and the documentation zip file may contain a README.txt file with additional installation instructions. See *PeopleSoft 9.2 Application Installation* for your database platform, "Installing PeopleSoft Online Help."

To configure the context-sensitive help for your PeopleSoft applications to use a locally installed online help website, see [Configuring Context-Sensitive Help Using a Locally Installed Online Help Website](#).

Downloadable PeopleBook PDF Files

You can access downloadable PDF versions of the help content in the traditional PeopleBook format on the [Oracle Help Center](#). The content in the PeopleBook PDFs is the same as the content in the PeopleSoft Online Help, but it has a different structure and it does not include the interactive navigation features that are available in the online help.

Common Help Documentation

Common help documentation contains information that applies to multiple applications. The two main types of common help are:

- Application Fundamentals

- Using PeopleSoft Applications

Most product families provide a set of application fundamentals help topics that discuss essential information about the setup and design of your system. This information applies to many or all applications in the PeopleSoft product family. Whether you are implementing a single application, some combination of applications within the product family, or the entire product family, you should be familiar with the contents of the appropriate application fundamentals help. They provide the starting points for fundamental implementation tasks.

In addition, the *PeopleTools: Applications User's Guide* introduces you to the various elements of the PeopleSoft Pure Internet Architecture. It also explains how to use the navigational hierarchy, components, and pages to perform basic functions as you navigate through the system. While your application or implementation may differ, the topics in this user's guide provide general information about using PeopleSoft applications.

Field and Control Definitions

PeopleSoft documentation includes definitions for most fields and controls that appear on application pages. These definitions describe how to use a field or control, where populated values come from, the effects of selecting certain values, and so on. If a field or control is not defined, then it either requires no additional explanation or is documented in a common elements section earlier in the documentation. For example, the Date field rarely requires additional explanation and may not be defined in the documentation for some pages.

Typographical Conventions

The following table describes the typographical conventions that are used in the online help.

<i>Typographical Convention</i>	<i>Description</i>
Key+Key	Indicates a key combination action. For example, a plus sign (+) between keys means that you must hold down the first key while you press the second key. For Alt+W , hold down the Alt key while you press the W key.
. . . (ellipses)	Indicate that the preceding item or series can be repeated any number of times in PeopleCode syntax.
{ } (curly braces)	Indicate a choice between two options in PeopleCode syntax. Options are separated by a pipe ().
[] (square brackets)	Indicate optional items in PeopleCode syntax.
& (ampersand)	When placed before a parameter in PeopleCode syntax, an ampersand indicates that the parameter is an already instantiated object. Ampersands also precede all PeopleCode variables.

<i>Typographical Convention</i>	<i>Description</i>
⇒	This continuation character has been inserted at the end of a line of code that has been wrapped at the page margin. The code should be viewed or entered as a single, continuous line of code without the continuation character.

ISO Country and Currency Codes

PeopleSoft Online Help topics use International Organization for Standardization (ISO) country and currency codes to identify country-specific information and monetary amounts.

ISO country codes may appear as country identifiers, and ISO currency codes may appear as currency identifiers in your PeopleSoft documentation. Reference to an ISO country code in your documentation does not imply that your application includes every ISO country code. The following example is a country-specific heading: "(FRA) Hiring an Employee."

The PeopleSoft Currency Code table (CURRENCY_CD_TBL) contains sample currency code data. The Currency Code table is based on ISO Standard 4217, "Codes for the representation of currencies," and also relies on ISO country codes in the Country table (COUNTRY_TBL). The navigation to the pages where you maintain currency code and country information depends on which PeopleSoft applications you are using. To access the pages for maintaining the Currency Code and Country tables, consult the online help for your applications for more information.

Region and Industry Identifiers

Information that applies only to a specific region or industry is preceded by a standard identifier in parentheses. This identifier typically appears at the beginning of a section heading, but it may also appear at the beginning of a note or other text.

Example of a region-specific heading: "(Latin America) Setting Up Depreciation"

Region Identifiers

Regions are identified by the region name. The following region identifiers may appear in the PeopleSoft Online Help:

- Asia Pacific
- Europe
- Latin America
- North America

Industry Identifiers

Industries are identified by the industry name or by an abbreviation for that industry. The following industry identifiers may appear in the PeopleSoft Online Help:

- USF (U.S. Federal)

- E&G (Education and Government)

Translations and Embedded Help

PeopleSoft 9.2 software applications include translated embedded help. With the 9.2 release, PeopleSoft aligns with the other Oracle applications by focusing our translation efforts on embedded help. We are not planning to translate our traditional online help and PeopleBooks documentation. Instead we offer very direct translated help at crucial spots within our application through our embedded help widgets. Additionally, we have a one-to-one mapping of application and help translations, meaning that the software and embedded help translation footprint is identical—something we were never able to accomplish in the past.

Using and Managing the PeopleSoft Online Help

Select About This Help in the left navigation panel on any page in the PeopleSoft Online Help to see information on the following topics:

- Using the PeopleSoft Online Help.
- Managing hosted Online Help.
- Managing locally installed PeopleSoft Online Help.

PeopleTools Related Links

[PeopleTools 8.61 Home Page](#)

[PeopleSoft Search and Insights Home Page](#)

“PeopleTools Product/Feature PeopleBook Index” (Getting Started with PeopleTools)

[PeopleSoft Online Help](#)

[PeopleSoft Information Portal](#)

[PeopleSoft Spotlight Series](#)

[PeopleSoft Training and Certification | Oracle University](#)

[My Oracle Support](#)

[Oracle Help Center](#)

Contact Us

Send your suggestions to pssoft-infodev_us@oracle.com.

Please include the applications update image or PeopleTools release that you’re using.

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	<u>Watch PeopleSoft on YouTube</u>
	<u>Follow @PeopleSoft_Info on X.</u>
	<u>Read PeopleSoft Blogs</u>
	<u>Connect with PeopleSoft on LinkedIn</u>

Getting Started with Change Impact Analyzer

Understanding Change Impact Analyzer

Change Impact Analyzer is a tool installed separately from PeopleSoft PeopleTools that helps you determine the impact of specific changes you plan to make during an application upgrade. It's an interactive program where you can see the relationships of PeopleSoft definitions in a hierarchical view.

Change Impact Analyzer displays several views of analyses in tabular and text views. It's delivered with a set of *rules* that are used to determine the relationships between definitions. Typically, these rules are written in SQL.

Note: Change Impact Analyzer includes some rules written in Java, however, the interface to write custom Java rules is not generally available.

You can add custom rules to the rules files, if needed, to assess the impact of additional relationships.

Rules define the impact or effect on definition(s) when another definition changes. For example, if a database field changes, it would impact the record containing that field.

Oracle provides three rule sets, which are related groups of rules, in Change Impact Analyzer. The rule sets are:

- Basic Impact Analysis, which includes the most frequently used rules.
- Impact Analysis, which includes more rules for more in-depth analysis.
- References Only, which includes all rules.

See [Working with Rules Files](#).

You can add or remove rules from these rule sets, or you can create new rule sets.

Types of Impact

When you consider the tasks involved in upgrading software or applying change packages, you want to know about the impact to your existing system. There are various types of impacts, for example:

- Structural impacts

These could be impacts such as how a change to a field type or its properties could affect the structure of a record. Making changes to a field without considering its affect on the related record may cause runtime errors. Therefore, a developer analyzing the impact of a field change can prevent unforeseen errors during an upgrade.

- Behavioral impacts

These could be impacts such as changing a common library PeopleCode program called by other PeopleCode programs may affect the behavior of the calling program. In this case, Change Impact Analyzer would note that the calling PeopleCode is affected by the change to the library PeopleCode.

Likewise, if a PeopleCode program writes to a field, the PeopleCode program impacts the field. Knowing this kind of relationship can help developers determine what other changes need to be made and help create a test strategy for the changes.

In typical PeopleSoft applications, there are a large number of relationships between definitions. Therefore, when Change Impact Analyzer performs an impact analysis, it generates a huge amount of data—more than what may be useful to work with. Consequently, it's important for you to determine the relevance of the relationships you want to analyze.

Change Impact Analyzer provides various features to make the impact searches more relevant. For example,

- Selecting the rule set(s) to be used, which determines specific rules.
- You can specify search paths, which cause a selective recursive analysis to be performed.
- Executing an analysis for the impact of one definition on another allows you to manually explore specific relationships.
- Using directed analysis, Change Impact Analyzer executes multiple search path analyses. When finished, it automatically produces a report, which can be filtered to allow further relevance.

Securing Change Impact Analyzer

Change Impact Analyzer uses rules files to perform analysis. Rules can be coded in SQL or Java and reside in a local directory. A potential vulnerability exists if the rules files are replaced by files that could have a negative impact on the system or database.

This situation is not unlike any batch file or script that can be run against a database. If these scripts are manipulated, unintended results could occur. Therefore, the Change Impact Analyzer rules files should be secured as you would secure any other potential database-modifying script file.

Change Impact Analyzer does require that the user enter a password to logon to the database. The passwords are not persisted, and are encrypted while they are in memory. However, there is an exception to this in the option to override a default JDBC connection string. A user could specify their own connection string that may contain a hard-coded user ID or password or both.

To alleviate this possible security weakness:

- Placeholders such as <<user ID>> and <<password>> can be used. At runtime, Change Impact Analyzer substitutes the actual logon user ID and password.
- The connection string is encrypted when the system saves it to the cia.properties file.

Oracle recommends that database administrators assign user IDs and passwords that grant read-only access to the database. However in all cases, database administrators need to assign create and write access to the File preprocessor tables and the PeopleCode preprocessor tables.

Analyzing Change Packages

Change Impact Analyzer can open a change package, read the definition names within it, and analyze these definitions in the selected database. Oracle recommends that you do this for a quick estimate only, because applying a change package may alter relationships.

The best method is to apply a change package to a copy of your database, then select definitions from either a project or the change package, and run the analysis.

Installing Change Impact Analyzer

You must install Change Impact Analyzer separately from PeopleSoft PeopleTools.

If your database type is Oracle, JDBC drivers are automatically installed for you. If your application database is not Oracle, you must download and install the JDBC Type 4 driver for your database.

Note: Change Impact Analyzer cannot work with DB2 JDBC DRIVER 3.0. DB2 JDBC DRIVER 4.0 must be downloaded and selected for Installing Change Impact Analyzer of 8.57. This issue is for z/OS platforms and has no impact on Oracle and SQL Server platforms.

See the product documentation for *PeopleSoft 9.2 Application Installation* for your database platform.

Configuring Database Connectivity

After installation and before you execute the Change Impact Analyzer, you must configure the connectivity to your database.

See [Configure Connectivity](#).

Configuring Rules Files

The default rules files are configured when Change Impact Analyzer is installed. You only need to configure them if you are using your own rules files.

See [Working with Rules Files](#).

Running the PeopleCode and File Pre-processors

These processes create certain tables that Change Impact Analyzer needs to perform an analysis. If you want to analyze PeopleCode referencing other PeopleCode, you must run the PeopleCode pre-processor before you can execute the Change Impact Analyzer. Likewise, if you want to include SQR, COBOL, DMS, or SQL files that reference definitions, you must run the File pre-processor.

See [PeopleCode Pre-Processor](#).

Setting Report Options

Change Impact Analyzer is delivered with default report options. However, you can specify various report options suited to your application.

Related Links

[Setting Reporting Options](#)

Using Change Impact Analyzer

After connecting to the database, you open a new or existing workspace from the File menu. Then you can select the type of analysis you want Change Impact Analyzer to execute. You can view the results on screen or have them written to a text, Excel, or HTML file.

Using the Rules Editor

If you need specific rules beyond those that are delivered, you can create your own rules and rules file. You should save any modifications you make to rules in your own rules file. Otherwise, your changes will be overwritten whenever you reinstall Change Impact Analyzer.

Related Links

[Understanding the Rules Editor](#)

Chapter 2

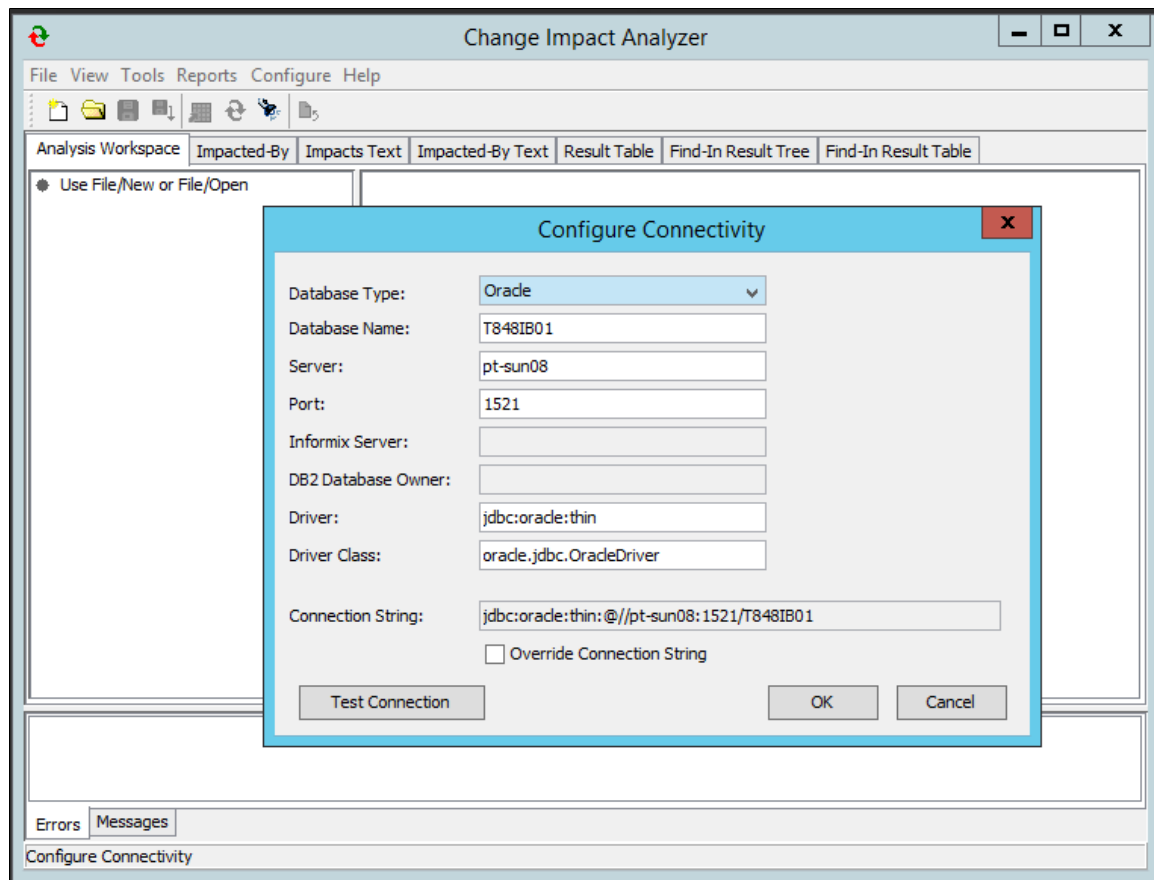
Configuring Database Connectivity

Configure Connectivity

Before you can run Change Impact Analyzer, you need to configure the database connectivity. You'll be prompted for the database user ID and password when you open a workspace.

Start Change Impact Analyzer. From the Change Impact Analyzer toolbar, select Configure, Connectivity. The Configure Connectivity screen appears:

This example illustrates the fields and controls on the Configure Connectivity page. You can find definitions for the fields and controls later on this page.



Select your database type and enter the database name, server name, and port number.

Note: Database administrators may consider assigning user IDs and passwords that allow read-only access to the database. However, users must have create, delete, and write access to the pre-processor tables.

Field or Control	Description
Informix Server	Note: Informix is no longer supported. This option is disabled.
DB2 Database Owner	Activated if your database type is DB2. Enter the DB2 database owner ID.
Driver and Driver Class	Enter the driver type and driver class used for your database.
Connection String	Enter the connection string required to connect to your database. You can override the default JDBC connection string and specify your own connection string.
Override Connection String	Select this check box if you want to override the connection string shown in the Connection String field. This is useful if your JDBC driver requires a different format than the string format provided. If you override the connection string, Oracle recommends that you set the connection string with placeholders, such as <<user ID>> and <<password>> to prevent any potential security issues. At runtime, Change Impact Analyzer substitutes the user ID and password entered in the logon.
Test Connection	Click to test that you are able to connect to the database.

You will be prompted for the database user ID and password. After you've entered the values on this page, click OK. If can't connect the system displays and error message, or the user ID password prompt will disappear.

Configuring Rules Files

Working with Rules Files

Change Impact Analyzer is delivered with three XML rules files. The rules files are loaded into memory in the order they appear in the rules files setup dialog (Configure, Rules Files). If Change Impact Analyzer encounters two rules with the same values for rule set, database, database version, changed type, impacted type, pillar, and pillar version, the second one found is ignored.

Select Configure, Rules Files to configure rules files or add rules files.

Use the up and down arrows on the right-hand side of the page to reorder the rules files. When finished, click OK.

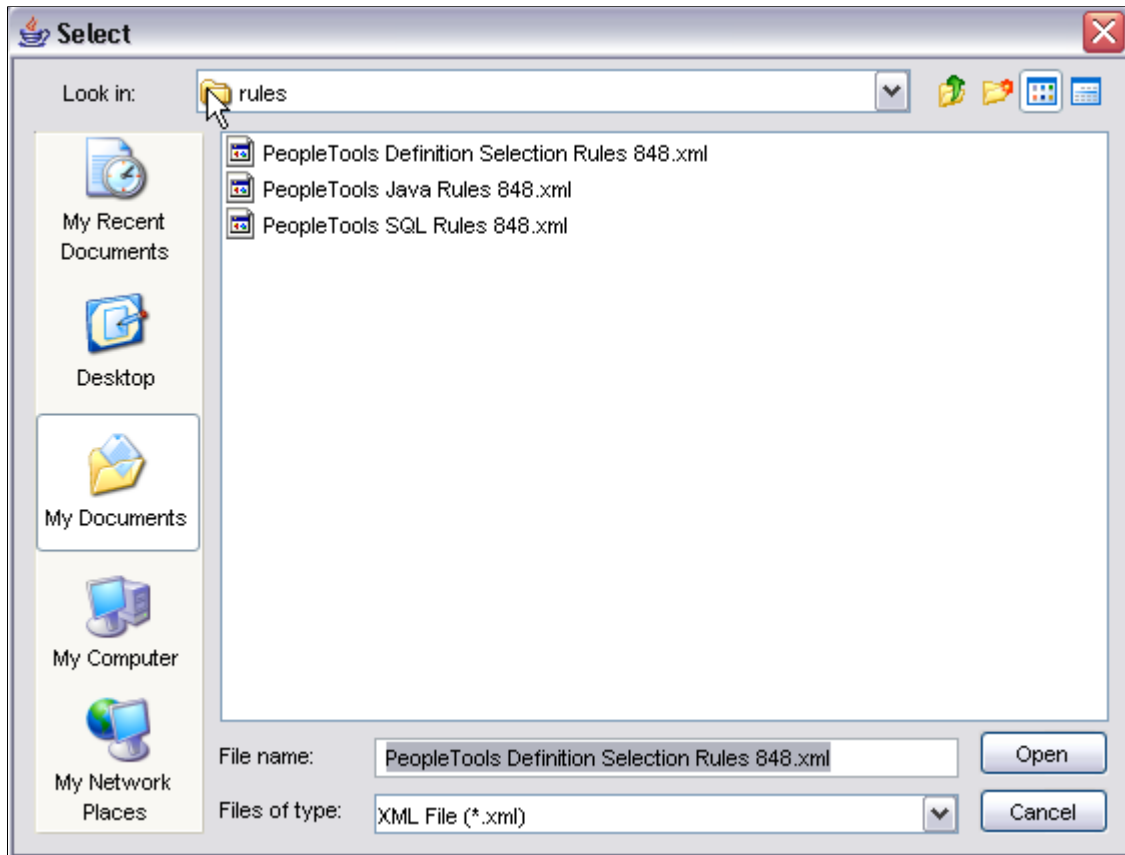
You can add your own rules files. However, you should save them as different rules file names than the Oracle-delivered files; otherwise they will be overwritten when you reinstall Change Impact Analyzer. If you want your custom rules to override an existing rule, use the up arrow and move the custom rules file above any existing rules files.

The first valid rule found, for a given rule (for example, how a field impacts a record) is the rule that is selected.

<i>Field or Control</i>	<i>Description</i>
Add rules file	Click to add a rules file to the existing rule sets.
Remove	Click to remove a rules file from the existing rule sets.
Override Rule Selection	Lets you specify the database version and the database type that you want Change Impact Analyzer to use for selecting rules. Select Override Platform and Platform Version to override the platform and version previously set. When rules are selected, the database is queried to determine the version. Note: Some database JDBC drivers do not support the determination of the version. In this case, the default version for the database is used for selecting rules from the rules file.

The default location for delivered rules files is C:\Program Files\PeopleSoft\Change Impact Analyzer\rules.

This example illustrates the fields and controls on the List of Delivered Rules Files.



Chapter 4

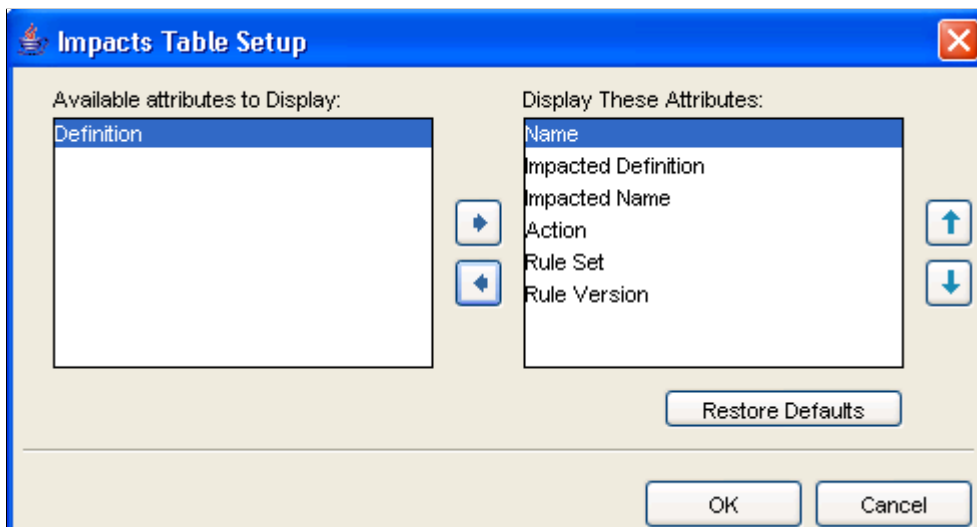
Customizing Impact Table Display

Impact Table Display

You can select which attributes of your impact analysis to display on the impact table view and the Excel report.

Select Configure, Impact Table Setup. The Impacts Table Setup page appears:

This example illustrates the fields and controls on the Impacts Table Setup page.

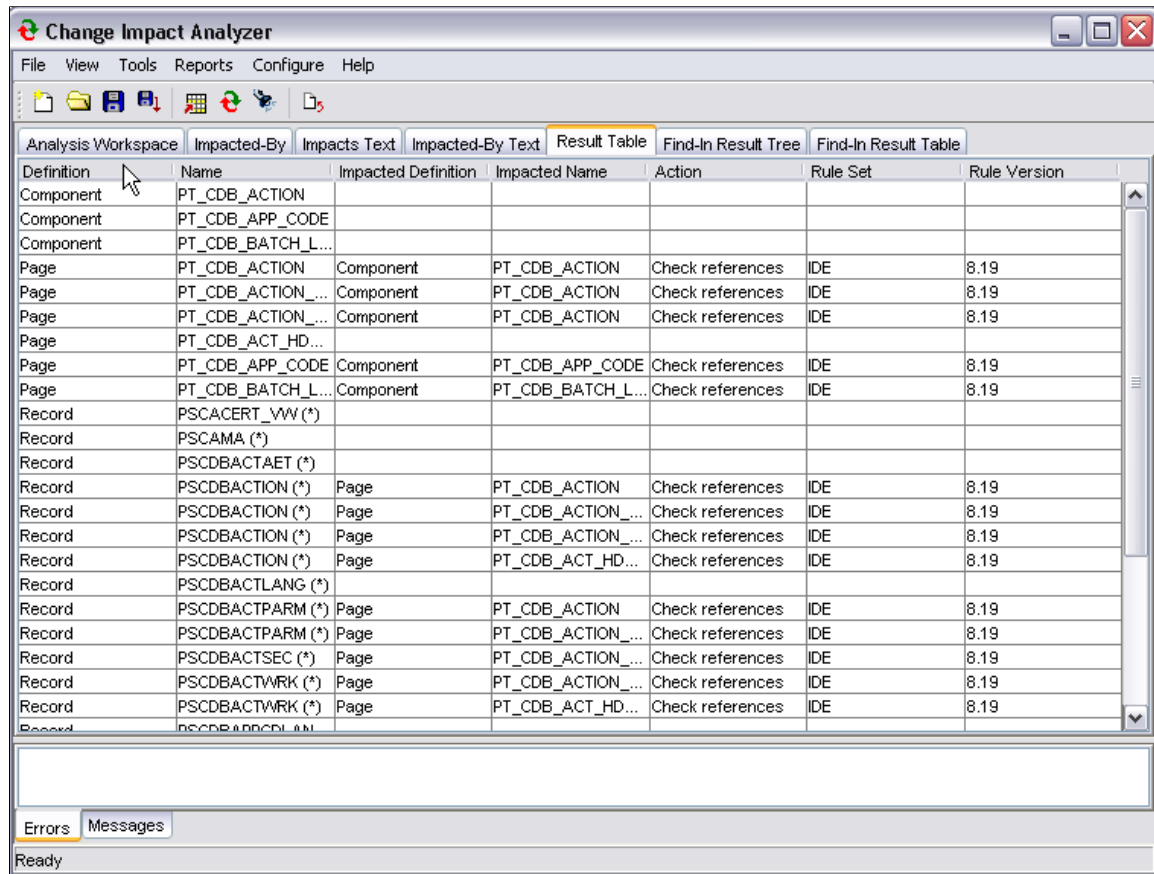


Use the left and right arrows to move attributes between Available and Display. Use the up and down arrows to reorder the attribute display.

Click Restore Defaults to restore to the defaults existing before any changes were made to them.

The following screen shows the attribute order of the Result Table that you specified in the Impacts Table Setup page. The attribute order is Name, Impacted Definition, Impacted Name, Action, Rule Set and Rule Version.

This example illustrates the fields and controls on the Result Table Attributes shown.



Change Impact Analyzer

File View Tools Reports Configure Help

Analysis Workspace Impacted-By Impacts Text Impacted-By Text **Result Table** Find-In Result Tree Find-In Result Table

Definition	Name	Impacted Definition	Impacted Name	Action	Rule Set	Rule Version
Component	PT_CDB_ACTION					
Component	PT_CDB_APP_CODE					
Component	PT_CDB_BATCH_L...					
Page	PT_CDB_ACTION	Component	PT_CDB_ACTION	Check references	IDE	8.19
Page	PT_CDB_ACTION_...	Component	PT_CDB_ACTION	Check references	IDE	8.19
Page	PT_CDB_ACTION_...	Component	PT_CDB_ACTION	Check references	IDE	8.19
Page	PT_CDB_ACT_HD...					
Page	PT_CDB_APP_CODE	Component	PT_CDB_APP_CODE	Check references	IDE	8.19
Page	PT_CDB_BATCH_L...	Component	PT_CDB_BATCH_L...	Check references	IDE	8.19
Record	PSCACERT_VW (*)					
Record	PSCAMA (*)					
Record	PSCDBACTAET (*)					
Record	PSCDBACTION (*)	Page	PT_CDB_ACTION	Check references	IDE	8.19
Record	PSCDBACTION (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTION (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTION (*)	Page	PT_CDB_ACT_HD...	Check references	IDE	8.19
Record	PSCDBACTLANG (*)					
Record	PSCDBACTPARM (*)	Page	PT_CDB_ACTION	Check references	IDE	8.19
Record	PSCDBACTPARM (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTSEC (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTWRK (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTWRK (*)	Page	PT_CDB_ACT_HD...	Check references	IDE	8.19
Record	PSCDBAPP_CODE...					

Errors Messages

Ready

Setting Reporting and Logging Options

Setting Reporting Options

You can specify various report options, such as number of output levels, your PeopleSoft installation URL prefix, and what to display in the report text area.

Select Configure, Reporting and Logging to set the report options. The Reporting option page appears:

This example illustrates the fields and controls on the Options: Reporting page. You can find definitions for the fields and controls later on this page.

The screenshot shows a Windows-style dialog box titled "Options". Inside, the "Reporting" tab is active. There are four main settings: "Maximum Output Levels" is a dropdown menu currently showing "1"; "URL Prefix" is a text input field containing "host:port/psp/site/"; there is a checked checkbox for "Output Impacts/Impacted-By Definitions in Impacted-By Tab"; and an "Analysis Tree" section which contains a checked checkbox for "Promote all found definitions to top-level". At the bottom right of the dialog are "OK" and "Cancel" buttons.

<i>Field or Control</i>	<i>Description</i>
Maximum Output Levels	Enter the value for the maximum level of output you want displayed in the Impacted-By text view. Note: High maximum output levels may affect how long it takes to generate the Impacted-By text view.
URL Prefix	If URL definitions are found during analysis, the URL prefix specified here directs the URL to your PIA installation and allow the URL to be opened in a browser.
Output Impacts/Impacted-By Definitions in Text Area	Displays Impacts and Impacted-By in the right-hand side text area of the Analysis and Impacted By tree views.

<i>Field or Control</i>	<i>Description</i>
Analysis Tree	Select to promote all definitions found during analysis to the top level of the analysis tree, as if they were initial candidates. This feature makes it easier to find all definitions.

Running the Pre-Processors

PeopleCode Pre-Processor

If you want to analyze PeopleCode impacts on other PeopleCode, you must run the PeopleCode pre-processor to generate the database tables that Change Impact Analysis uses for an impact analysis. The pre-processor scans each PeopleCode program in the database for the presence of Import and Declare statements, which indicate references to other PeopleCode programs.

The PeopleCode pre-processor generates two tables:

- PSCIAPCXREF
- PSCIAPCXREFTIME

You must have permission to create, delete from and write to these tables. If you have full privileges, you can create these tables prior to using Change Impact Analyzer.

You do not need to run the PeopleCode pre-processor every time you start Change Impact Analyzer—only when there have been changes to PeopleCode that would affect an analysis.

Note: Database administrators may consider assigning user IDs and passwords that grant read-only access to the database. However, users must have create and write access to these work tables used by Change Impact Analyzer.

To run the PeopleCode pre-processor, select Tools, PeopleCode Pre-Processor.

File Pre-Processor

The File pre-processor generates database tables that Change Impact Analysis reads to perform impact analysis. The pre-processor scans SQL, SQR, SQC, DMS, COBOL, and PSScript files and extracts the names of definitions referenced by these files.

The File pre-processor generates the following tables:

- PSFILEPROCESSRUN
- PSSQLXREFDEFN
- PSSQLXREFITEM
- PSFILESQLXREFDEFN
- PSFILEXREFDEFN

To run the File pre-processor, select Tools, File Pre-processor.

You do not need to run the File pre-processor every time you start Change Impact Analyzer—only when there have been changes to any of those files scanned for impact analysis.

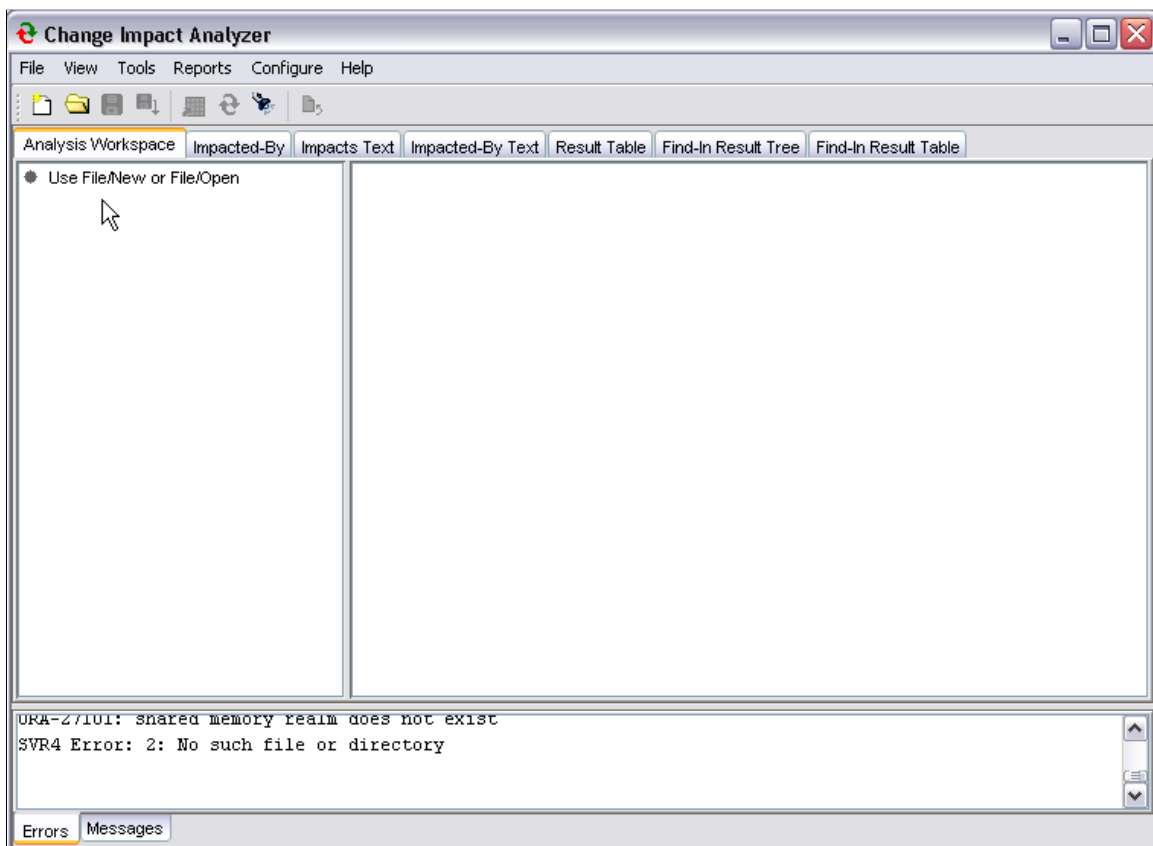
Chapter 7

Analyzing Definitions

Using the Analysis Workspace

The Analysis Workspace is the first page that appears after you open Change Impact Analyzer.

This example illustrates the fields and controls on the Analysis Workspace page.



Select File, New Workspace from the Change Impact Analysis toolbar. The Impact Analysis Search Dialog appears:

This example illustrates the fields and controls on the Impact Analysis Search Dialog. You can find definitions for the fields and controls later on this page.

Select definition, project, or change package depending on where you want to begin your search. Enter a definition type and name, or project name, or package file name, then click Search to display the values desired.

Field or Control	Description
Use rule set:	Basic Impact Analysis, Impact Analysis, Reference Only.

When you are satisfied with the analysis criteria, click Select.

Full Analysis

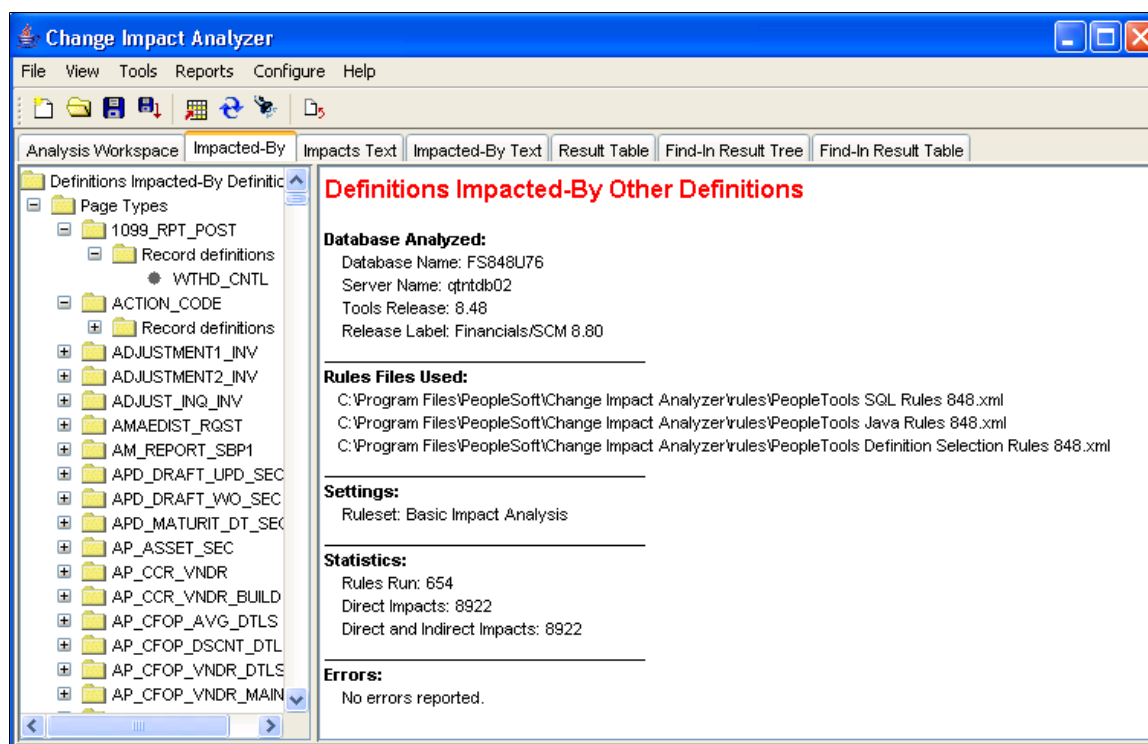
Full Analysis executes all available rules for all top level candidate definitions. If you need more specific analysis, use Directed Analysis, Analyze For, and Analyze Along Search Path features.

Select **Tools, Full Analysis**. A confirmation screen appears immediately. Click Yes to perform a full analysis.

Depending on the size of your database, the full analysis processing may take several minutes. A processing bar appears on the screen. When finished, the Analysis Workspace tab is highlighted and the Definitions Impacting Other Definitions page displays.

The left-hand side of the page shows a tree view of the definitions. The right-hand side of the page displays several paragraphs listing the database characteristics, the rules files used, the analysis setting, statistics, and any errors found during the execution.

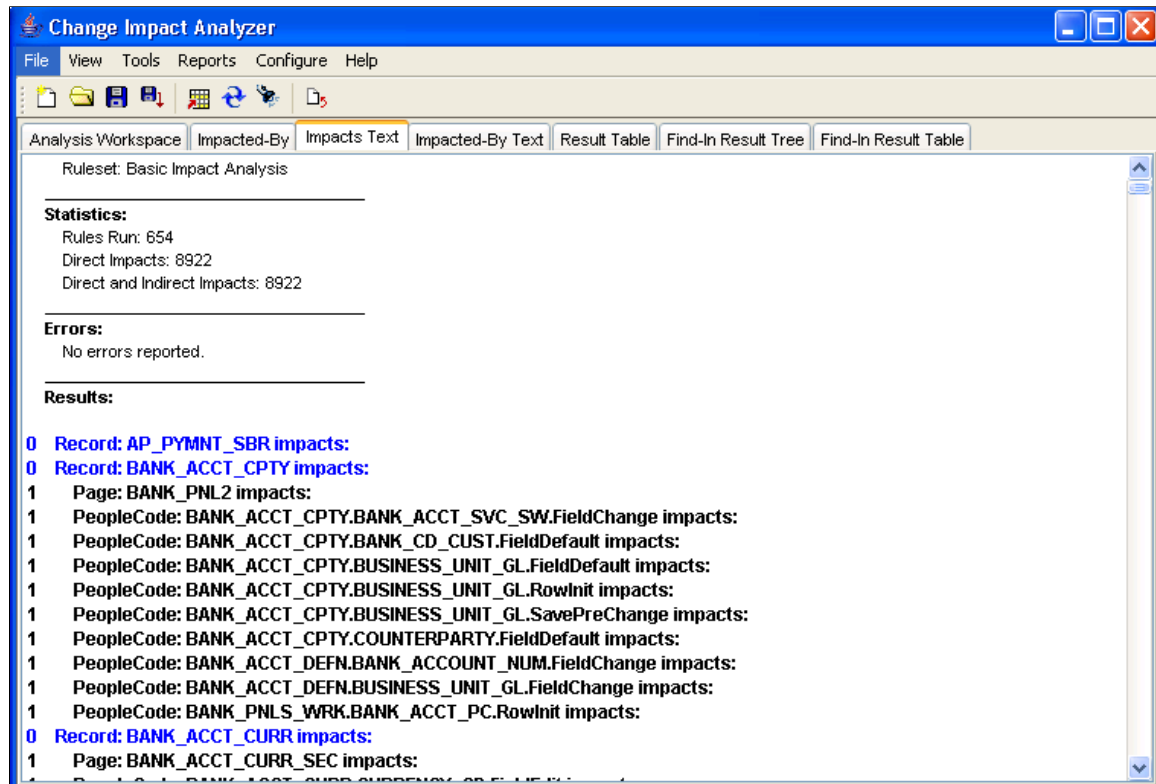
This example illustrates the fields and controls on the Full Analysis Result, Definitions Impacting Other Definitions page.



To view the definitions impacted by changes, select the Impacted-By tab.

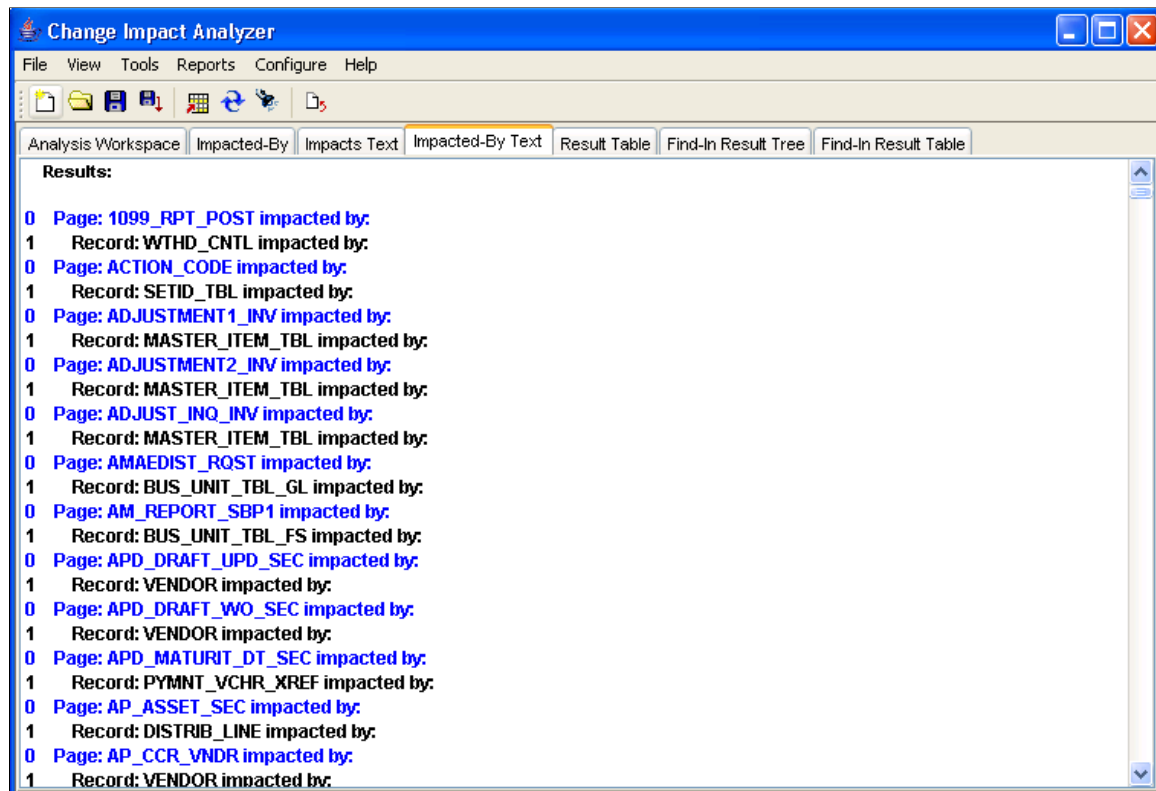
Select the Impacts Text tab to display the list of definitions impacted.

This example illustrates the fields and controls on the Full Analysis Results, Impacts Text.



Select the Impacted-By Text tab to display the definitions that impact the analyzed definition.

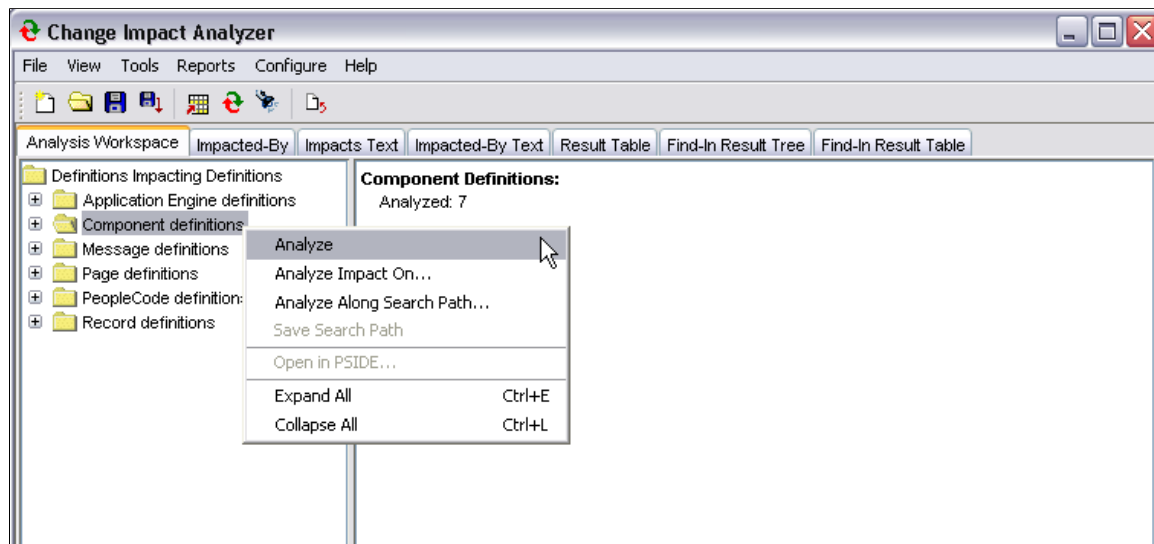
This example illustrates the fields and controls on the Full Analysis, Impacted-By Text.



Analyze Option

The Analyze option analyzes the definition selected in the left-hand column tree. Using the right mouse button, click on a definition. The analyze popup appears:

This example illustrates the fields and controls on the Analyze (component definitions) popup.



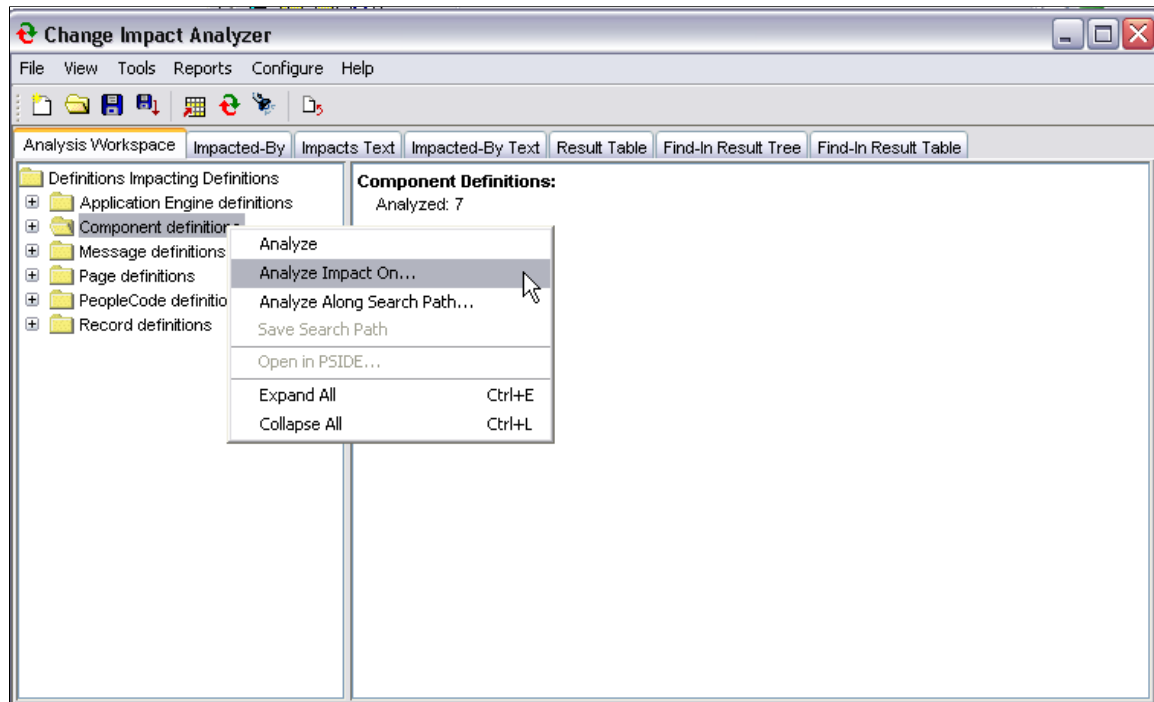
The Analysis progress status window displays during the processing. When finished, the right-hand section of the screen shows the results.

Analyze Impact On

Selecting this option displays a list of definition types that are relevant to (may be impacted by) the definition selected in the left-hand column tree. Change Impact Analyzer dynamically generates this list from available rules for the definition.

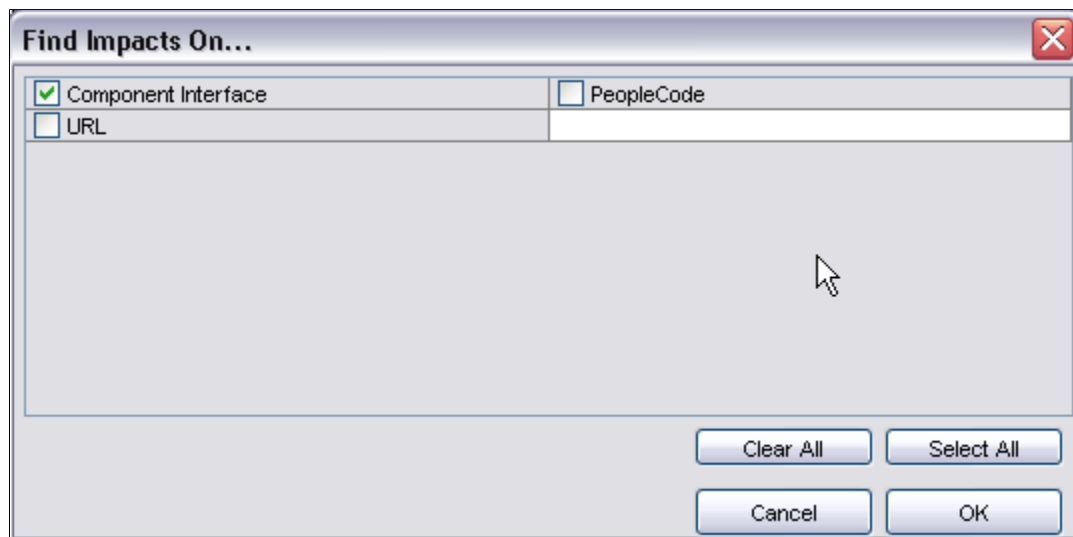
Highlight the definition to be analyzed, click the right-hand mouse button. The popup page shows several analyze options. Select Analyze Impact On.

This example illustrates the fields and controls on the Analyze Impact On.



The Find Impacts On popup page, appears:

This example illustrates the fields and controls on the Find Impacts On selection page.



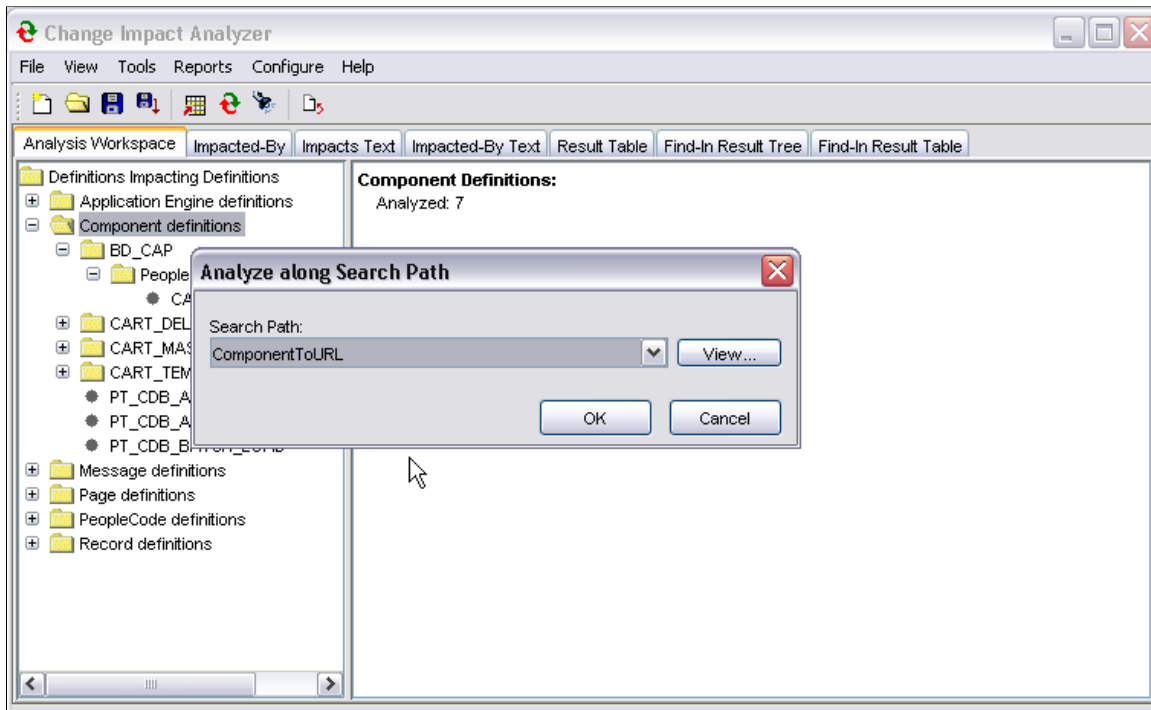
Select the items you want to find the impact on. Click OK.

Analyze Along Search Path

This option analyzes definitions based on a default search path or one that you have previously defined.

Using the right-hand mouse button, click a definition in the left-hand side tree. Select **Analyze Along Search Path**.

This example illustrates the fields and controls on the Analyze along Search Path popup page.



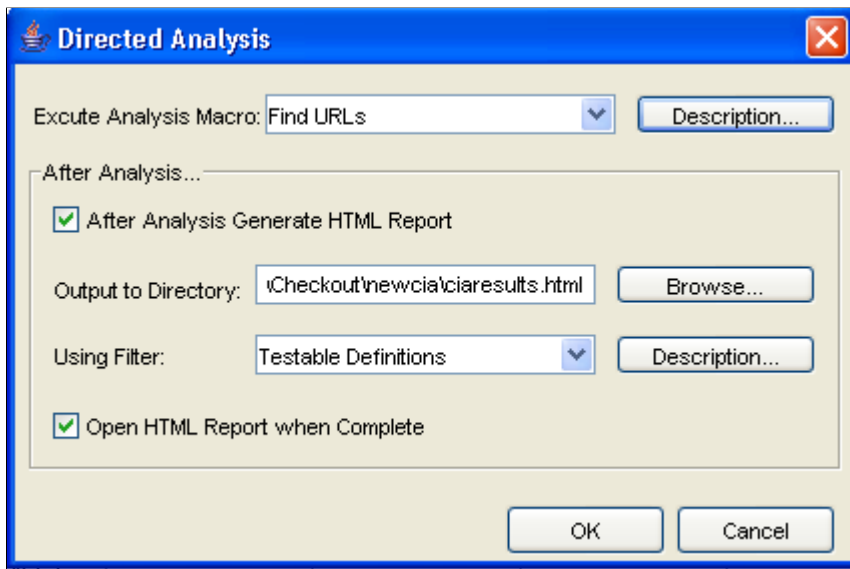
Select the desired search path, click OK. The Analyze Along Search Path progress status popup displays.

Directed Analysis

Directed Analysis executes an analysis on a number of search paths, then generates and opens a filtered report. Typically, the results generated by a directed analysis are easier to work with than those generated by a full analysis because of the large volume of reference data generated in a full analysis. Also, a directed analysis executes much faster than a full analysis.

To set the parameters for your database analysis, select Tools, Directed Analysis. The Directed Analysis dialog appears.

This example illustrates the fields and controls on the Directed Analysis. You can find definitions for the fields and controls later on this page.



Note: The analysis macro(s) and report filters referred to in this section are saved in the analysis.xml and outputfilters.xml files respectively, and are not related to saved search paths.

Field or Control	Description
Execute Analysis Macro	Select the type of analysis you want to perform from the dropdown list. The options are Find AE programs, Find URLs, and SAMPLE_MACRO. Note: To add new macros, edit the <i>analysismacros.xml</i> file in the Change Impact Analyzer installation directory.
After Analysis Generate HTML Report	Select this check box to generate an HTML report after the analysis is complete.
Output to Directory:	Specify the directory to which you want the report placed.
Using Filter:	Select which filter to use during the analysis. The options are Common Definitions and Testable Definitions. Note: To add other filters, edit the <i>outputfilters.xml</i> file, found in the Change Impact Analyzer installation directory.
Open HTML Report when Complete	Select to open the HTML report when the analysis is complete.

Find In Feature

The find in feature allows you to look for specific PeopleCode, SQL, and HTML definitions and filter the search criteria. You can specify various search ranges including a database, a project, definitions associated with an owner ID, and definitions whose names contain specific characters.

Select **Tools**, then **Find In**. The Find In dialog page appears:

This example illustrates the fields and controls on the Find In Search Criteria page. You can find definitions for the fields and controls later on this page.

The screenshot shows the 'Find In' dialog box with the following sections and controls:

- File** (Menu)
- Search Criteria**
 - PeopleCode**
 - ☒ Record PeopleCode
 - ☐ Menu PeopleCode
 - ☐ Page PeopleCode
 - ☐ Component PeopleCode
 - ☐ Application Engine PeopleCode
 - ☐ Component Interface PeopleCode
 - ☐ Message PeopleCode
 - ☐ Application Package PeopleCode
 - SQL**
 - ☐ SQL Object
 - HTML**
 - ☐ HTML Object
 - Select All** **Clear All**
- Search Range**
 - ☐ Database
 - ☐ Project
 - ☐ Owner ID
 - ☒ Definitions Containing
 - ☒ Begins with... ☐ Ends with...
- ☐ Match Case ☐ Whole Word ☐ Uncompiled PeopleCode
- Find What:** **Add to List**
- List of Items to Find:** 1 item

Definition	Name
find In...	Pages
- Remove All** **Remove Items**
- Run Find In** **Cancel**

Select the criteria for Change Impact Analyzer to use for Find In.

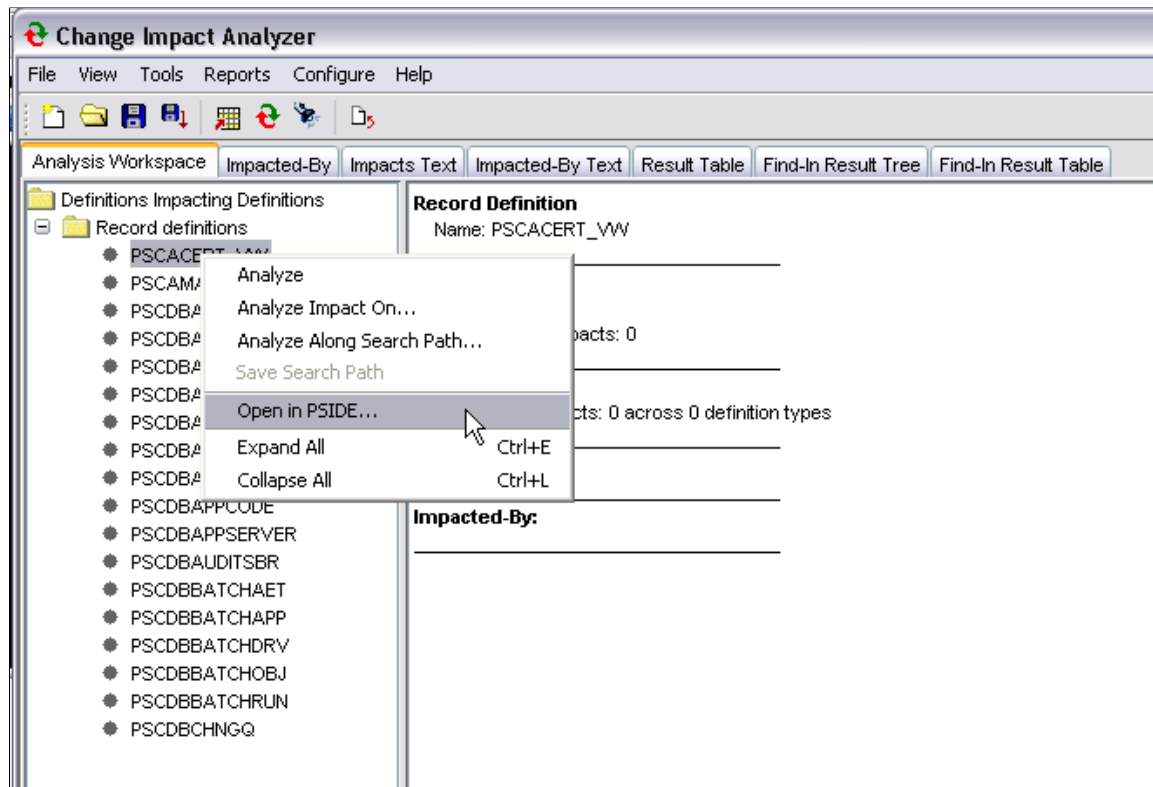
Field or Control	Description
PeopleCode	Select check box(es) to find a (what) in PeopleCode record, menu, page, component, Application Engine, component interface, message, and application package definitions. Note: It's not recommended to use the Select All option for defining the scope for a search of a specified string in PeopleCode programs. This can cause performance issues related to JVM memory. For best results, select one PeopleCode type at a time. This is due to the memory and processing requirements when run against large volumes of data. This is due to the memory and processing requirements when run against large volumes of data. As the default heap size for the JVM minimum is increased (1200 MB minimum to maximum of 1500 MB) in the pscia.cmd , it can lead to unavailability of memory in the client machine when starting Change Impact Analyzer. In that case, pscia.cmd can be edited so that Change Impact Analyzer runs using less JVM. For example, edit the following line in pscia.cmd located in C:\Program Files\PeopleSoft\Change Impact Analyzer: <pre>%javaCmd% -cp %CLASSPATH% -Xms1000m -Xmx1200m -Xss2m -Xoss2m com.peoplesoft.pt.changeimpactanalyzer.ciamain.main</pre> Change the -Xms and -Xmx values as needed (specified in MBs).
SQL	Select check box to find (what) in SQL object definitions.
HTML	Select check box to find (what) in HTML objects.
Search Range	Select either database, project, owner ID, or definitions containing character(s). You can narrow the definition containing by beginning with or ending with.
Match Case, Whole Word, Uncompiled PeopleCode	Select check boxes depending on whether you want to narrow the search by matching the case, using the whole word, or uncompiled PeopleCode.
Find What:	Enter the text string that you want to search for within the specified PeopleCode, HTML, or SQL. If you want to search for multiple strings, enter additional strings in the Find What: field and select Add to List. The find in feature searches for an occurrence of any of the strings included in the list.

Other options include Add to List, Remove All, and Clear. Select Run Find In to begin the process.

Opening the Definition in PeopleSoft Application Designer

This option enables you to open any definition in Application Designer directly from the Change Impact Analyzer tools. From the Analysis Workspace right-hand column tree, right-click on the desired definition. A popup menu appears.

This example illustrates the fields and controls on the Open Definition in PSIDE popup.



Click Open in PSIDE to open the selected definition in PeopleSoft Application Designer.

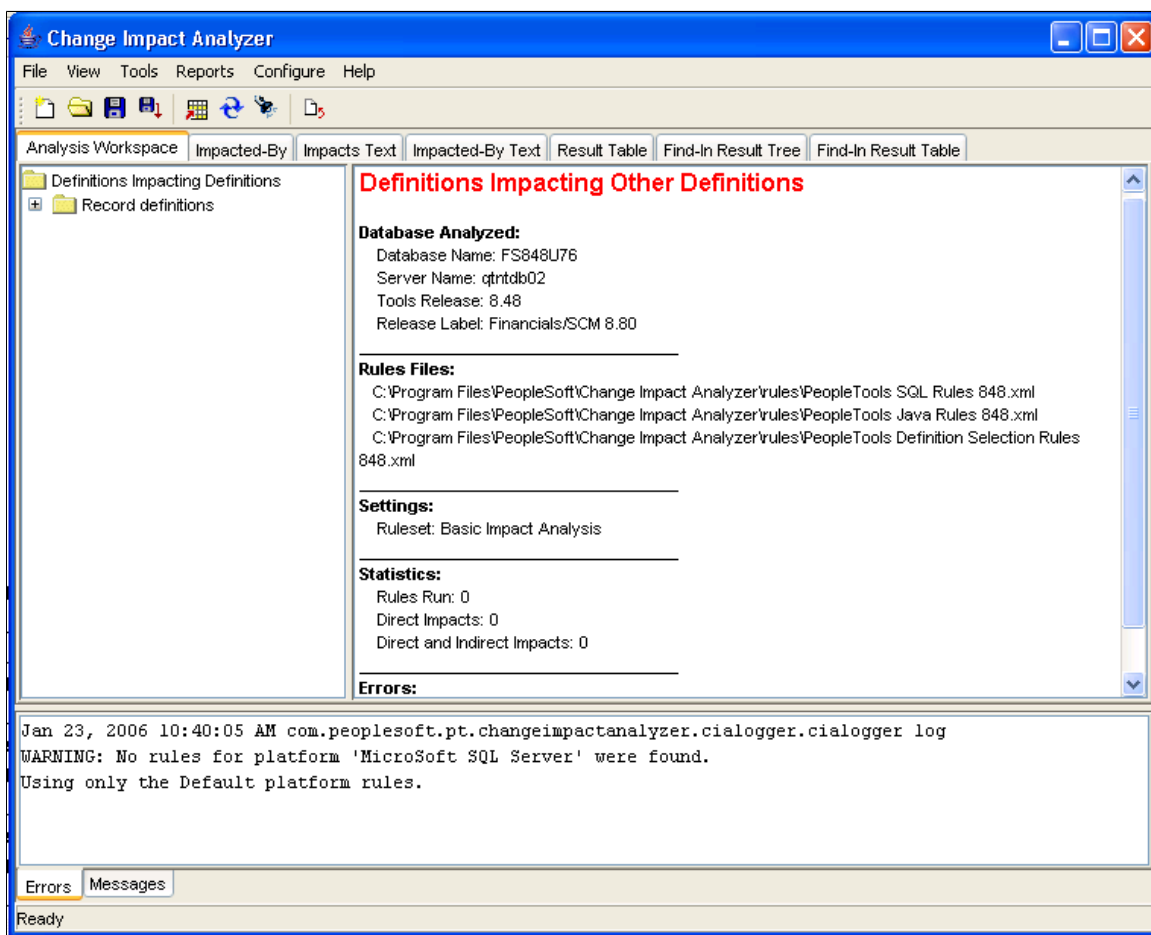
Note: Before the Open In PSIDE option can be used, each user needs to have logged into pside.exe (Application Designer) at least once on the machine where Change Impact Analyzer is running. This ensures that the current path to pside.exe is stored in the registry settings for that user.

Viewing Results

Definitions Impacting Other Definitions

If you selected a definition(s) for impact analysis, the resulting page appears listing the definitions that impact other definitions. The right-hand side of the page displays the summary criteria of the analysis.

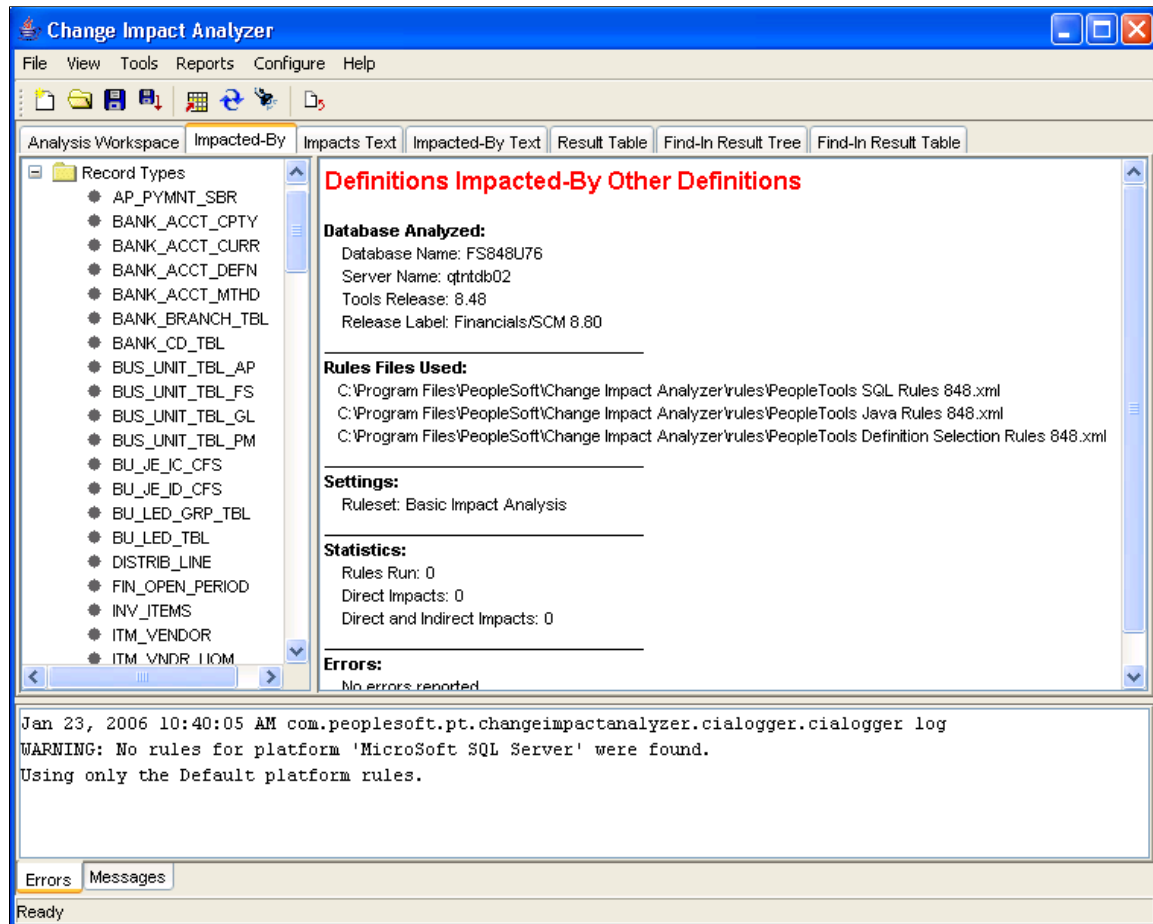
This example illustrates the fields and controls on the Definitions Impacting Other Definitions.



Definitions Impacted-By Other Definitions

If you want to see the reverse analysis, click the Impacted-By tab. The analysis result shows definitions that are impacted by other definitions.

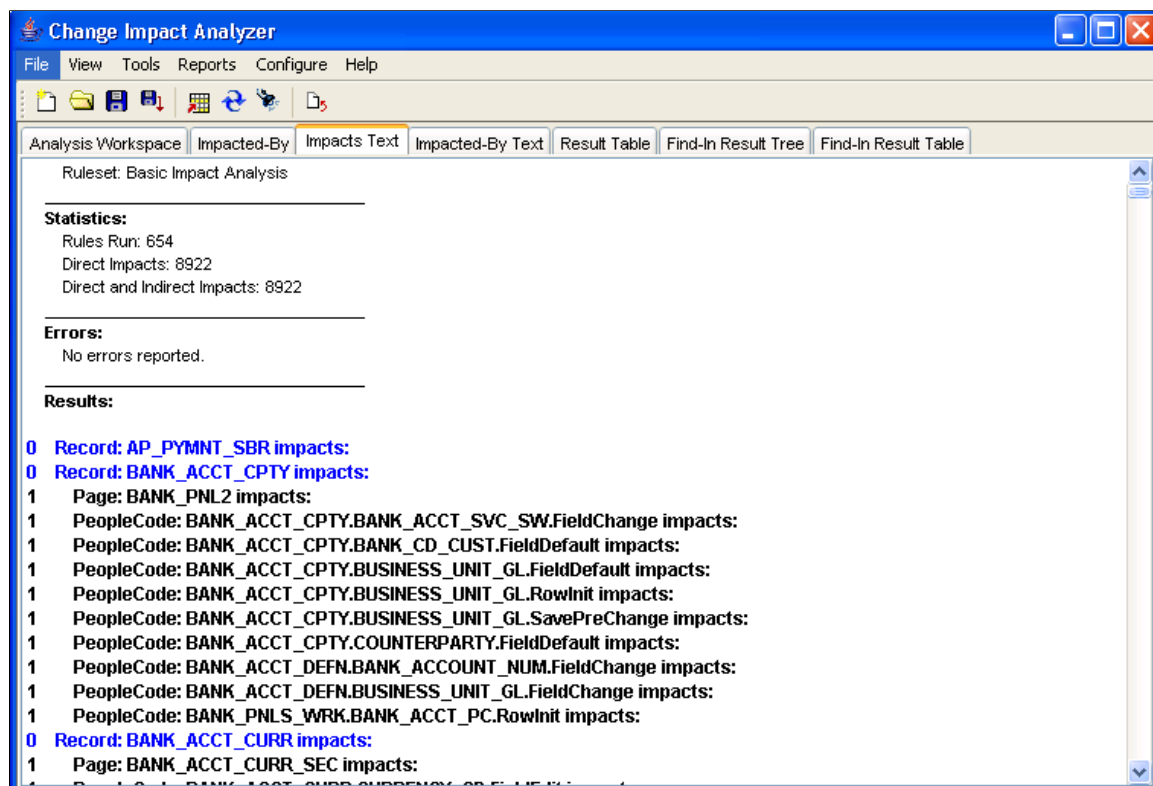
This example illustrates the fields and controls on the Definitions Impacted-By Other Definitions.



Impacts Text Page

Select the Impacts Text tab to display a page listing the result data in text format.

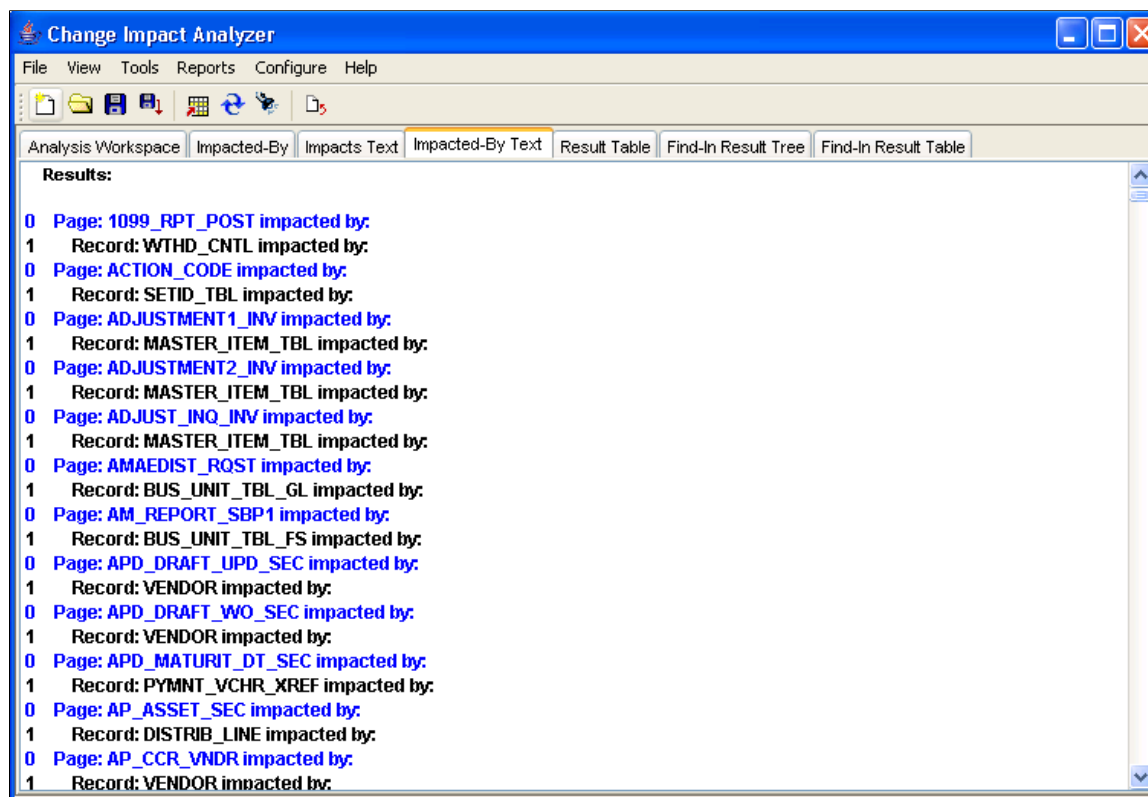
This example illustrates the fields and controls on the Impact Text Page.



Impacted-By Text Page

Select the Impacted-By Text tab to display a page listing the result data in text format.

This example illustrates the fields and controls on the Impacted-By Text.



Result Table Page

To see the detailed analysis results, click [Result Table](#).

This example illustrates the fields and controls on the Result Table.

The screenshot shows the 'Change Impact Analyzer' application window. The 'Result Table' tab is selected, displaying a table with the following columns: Definition, Name, Impacted Definition, Impacted Name, Action, Rule Set, and Rule Version. The table contains 20 rows of data, including components, pages, and records, with various impacted definitions and actions listed.

Definition	Name	Impacted Definition	Impacted Name	Action	Rule Set	Rule Version
Component	PT_CDB_ACTION					
Component	PT_CDB_APP_CODE					
Component	PT_CDB_BATCH_L...					
Page	PT_CDB_ACTION	Component	PT_CDB_ACTION	Check references	IDE	8.19
Page	PT_CDB_ACTION_...	Component	PT_CDB_ACTION	Check references	IDE	8.19
Page	PT_CDB_ACTION_...	Component	PT_CDB_ACTION	Check references	IDE	8.19
Page	PT_CDB_ACT_HD...					
Page	PT_CDB_APP_CODE	Component	PT_CDB_APP_CODE	Check references	IDE	8.19
Page	PT_CDB_BATCH_L...	Component	PT_CDB_BATCH_L...	Check references	IDE	8.19
Record	PSCACERT_VWV (*)					
Record	PSCAMA (*)					
Record	PSCDBACTAET (*)					
Record	PSCDBACTION (*)	Page	PT_CDB_ACTION	Check references	IDE	8.19
Record	PSCDBACTION (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTION (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTION (*)	Page	PT_CDB_ACT_HD...	Check references	IDE	8.19
Record	PSCDBACTLANG (*)					
Record	PSCDBACTPARM (*)	Page	PT_CDB_ACTION	Check references	IDE	8.19
Record	PSCDBACTPARM (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTSEC (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTWRK (*)	Page	PT_CDB_ACTION_...	Check references	IDE	8.19
Record	PSCDBACTWRK (*)	Page	PT_CDB_ACT_HD...	Check references	IDE	8.19
Record	PSCDBACTWRK (*)					

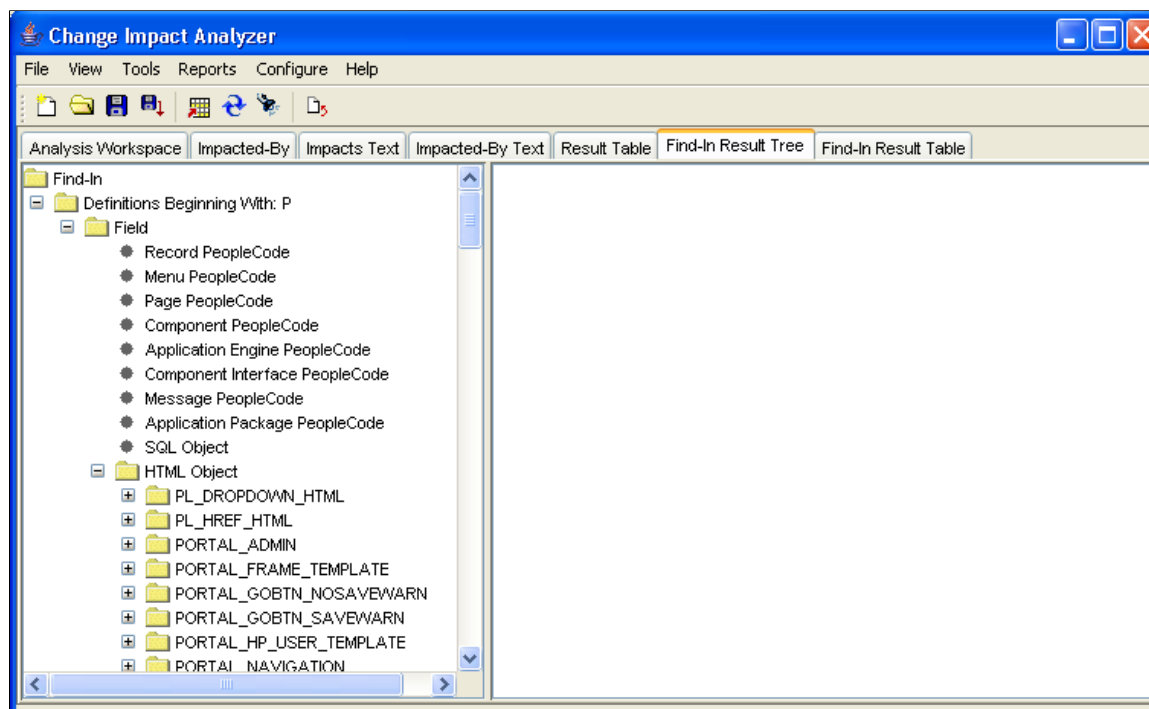
At the bottom of the window, there are tabs for 'Errors' and 'Messages', and a status bar indicating 'Ready'.

Find In Result Tree Page

Select the Find In Result Tree tab to display a result tree on the left-hand side of the screen.

Note: The find in result tree is available only after a find in search has been executed.

This example illustrates the fields and controls on the Find In Tree.

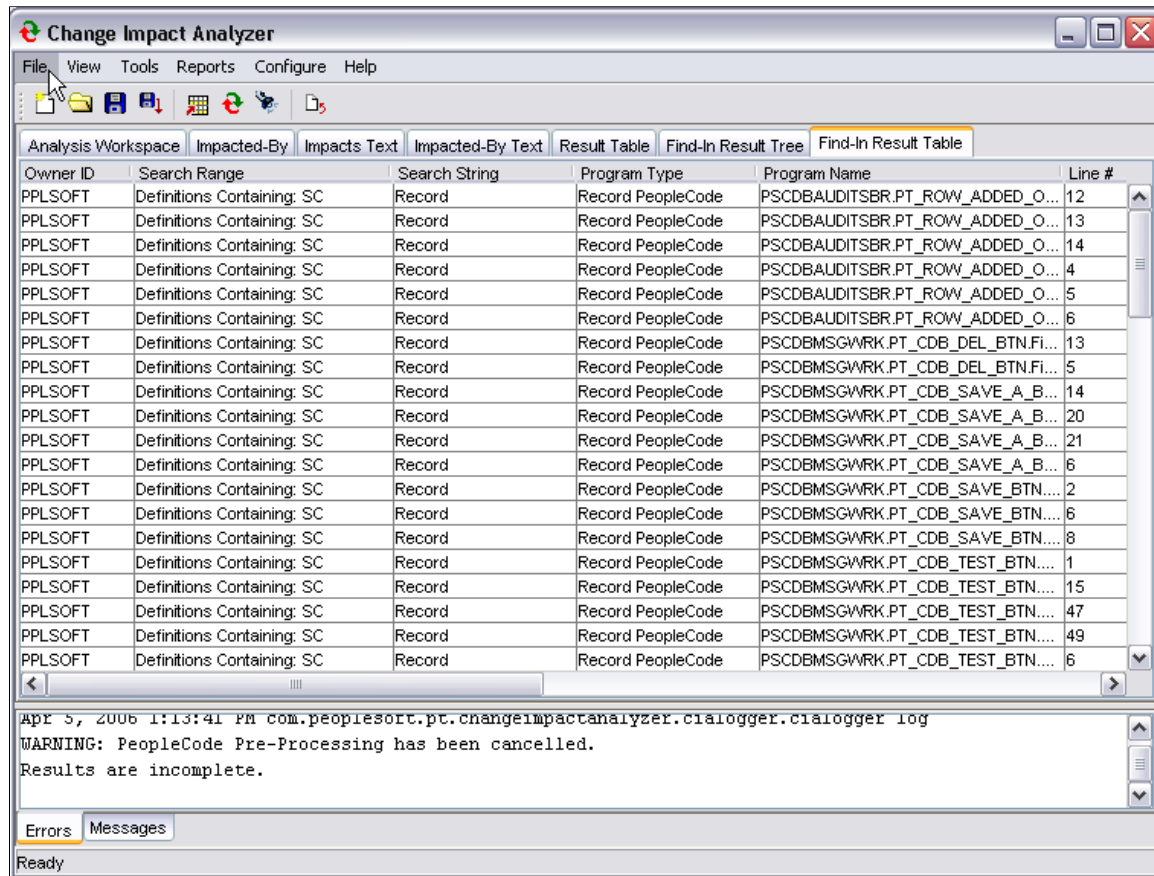


Find In Result Table Page

Select the Find In Result Table to display the output in a table format.

The find in result table is available only after a find in search has been executed.

This example illustrates the fields and controls on the Find In Result Table page.

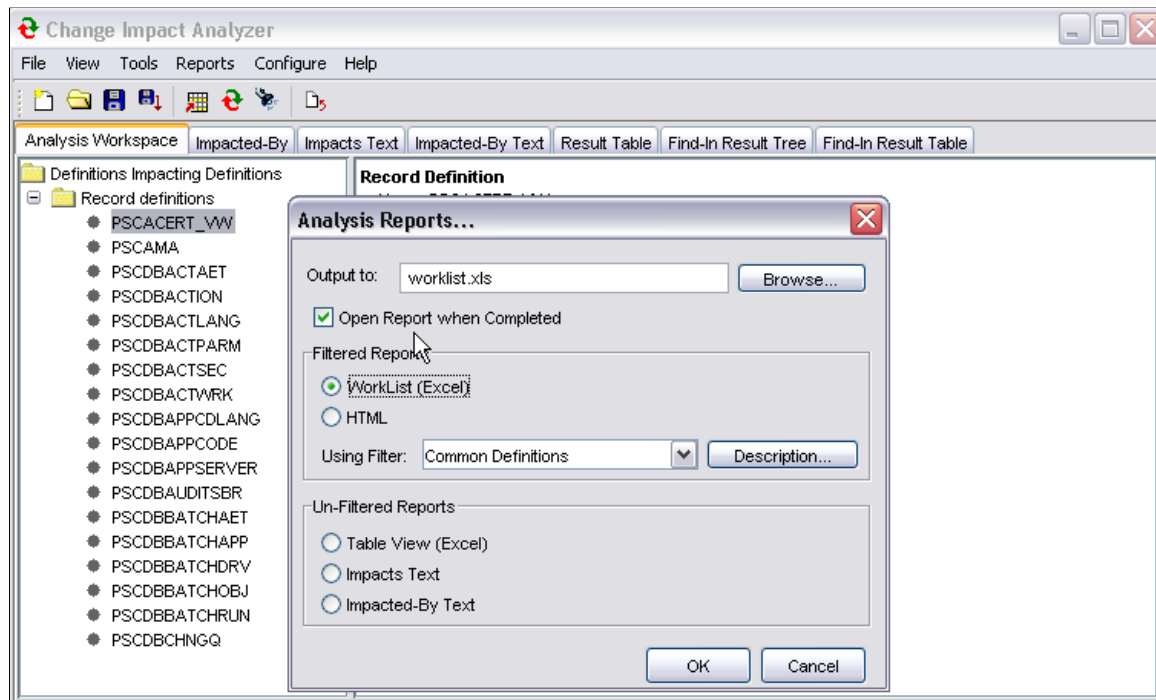


Note: If Windows User Access Control (UAC) is ON, UAC might prevent saving the *findinresults.xml* file to the default root directory, for example, *C:*. You may need to set UAC to OFF or save the *findinresults.xml* file needs to be saved to a location that accessible to the user.

Running Reports

To produce a report of the analysis, select Reports, Analysis Reports from the Change Impact Analyzer toolbar. The Analysis Reports dialog opens:

This example illustrates the fields and controls on the Analysis Reports dialog. You can find definitions for the fields and controls later on this page.



Field or Control	Description
Output to:	Specify the file to which you want your analysis results written.
Open Report when Complete	Select to have the report file open automatically.
Filtered Reports	Select Excel worklist or HTML format and the filter for the generated report. The filters are saved in the outputfilters.xml file.
Unfiltered Reports	Select the unfiltered report option.

Click OK.

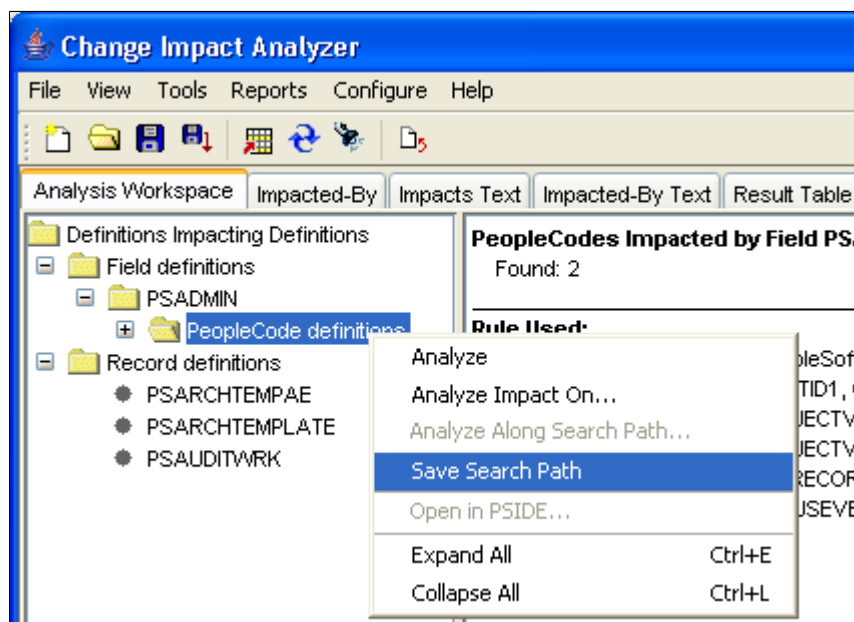
Chapter 9

Managing Search Paths

Creating a New Impact Search Path

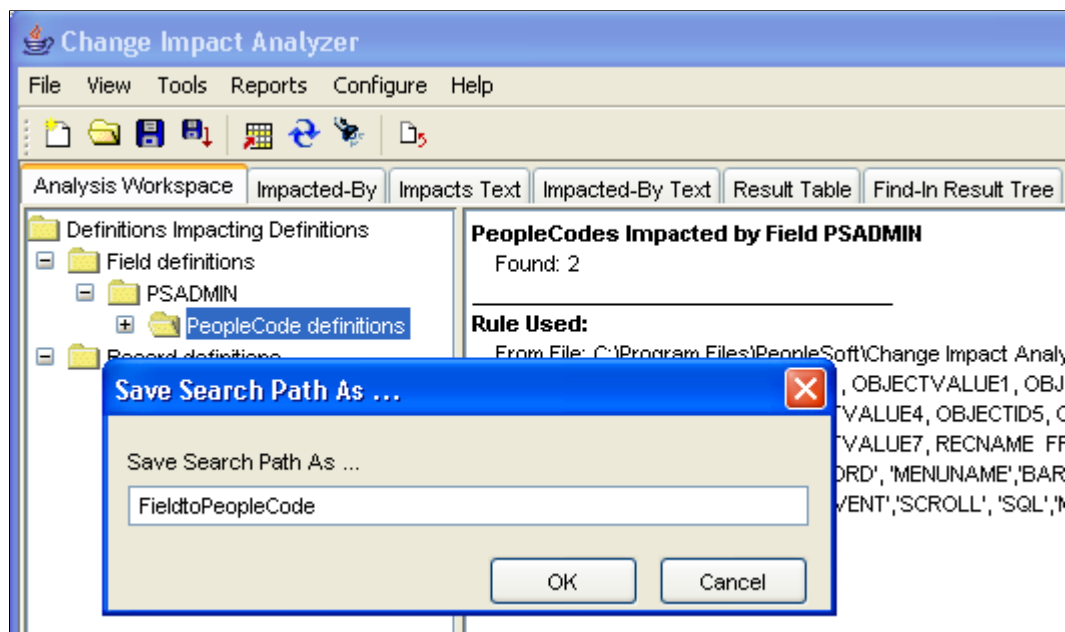
You can specify the path(s) to search when performing an impact analysis. Create new search paths by clicking the right mouse button on a node in the analysis tree. A popup page appears:

This example illustrates the fields and controls on the Save Search Path selection.



Select **Save Search Path**. Enter the new path name in the Save Search Path As dialog. Click OK.

This example illustrates the fields and controls on the Save Search Path As dialog.



To verify the new search path, select **Configure, Impacts Search Paths**. The search path you added displays in the list.

You can also select a search path to remove or click **Restore Defaults** to reset to all search paths.

Using the Rules Editor

Understanding the Rules Editor

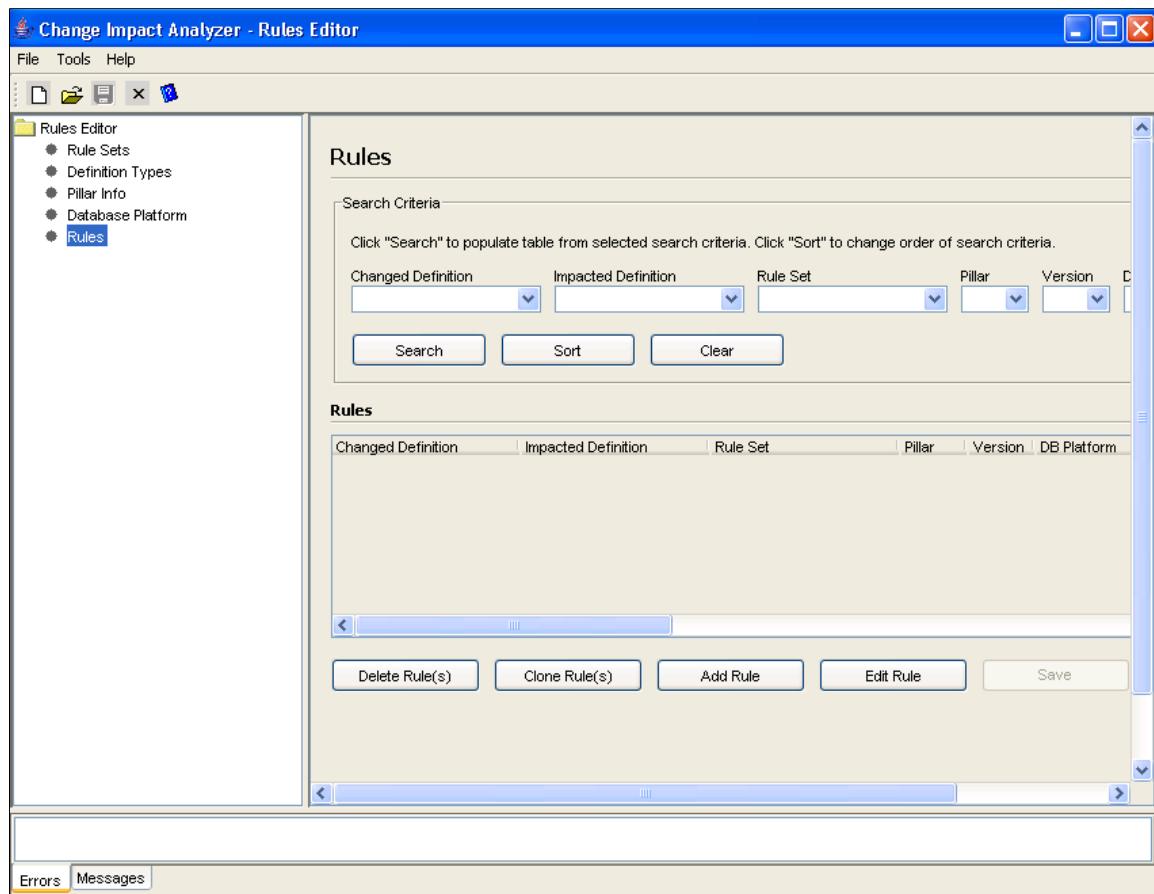
The rules editor allows you define your own rules—the SQL statements that search for a changed definition. You can add new rules, modify existing rules, copy one rule to a new rule set, and delete rules.

Note: You must know your database thoroughly to know what rules to associate with specific definitions. You must also know how to use SQL statements to search for the impact of any definition change.

Using the Rules Editor

To open the rules editor, select Tools, Rules Editor. The Rules Editor page appears:

This example illustrates the fields and controls on the Rules Editor Rules page.



Parts of a Rule

A rule comprises the following parts:

<i>Field or Control</i>	<i>Description</i>
Changed Definition	Type of definition that is changing.
Impacted Definition	Type of definition that is affected by the changed definition.
Rule Set	A grouping or subset of rules.
Pillar	The pillar, or application, for which this rule is written. The pillar is derived from the RELEASELABEL in the PSRELEASE table. The specific SQL statement is: <pre>select RELEASELABEL from PSRELEASE where RELEASEDTTM = (select max(RELEASED⇒ TTM) from PSRELEASE)</pre> The RELEASELABEL value is converted to <pillar> x.xx and is the key to look up the value in the rules file. For example, RELEASELABEL CRM 8.00. Two core PeopleTools pillars provide rules that find the relationships between PeopleSoft metadata definitions, IDE and PPT. When rules are selected from the rules files, the IDE and PPT rules are always used in addition to your application's pillar, for example FMS or HRMS.
Version	Release version and used to determine the pillar value.
Database Platform	The database platform for which this rule is written. Note: If you want to run rules against a specific (non-default) database platform, create a new rule in your own rules file, and add your rule for the specific platform. Rule selection will choose a specific platform rule over the same rule, but for the default platform.
Database Version	The database version for which this rule is written.

Field or Control	Description
Definition Name and Definition Print Name	These fields contain the database column names that identify the definition. The definition name is the internal name used by the rules engine. The definition print name is used when displaying the name to the user. These values are usually the same. For example, from the Field Impacting Record rule, RECNAME is one of the selected columns from the PSRECFIELD table. If the definition name and the definition print name is RECNAME. The rule is: <pre>select DISTINCT RECNAME, FIELDNAME from ⇒ PSRECFIELD where FIELDNAME = ':1' ORDER BY RECNAME</pre>
Definition ID	The Application Designer object ID for the definition. This field contains the template to create an Application Designer object ID for the impacted definition. Change Impact Analyzer uses this objectID to open the definition within Application Designer. For example, using the Field Impacting Record rule, the definition ID is 'RECORD'.RECNAME The elements of the name within single quotes (RECORD), are the literal string values of an Application Designer object ID class. If the RECNAME is Customer, then the Application Designer object ID is RECORD.Customer.
Rule	The SQL select statement that is executed (or in the case of a Java rule, the name of a Java class). For example, <pre>select DISTINCT RECNAME, FIELDNAME from ⇒ PSRECFIELD where FIELDNAME = ':1' order by RECNAME</pre> The parameter :1 refers to 1st element of the impacted definition name. In the case of PeopleCode impacting PeopleCode, the rule is implemented by the class as in: <pre>com.peoplesoft.pt.changeimpactanalyzer.b⇒ uiltinrules. PCImpactsPC</pre> Java rules can execute more complex code than SQL code, however, Java rules are not documented in this release.
Action	The action recommended for the definitions found.

Creating Rules Files

If you require rules that are not in the delivered rules files, you can add custom rules files. Oracle recommends that you clone an existing rules file. In this way, you can match key elements (rule set, database, database version, definition type, and so on) and then supply your own SQL code or Java program.

Make sure that you save your rules file with a new name and move it to a position above the existing rules file.

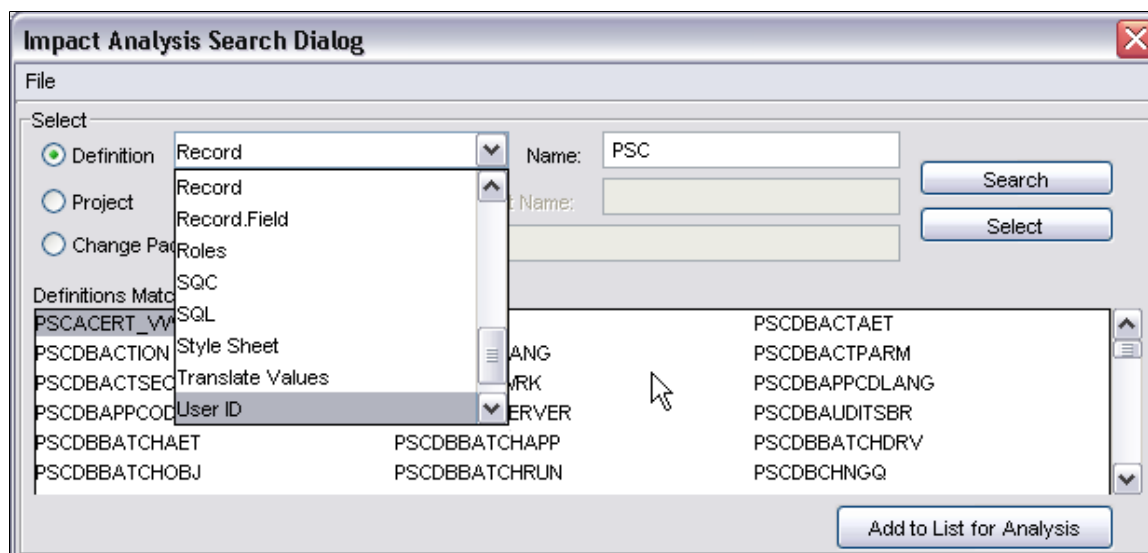
If you want to override a specific rule using your own rules file, make sure you

- Use the same pillar as in the rule for which you want to override.
- In the Select dialog (Configure, Rules Files), place the rules file that contains your new rule above the rules file to be overridden in the rules file list.

Definition Selection Rules File

This rules file populates the **Definition** selection dropdown list in the New Workspace dialog page.

This example illustrates the fields and controls on the Impact Analysis Search Dialog page (Select Definition dropdown list).



These rules use the fictitious type *DefinitionSelection* and an impacted definition type to search for the requested definition. For example, the rule *DefinitionSelection impacts Record* generates SQL that is used to populate the **Definitions Matching Name** area in the Impact Analysis Search Dialog (of a new workspace):

```
select RECNAME from PSRECDEFN
where RECNAME like ':1%' ORDER BY RECNAME
```

The `like '1%'` supports partial name matching from the search dialog.

Pre-Processor Tables

PeopleCode Pre-Processor

You must run the PeopleCode pre-processor to generate the database tables that Change Impact Analysis reads and analyzes. The PeopleCode pre-processor generates two tables:

- PSCIAPCXREF
- PSCIAPCXREFTIME

You must have permission to create, delete from and write to these files. If you have full privileges, you can create these files prior to using Change Impact Analyzer.

Note: Database administrators may consider assigning user IDs and passwords that grant read-only access to the database. However, users need create and write access to these work tables used by Change Impact Analyzer.

The following tables describe the columns for each of these tables for the different supported databases:

<i>PSCIAPCXREF for Oracle and Microsoft</i>	<i>Description</i>
PROGSEQ	INT NOT NULL
REFOBJECTID1	SMALLINT NOT NULL
REFOBJECTVALUE1	NCHAR(30) NOT NULL
REFOBJECTID2	SMALLINT NOT NULL
REFOBJECTVALUE2	NCHAR(30) NOT NULL
REFOBJECTID3	SMALLINT NOT NULL
REFOBJECTVALUE3	NCHAR(30) NOT NULL
REFOBJECTID4	SMALLINT NOT NULL
REFOBJECTVALUE4	NCHAR(30) NOT NULL
REFOBJECTID5	SMALLINT NOT NULL

<i>PSCIAPCXREF for Oracle and Microsoft</i>	<i>Description</i>
REFOBJECTVALUE5	NCHAR(30) NOT NULL
REFOBJECTID6	SMALLINT NOT NULL
REFOBJECTVALUE6	NCHAR(30) NOT NULL
REFOBJECTID7	SMALLINT NOT NULL
REFOBJECTVALUE7	NCHAR(30) NOT NULL
OBJECTID1	SMALLINT NOT NULL
OBJECTVALUE1	NCHAR(30) NOT NULL
OBJECTID2	SMALLINT NOT NULL
OBJECTVALUE2	NCHAR(30) NOT NULL
OBJECTID3	SMALLINT NOT NULL
OBJECTVALUE3	NCHAR(30) NOT NULL
OBJECTID4	SMALLINT NOT NULL
OBJECTVALUE4	NCHAR(30) NOT NULL
OBJECTID5	SMALLINT NOT NULL
OBJECTVALUE5	NCHAR(30) NOT NULL
OBJECTID6	SMALLINT NOT NULL
OBJECTVALUE6	NCHAR(30) NOT NULL
OBJECTID7	SMALLINT NOT NULL
OBJECTVALUE7	NCHAR(30) NOT NULL

<i>PSCIAPCXREF for DB2/OS390, DB2/Unix</i>	<i>Description</i>
PROGSEQ	INT NOT NULL
REFOBJECTID1	SMALLINT NOT NULL
REFOBJECTVALUE1	CHAR(60) NOT NULL
REFOBJECTID2	SMALLINT NOT NULL
REFOBJECTVALUE2	CHAR(60) NOT NULL
REFOBJECTID3	SMALLINT NOT NULL
REFOBJECTVALUE3	CHAR(60) NOT NULL
REFOBJECTID4	SMALLINT NOT NULL
REFOBJECTVALUE4	CHAR(60) NOT NULL
REFOBJECTID5	SMALLINT NOT NULL
REFOBJECTVALUE5	CHAR(60) NOT NULL
REFOBJECTID6	SMALLINT NOT NULL
REFOBJECTVALUE6	CHAR(60) NOT NULL
REFOBJECTID7	SMALLINT NOT NULL
REFOBJECTVALUE7	CHAR(60) NOT NULL
OBJECTID1	SMALLINT NOT NULL
OBJECTVALUE1	CHAR(60) NOT NULL
OBJECTID2	SMALLINT NOT NULL
OBJECTVALUE2	CHAR(60) NOT NULL
OBJECTID3	SMALLINT NOT NULL

<i>PSCIAPCXREF for DB2/OS390, DB2/Unix</i>	<i>Description</i>
OBJECTVALUE3	CHAR(60) NOT NULL
OBJECTID4	SMALLINT NOT NULL
OBJECTVALUE4	CHAR(60) NOT NULL
OBJECTID5	SMALLINT NOT NULL
OBJECTVALUE5	CHAR(60) NOT NULL
OBJECTID6	SMALLINT NOT NULL
OBJECTVALUE6	CHAR(60) NOT NULL
OBJECTID7	SMALLINT NOT NULL
OBJECTVALUE7	CHAR(60) NOT NULL

<i>PSCIAPCXREFTIME for Oracle and Microsoft</i>	<i>Description</i>
LASTRUN	NCHAR(60)

<i>PSCIAPCXREFTIME for DB2/OS390, DB2/UNIX</i>	<i>Description</i>
LASTRUN	CHAR(120)

File Pre-Processor

The File Pre-processor generates the following database tables that Change Impact Analysis reads to perform analysis.

- PSFILEPROCESSRUN
- PSSQLXREFDEFN
- PSSQLXREFITEM
- PSFILESQLXREFDEFN
- PSFILEXREFDEFN

Note: You must have permission to create, delete from and write to these files. If you have full privileges, you run the pre-processor and create these files beforehand.

<i>PSFILEPROCESSRUN for Oracle</i>	<i>Description</i>
LASTREFRESHDTTM	DATE
FPPSTATUS	VARCHAR2(10) NOT NULL

<i>PSFILEPROCESSRUN for MicroSoft</i>	<i>Description</i>
LASTREFRESHDTTM	PSDATETIME
FPPSTATUS	CHAR(10) NOT NULL

<i>PSFILEPROCESSRUN for Db2 z/OS</i>	<i>Description</i>
LASTREFRESHDTTM	TIMESTAMP
FPPSTATUS	CHAR(10) NOT NULL

<i>PSSLXREFDEFN for Oracle</i>	<i>Description</i>
XREF_ID	VARCHAR2(128) NOT NULL
XREF_SQLTYPE	VARCHAR2(1) NOT NULL
DBTYPE	VARCHAR2(1) NOT NULL
XREF_GROUPBY_CNT	SMALLINT NOT NULL
XREF_ORDERBY_CNT	SMALLINT NOT NULL
XREF_HAVING_CNT	SMALLINT NOT NULL
XREF_SUBQUERY_CNT	SMALLINT NOT NULL
XREF_OUTERJOIN_CNT	SMALLINT NOT NULL
LASTUPDDTTM	DATE

<i>PSSQLXREFDEFN for Oracle</i>	<i>Description</i>
SQLTEXT	LONG VARCHAR

<i>PSSQLXREFDEFN for Microsoft</i>	<i>Description</i>
XREF_ID	CHAR(128) NOT NULL
XREF_SQLTYPE	CHAR(1) NOT NULL
DBTYPE	CHAR(1) NOT NULL
XREF_GROUPBY_CNT	SMALLINT NOT NULL
XREF_ORDERBY_CNT	SMALLINT NOT NULL
XREF_HAVING_CNT	SMALLINT NOT NULL
XREF_SUBQUERY_CNT	SMALLINT NOT NULL
XREF_OUTERJOIN_CNT	SMALLINT NOT NULL
LASTUPDDTTM	PSDATETIME NULL
SQLTEXT	TEXT NULL

<i>PSSQLXREFDEFN for Db2 z/OS</i>	<i>Description</i>
XREF_ID	CHAR(128) NOT NULL
XREF_SQLTYPE	CHAR(1) NOT NULL
DBTYPE	CHAR(1) NOT NULL
XREF_GROUPBY_CNT	SMALLINT NOT NULL
XREF_ORDERBY_CNT	SMALLINT NOT NULL
XREF_HAVING_CNT	SMALLINT NOT NULL
XREF_SUBQUERY_CNT	SMALLINT NOT NULL

<i>PSSQLXREFDEFN for Db2 z/OS</i>	<i>Description</i>
XREF_OUTERJOIN_CNT	SMALLINT NOT NULL
LASTUPDDTTM	TIMESTAMP
SQLTEXT	LONG VARCHAR

<i>PSSQLXREFITEM for Oracle</i>	<i>Description</i>
XREF_ID	VARCHAR2(128) NOT NULL
XREF_SQLTYPE	VARCHAR2(1) NOT NULL
DBTYPE	VARCHAR2(1) NOT NULL
XREF_ITEMSEQ	SMALLINT NOT NULL
XREF_ITEMTYPE	VARCHAR2(4) NOT NULL
XREF_RECNAME	VARCHAR2(30) NOT NULL
XREF_VALUE	VARCHAR2(128) NOT NULL
XREF_USAGE	VARCHAR2(4) NOT NULL
XREF_CLAUSE	VARCHAR2(5) NOT NULL

<i>PSSQLXREFITEM for Microsoft, Db2 z/OS</i>	<i>Description</i>
XREF_ID	CHAR(128) NOT NULL
XREF_SQLTYPE	CHAR(1) NOT NULL
DBTYPE	CHAR(1) NOT NULL
XREF_ITEMSEQ	SMALLINT NOT NULL
XREF_ITEMTYPE	CHAR(4) NOT NULL
XREF_RECNAME	CHAR(30) NOT NULL

<i>PSSQLXREFITEM for Microsoft, Db2 z/OS</i>	<i>Description</i>
XREF_VALUE	CHAR(128) NOT NULL
XREF_USAGE	CHAR(4) NOT NULL
XREF_CLAUSE	CHAR(5) NOT NULL

<i>PSFILESQXREFDEFN Oracle</i>	<i>Description</i>
SOURCE_FILE	VARCHAR2(40) NOT NULL
FILE_TYPE	VARCHAR2(4) NOT NULL
XREF_ID	VARCHAR2(128) NOT NULL

<i>PSFILESQXREFDEFN for Microsoft, Db2 z/OS</i>	<i>Description</i>
SOURCE_FILE	CHAR(40) NOT NULL
FILE_TYPE	CHAR(4) NOT NULL
XREF_ID	CHAR(128) NOT NULL

<i>PSFILEXREFDEFN for Oracle</i>	<i>Description</i>
SOURCE_FILE	VARCHAR2(40) NOT NULL
CALLED_FILE	VARCHAR2(40) NOT NULL
FILE_TYPE	VARCHAR2(3) NOT NULL

<i>PSFILEXREFDEFN for Microsoft, DB2/Unix, DB2/OS390</i>	<i>Description</i>
SOURCE_FILE	CHAR(40) NOT NULL
CALLED_FILE	CHAR(40) NOT NULL
FILE_TYPE	CHAR(3) NOT NULL