nehta

AMT Viewer

Installation and user guide

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Table of contents

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1   Introduction

1.1   Purpose

The purpose of this document is to explain how to install and use the Australian Medicines Terminology (AMT) Viewer.

1.2   Intended audience

This document should be read by anyone who intends to install or use the AMT Viewer. The reader should be familiar with the NEHTA AMT model and have a basic knowledge of SNOMED CT[1]. Supporting documentation is listed in Section 1.4.

1.3   Scope

This document explains the installation and basic use of the AMT Viewer. It does not provide background details on the AMT itself, nor does it detail the latest AMT release.

1.4   Supporting documentation

This user guide has been released in conjunction with the NEHTA AMT Viewer download and should be read in conjunction with the following AMT documentation:

- *Australian Medicines Terminology release note*
- *Australian Medicines Terminology release UML class diagram*
- *Australian Medicines Terminology editorial rules*
- *Australian Medicines Terminology technical specifications*

Licensed users[2] can access these documents from the National Clinical Terminology and Information Service (NCTIS) website (https://nehta.org.au/aht/index.php), and selecting **Downloads > Australian Medicines Terminology**.

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[1] This material includes SNOMED Clinical Terms® (SNOMED CT®) which is used by the permission of the International Health Terminology Standards Development Organisation (IHTSDO®). All rights reserved. SNOMED CT was originally created by The College of American Pathologists. IHTSDO®, SNOMED® and SNOMED CT® are registered trademarks of the IHTSDO.

[2] See Section 2.2 for licensing details.

1.5   History of changes

The following table summarises the changes that have been made to the Viewer and this document.

AMT Release	Viewer/Documentation change
v1.0.0-Beta	New 'pill concept' functionality.
v1.4	UUIDs of a concept's associated descriptions and relationships displayed in Component View.
v1.9	New 'Find dependencies' functionality.
v1.13	Illustrations corrected.
v2.19	Documentation streamlined to remove release dependencies.
v2.24	Significant update to address new functions. This guide is now derived from the *SNOMED CT-AU viewer guide*.
v2.26	Significant update in response to feedback from naïve readers.
v2.27	Secure website references changed to NCTIS.
v2.33	Updated with export/import list details and concept export.
v2.39	Minor editorial changes.
v2.43	Instructions for Windows 7 installation.

1.6   Questions and feedback

The National Clinical Terminology and Information Service welcomes your questions, feedback and input in relation to the AMT Viewer, AMT releases, or this document itself. Please direct your queries and comments to help@nehta.gov.au.

2   Installation

2.1   Overview

To obtain the AMT Viewer installer, you first need a SNOMED CT licence. And if you have already installed a previous version of Viewer you need to uninstall it before installing the current version. Accordingly, the installation sequence proceeds as per Figure 1 below.
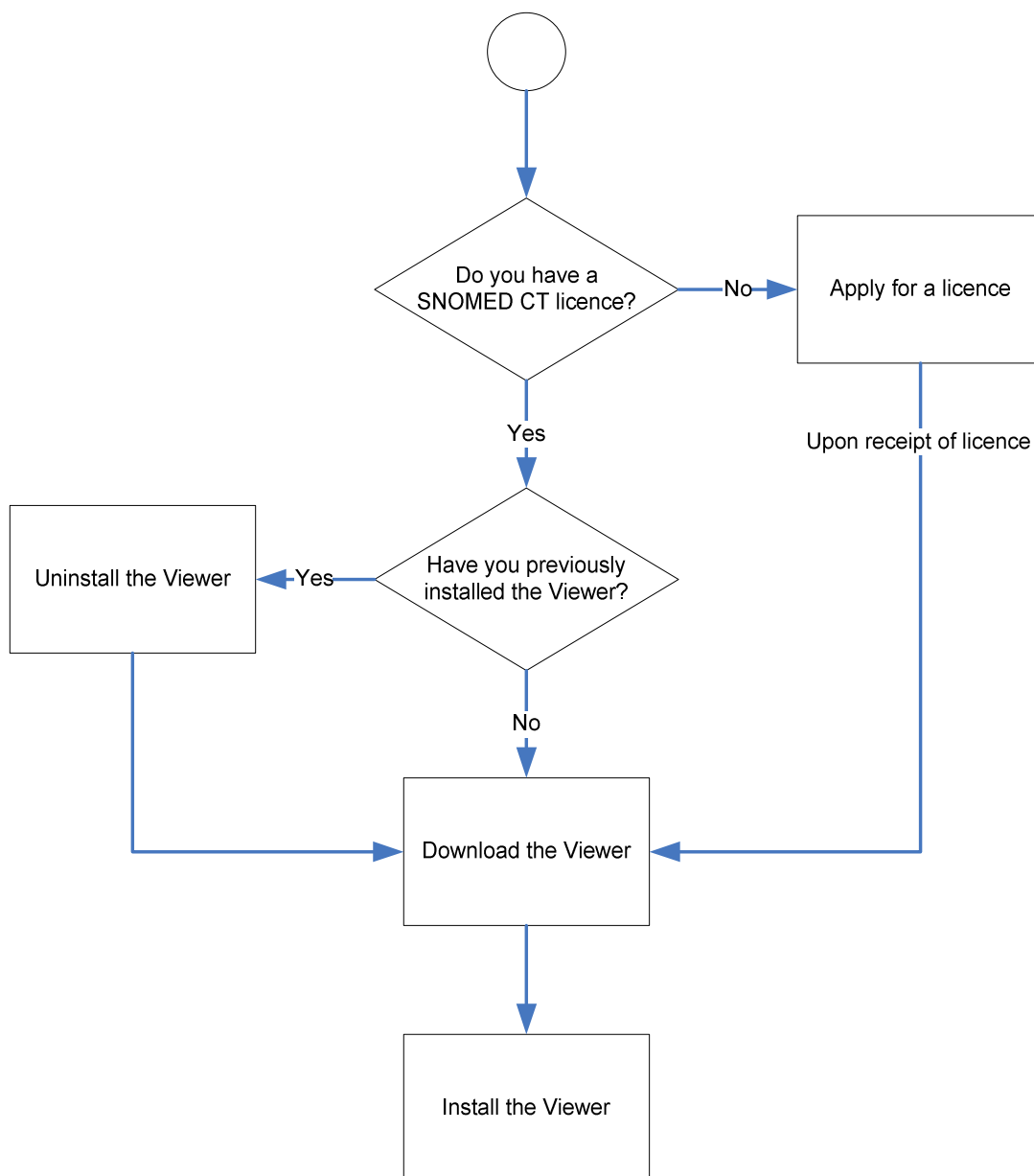
Figure 1: Installation sequence

These steps are detailed in Sections 2.2, 2.3, 2.4 and 2.5 below.

2.1.1   System requirements

Installation and use have been tested on the configurations described below. It is recommended that a similar configuration (or better) be used. NEHTA cannot guarantee reliable operation using a lesser configuration.

2.1.1.1   Windows system requirements (minimum)

- Windows$^®$ XP Professional version 2002, Service Pack 2; Intel Pentium M 1.73 GHz.

2.1.1.2   Mac system requirements (minimum)

- Mac OS$^®$ X version 10.4.10; 2.16 GHz Intel Core Duo; RAM 1GB.
- Mac OS X version 10.4.9; 1.5 GHz PowerPC G4; RAM 512MB.

2.2   Do you have a SNOMED CT licence?

- If so, you can skip the rest of this section, and go to Section 2.3.
- If you don't have a SNOMED CT licence, click on the following link to view and download SNOMED CT licence agreements and related documentation:

  https://nehta.org.au/aht/index.php?option=com_docman&task=cat_view&gid =14&Itemid=40.

SNOMED CT licences are free of charge. Once you have obtained your licence, you will be able to log into the National Clinical Terminology and Information Service website and download the viewer.

2.3   Have you previously installed the Viewer?

- If not, you can skip the rest of this section, and go to Section 2.4.
- If a previous version of the Viewer is on your computer, please uninstall previous versions as per the following instructions:
  - **Windows:** Click the Start button and select **All Programs > AMT Viewer > AMT Viewer Uninstaller**.
  - **Mac:** Drag the application to the trash and empty the trash.

2.4   Download the Viewer

1. Log into the NCTIS website (https://nehta.org.au/aht/index.php).
2. Select **Downloads > Australian Medicines Terminology** from the menu on the left of the screen.
3. Select either the Windows or Macintosh version of the Viewer from this page.

The download package contains the installer for either Windows or Macintosh systems, as well as this document and the AMT Viewer end user license agreement.

2.5   Install the Viewer

2.5.1   Windows installation

The installation process for Windows 7 differs from that of earlier versions of Windows, as detailed below.

2.5.1.1   Windows 7 installation

Important: If this is *not* your first installation of the AMT Viewer, please uninstall previous versions as per the instructions in Section 2.3 before proceeding to install the current version.

1. Double-click `amt_viewer_windows_YYYYMMDD.exe`[3] to launch the installer, which will guide you through the installation process.

2. The default installation location is within `C:\Program Files`, which is a system directory. Users without administrator rights will be unable to install to this directory. Such users should instead create a directory such as `C:\amt_viewer` when prompted for the location of the installation, as depicted below.
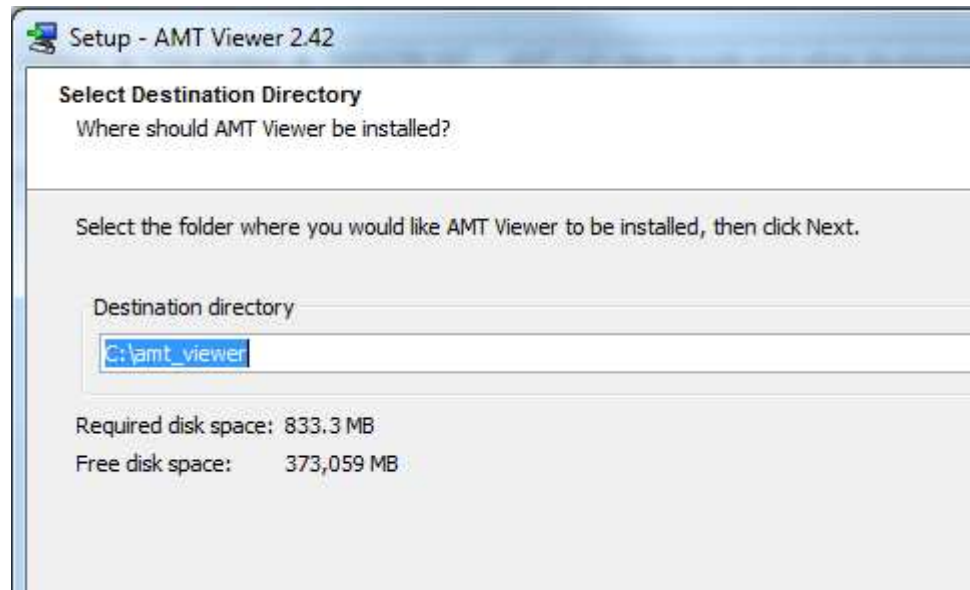
Figure 2: Recommended installation location for Windows 7 users

2.5.1.2   Installing on earlier versions of Windows

Important: If this is *not* your first installation of the AMT Viewer, please uninstall previous versions as per the instructions in Section 2.3 before proceeding to install the current version.

1. Double-click `amt_viewer_windows_YYYYMMDD.exe`[4] to launch the installer, which will guide you through the installation process.

2. The default settings should be suitable for Windows versions before Windows 7.

2.5.2   Mac installation

Important: If this is *not* your first installation of the AMT Viewer, please uninstall previous versions as per the instructions in Section 2.3 before proceeding to install the current version.

1. Double-click `amt_viewer_macos_YYYYMMDD.dmg`[5] to launch the installer, which will guide you through the installation process.

2. The default settings should be suitable for all supported versions of Mac OSX.

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[3]   'YYYYMMDD' here is a placeholder for the release date of the installer.

[4]   'YYYYMMDD' here is a placeholder for the release date of the installer.

[5]   'YYYYMMDD' here is a placeholder for the release date of the installer.

3   Introduction to the AMT Viewer

3.1   Launching the AMT Viewer

Windows: Click the **Start** button and click **All Programs > AMT Viewer > AMT Viewer**.

Mac: Double-click the application icon.

The AMT Viewer displays two windows when it is launched:

- Activity Viewer

- Viewer Window; AMT Viewer

The Activity Viewer is a simple window that logs the activities of the AMT Viewer as it fetches concepts to be displayed. It can be closed without affecting the rest of the Viewer in any way; it is not discussed further in this document.

In the following, all references to the AMT Viewer interface refer to the 'Viewer Window; AMT Viewer' window.

3.2   The AMT Viewer interface

The AMT Viewer consists of three main work areas, as depicted in Figure 3:

- *Hierarchy view:* provides access to the available hierarchies. (See Section 3.3.)

- *Component view:* displays the details of concepts. (See Section 3.4.)

- *Search panel:* provides search functionality. (See Section 3.5.)

In addition to these work areas, a strip on the bottom of the viewer window called the Task Bar provides feedback on selections and background activities.

Hierarchy view   Component view

Search panel
(click on Binoculars to view)
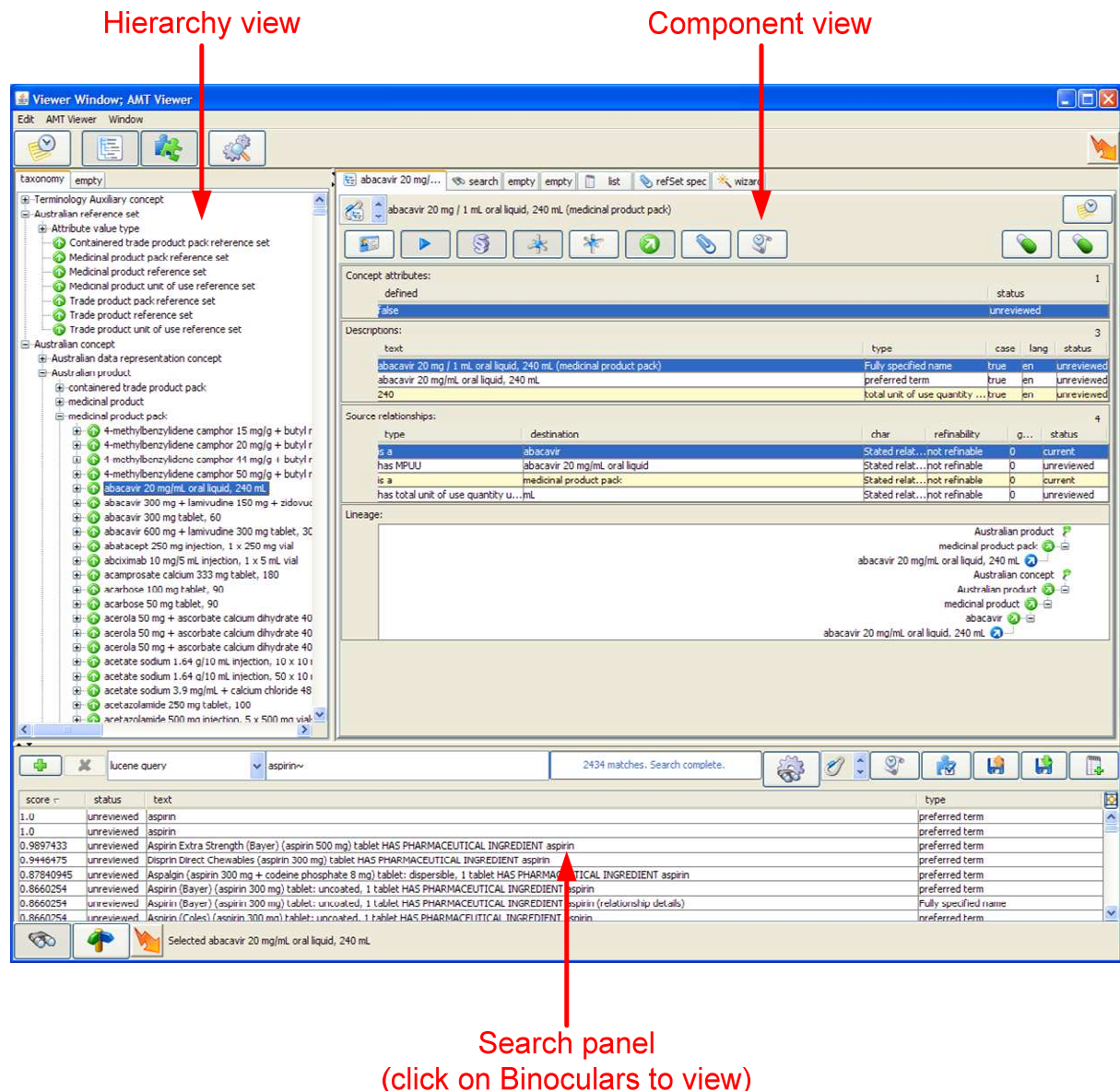
Figure 3: AMT Viewer interface

The separators between each of these work areas can be adjusted by clicking and dragging the separator to the desired position. The separators that can be manipulated in this way are indicated by two small triangles, and the cursor changes to a double arrow when hovering over a separator. See Figure 4.

Two triangles indicate that   Cursor changes to double
the separator can be   arrow when over a
dragged to resize   resizable separator
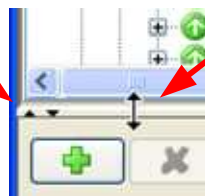

Figure 4: Resizing windows

3.3   Hierarchy view

The Hierarchy view[6] is displayed under the **taxonomy** tab in the panel on the left of the AMT Viewer. The second tab in this panel displays a second instance of the Component view (see Section 3.4).

The Hierarchy view can be navigated by selecting the plus ⊞ or minus ⊟ icons, which indicate if there are more levels within the hierarchy.
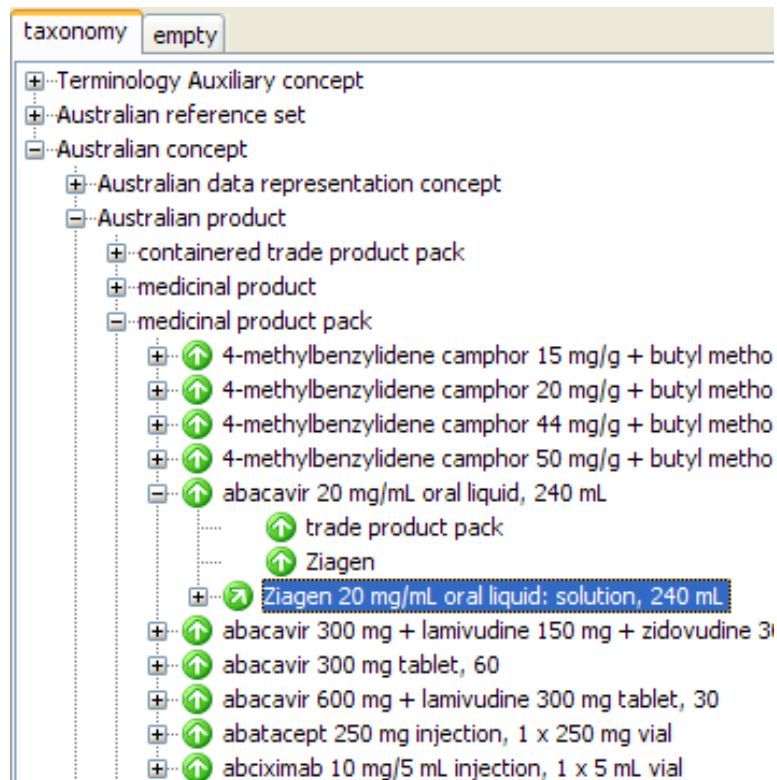

Figure 5: Hierarchy view

A vertical green arrow ⬆ next to a concept indicates that it has multiple lineages, i.e. more than one parent concept. Click on this arrow to display a list of a concept's other parent concepts in the hierarchy. The vertical arrow will change to a diagonal arrow ↗. Click on it again to hide the list of parent concepts.

When a concept is highlighted, information about it appears in the Component view to the right. (This is the default behaviour: other modes of interaction can be configured via the **Concept Linkage** box, which is described in Section 5.4.1.1.)

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6   This view is sometimes described as the 'Taxonomy view' or 'Tree view' in other documents.

3.4   Component view

The Component view displays details of the concept selected in the Hierarchy view. This view is more complex than the Hierarchy view, and offers many functions and customisation options. See Figure 6.
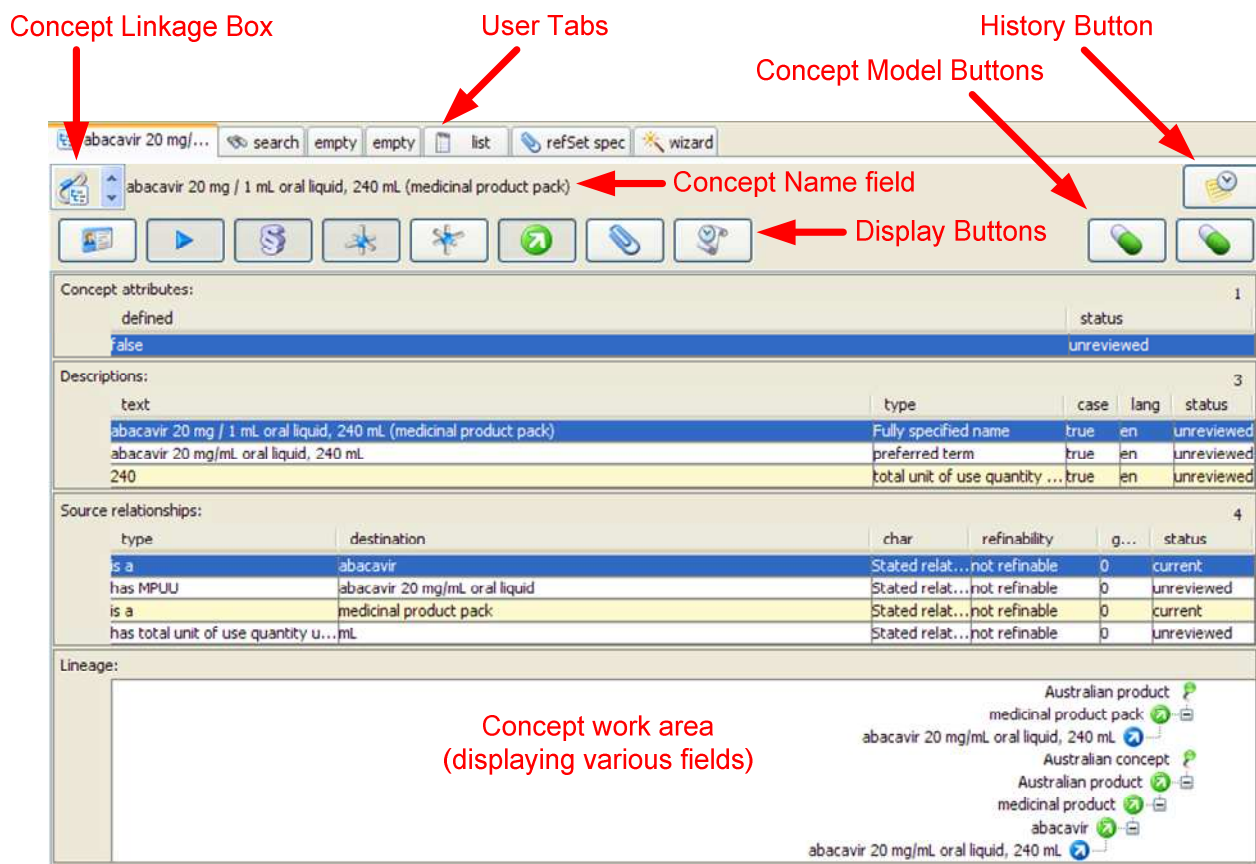
Figure 6: Component view

The majority of the space in the Component view is given to the Concept work area, which displays fields detailing various concept attributes. A number of interface elements are provided to control or interact with the information displayed in the Concept work area, namely:

User tabs	These allow you to store concept details in different tabs. (See Section 5.4.1.)
Concept Linkage box	This allows you to configure the relationship between the active tab and the other content being viewed. (See Section 5.4.1.1.)
Concept Name field	Drag or copy/paste concepts from the Hierarchy view or any field within the Concept work area to this field to display details of the concept. (See Section 5.4.1.2.)
History button	This displays a history of the concept displayed under that tab. (See Section 5.4.1.3.)
Display buttons	These control the display of fields in the Concept work area. (See Section 5.4.1.4.)
Concept Model buttons	These buttons display the concept model for the selected item. (See Section 5.4.1.5.)

3.5   Search panel

The Search panel is displayed by clicking on the **Binoculars** button [image] in the Search Bar at the bottom of the AMT Viewer window. This panel provides for a number of search parameters and related functions such as saving search criteria for later re-use.

The Search panel can be hidden by clicking on the **Binoculars** button.

4   Basic operations

4.1   How to view AMT content

AMT content can be viewed by 'drilling down' through the concepts by clicking on the '**plus**' button ⊞ on the left of each concept displayed in the Hierarchy view on the left of the window.

You can drill down further into the AMT content by clicking on successively lower '**plus**' buttons ⊞ to reveal deeper elements within the hierarchy.

4.2   How to navigate to reference sets

AMT is a *hierarchy* of concepts, and reference sets are represented as types of concepts. Reference sets can be viewed directly under the top-level *Australian reference set* concept, as depicted below. (Most these reference sets are also displayed one level down the hierarchy, under **Australian reference set > Attribute value type**. The reference sets displayed here have the same content as those displayed above them in the hierarchy.)
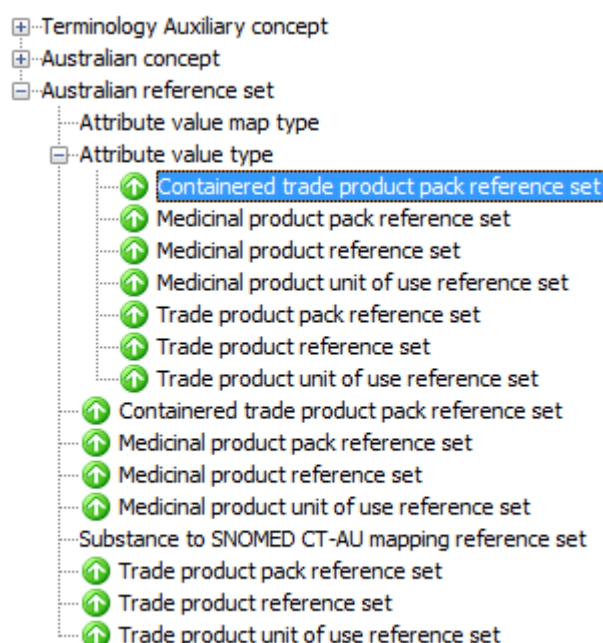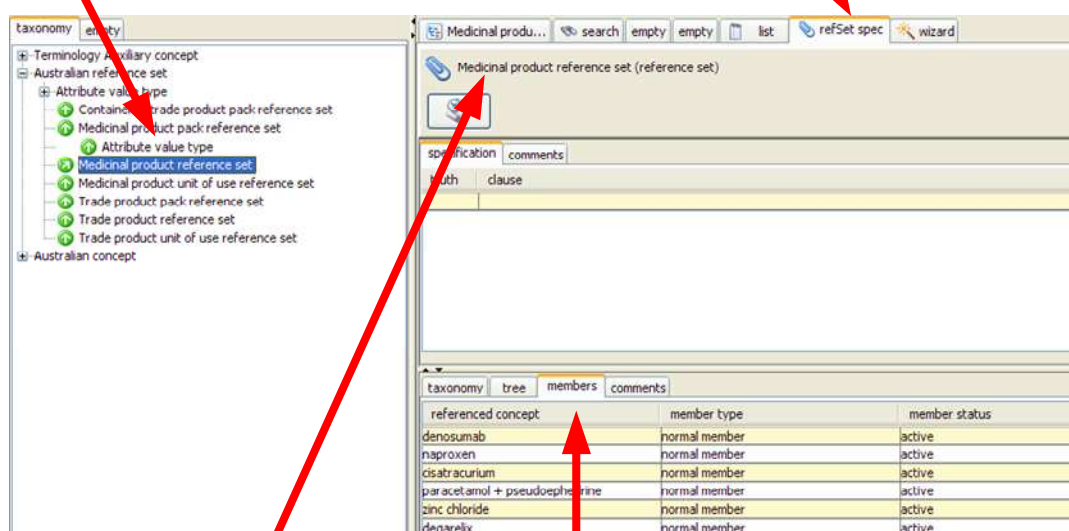

Figure 7: AMT reference sets

4.3   How to view the content of a reference set

1. Navigate to a reference set as per Section 4.2.

2. Select the **RefSet Spec** tab in the Component view on the right of the AMT Viewer window.

3. Drag a reference set onto the **RefSet Name** field, which is immediately to the right of the **blue paperclip** displayed under this tab.

4. The content of the reference set will display under the **members** tab in the Component view. (See Figure 8.)

1. Select a reference set   2. Select the 'refSet spec' tab

3. Drag the reference set here   4. The reference set content displays
                                                   under the 'members' tab

Figure 8: Viewing the content of a reference set

Four tabs are available in this bottom panel, presenting different views of the same reference set information.

- **taxonomy** displays the reference set in the context of the broader AMT concept hierarchy.[7]

- **tree** provides a hierarchical view of the reference set without the context of the broader concept hierarchy.[8]

  In other words, the information displayed under this tab is a *subset* of the information displayed under the **refSet spec** tab.

- **members** displays the content of the reference set in a tabular format.

  This table consists of four columns: 'referenced concept', 'member type', 'member status' and 'promotion status'. The table can be sorted by clicking on the relevant column header.

- **comments** is not used in this release of the Viewer.

4.4   How to search for a concept or concept id

Both concepts and concept ids can be searched for by utilising the Search panel at the bottom of the AMT Viewer window.

1. Click on the **Binoculars** button ⬚ in the Search Bar to display the Search panel.

2. Enter the name of the concept (or the number of the concept id) in the Search field (Figure 9).

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[7]   Not functional in the current release.

[8]   Not functional in the current release.
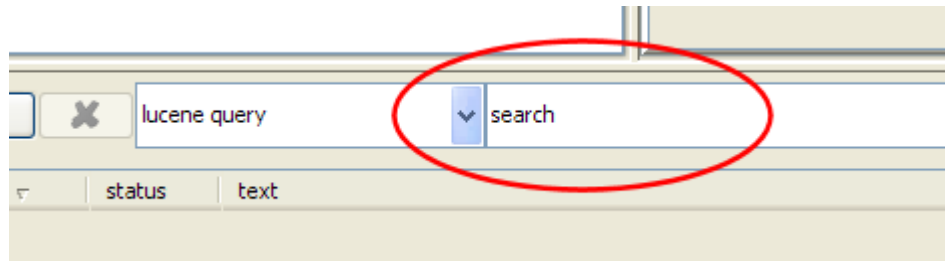
Figure 9: Search field

3. Click on the **Execute Search** button [icon].

    All descriptions containing the search query are returned. More than one description may be provided for a single concept or concept id.

Many search options are available: see Section 5.5 for details.

4.5   How to search for a concept in a reference set

1. Click on the **Binoculars** button [icon] in the Search Bar to display the Search panel.

2. Enter the text to search for in the Search field.

3. Click on the **Add Criteria** button [icon] in the Search panel to display additional search criteria.

    An additional search panel will display for the entry of these additional criteria. The configuration of this panel is dependent upon the criteria selected.

4. Select 'refset member' from the drop-down menu in the new search criteria panel.

5. Display a reference set as per Section 4.1.

6. Drag a reference set onto the green 'refset' field in the Search panel.

7. Click on the **Execute Search** button [icon]. (See Figure 10 for an example.)
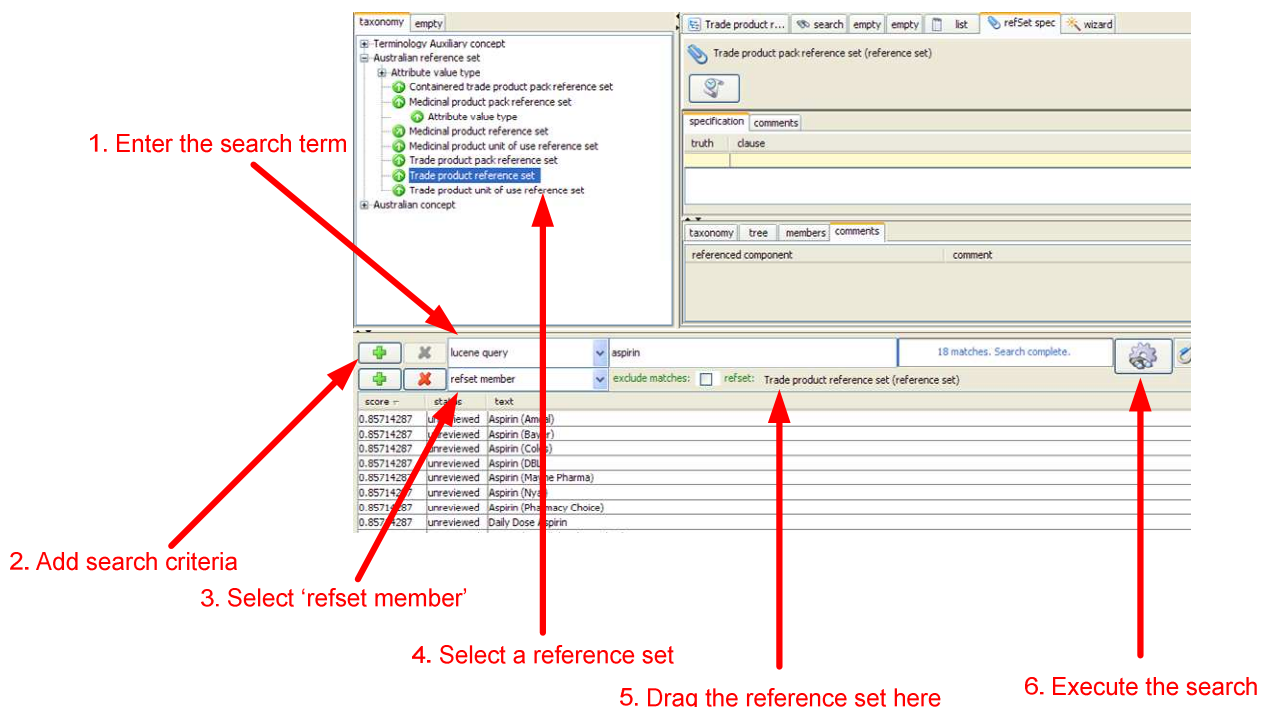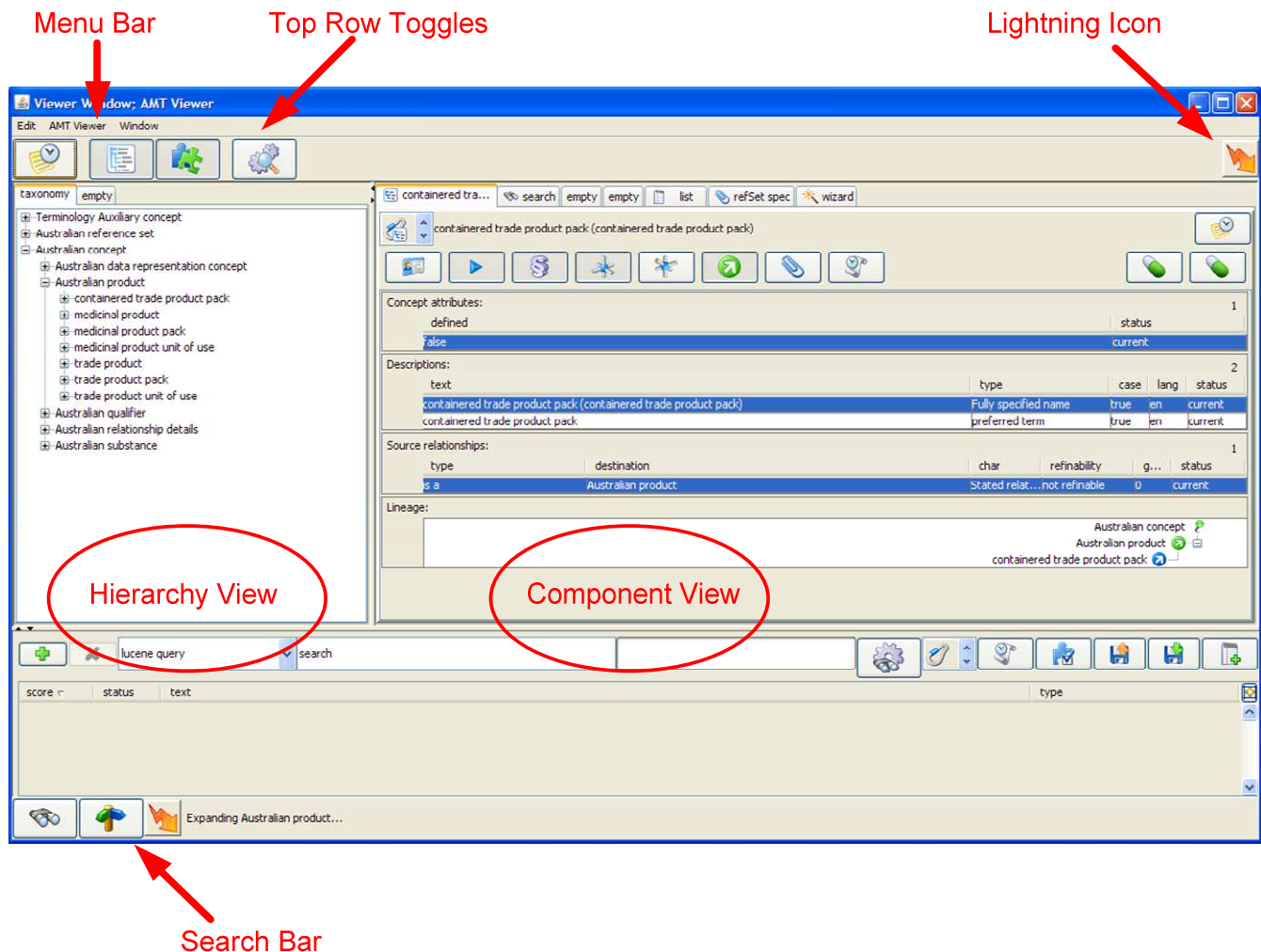

Figure 10: Searching for a concept within a reference set

5   Features in detail

There are six main elements in the AMT Viewer interface (Figure 11):

1. Menu Bar (see Section 5.1)

2. Top Row Toggles (see Section 5.2)

3. Lightning Icon (see Section 5.3)

4. Hierarchy View (already described in Section 3.3)

5. Component view (see Section 5.4)

6. Search Bar (see Section 5.5)

Figure 11: AMT Viewer window

5.1   Menu Bar

The Menu Bar displays three menus:

- Edit

- AMT Viewer

- Window

The **Edit** menu provides familiar *Cut*, *Copy* and *Paste* functions, which can be used (for example) to copy concepts into the Search panel or into the List tab. There are two additional functions on this menu that have not yet been implemented: *Copy XML* and *Copy Tab Delimited Text*.
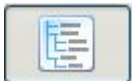
The **AMT Viewer** menu has a single option: *About AMT Viewer …*, which displays basic legal and copyright information about the AMT Viewer, including the version number of the data release.

The **Window** menu provides options for displaying each of the AMT Viewer windows (see Section 3.1) as well as the option to launch an additional 'Viewer Window; AMT Viewer' window.

5.2   Top Row Toggles

The Top Row Toggles toggle the display of different views as shown in Table 1 below.

Table 1: Top Row Toggles

	History button: Shows a list of the concepts previously viewed by the user in any of the tabs.
	Hierarchy button: Displays or hides the Hierarchy view of the terminology.
	Component button: Displays or hides the Component view.
	Activity button: Displays the Activity Viewer (see Section 3.1).

5.3   Lightning icon

The **Lightning** icon appears in two places: on the right of the top row, as well as in the Search Bar. Its behaviour is exactly the same in both locations. It offers a quick way to populate a concept work area tab with a concept, or to locate a concept in the hierarchy.

5.3.1   How to use the Lightning icon

1. Drag a concept from the taxonomy pane, or from any field in the Concept work area, and drop it onto either one of the **Lightning** icons.

2. When the popup appears, select either:

    – Show in taxonomy

    – Put in Concept tab L – 1

    – Put in Concept tab R - 1

    – Put in Concept tab R - 2

    – Put in Concept tab R - 3

    – Put in Concept tab R - 4

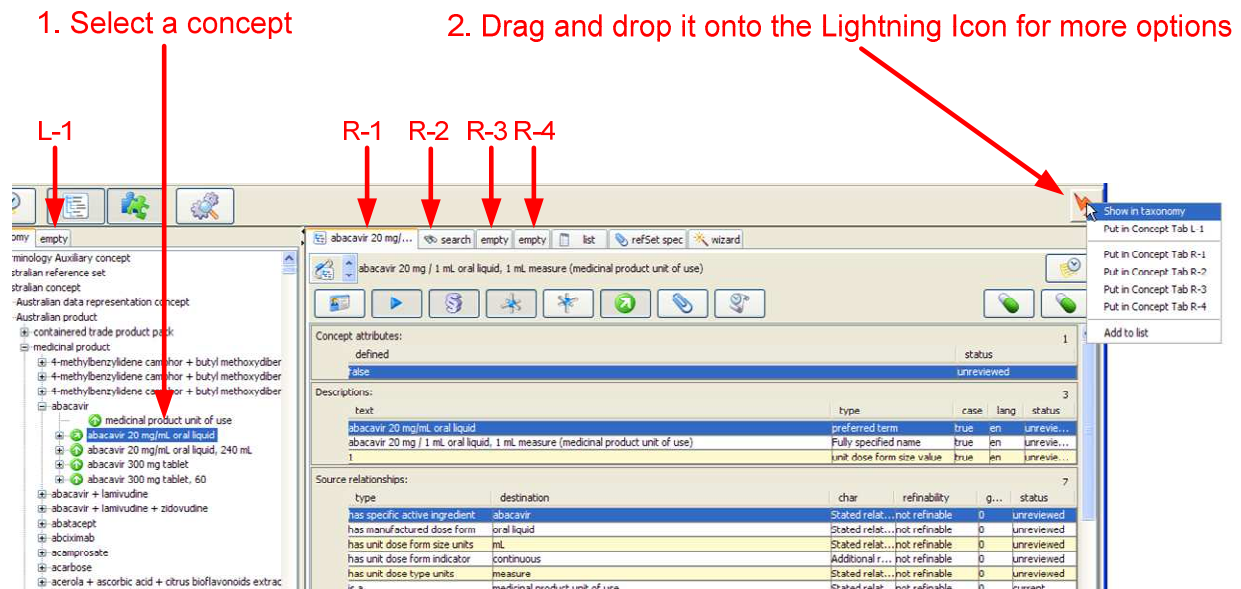   – Add to list

   (See Figure 12 below.)

Figure 12: Using the Lightning icon

5.4   Component view

The Component view consists of:

- Four concept tabs (see R-1, R-2, R-3 and R-4 in Figure 13), each of which includes:
  - a **Concept Linkage** box (see Section 5.4.1.1);
  - a **Concept Name** field (see Section 5.4.1.2);
  - a **History** button (see Section 5.4.1.3);
  - **Display** buttons (see Section 5.4.1.4); and
  - **Concept Model** buttons (see Section 5.4.1.5).
- A **list** tab (see Section 5.4.2).
- A **refSet spec** tab (see Section 5.4.3).
- A wizard tab (which is not active in this release).
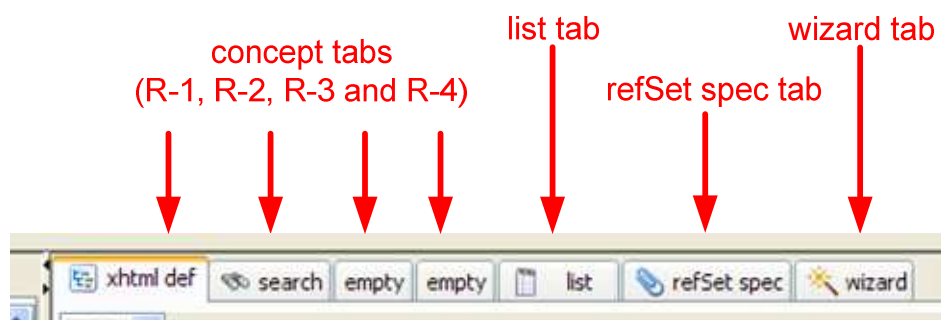
See Figure 13 below.

Figure 13: Component view tabs

Clicking on any of these tabs displays a variable number of fields that in turn display distinctive views or aspects of the information being sought.

5.4.1 Concept tabs

There are four concept tabs in the Component view. These tabs allow you to view multiple concepts and move between them easily.

By default the *first and second tabs* are linked to the Hierarchy view[9] and the Search panel respectively. This means that when a concept is selected in the hierarchy or from the search results, the concept will automatically be viewable in the relevant tab.

These default behaviours can be overridden by selecting options in the **Concept Linkage** box, described in Section 5.4.1.1.

The *third and fourth tabs* are empty by default. You can use these tabs to display other concepts alongside the ones you're already displaying. Tabs can be populated by either:

- making a selection in the **Concept Linkage** box (see Section 5.4.1.1), followed by the appropriate selection from the Hierarchy view or search results (see Section 5.5.1); or

- dragging and dropping a concept onto a **Lightning** icon, and then selecting the desired tab from the pop-up menu (see Section 5.3); or

- dragging and dropping a concept onto the Concept Name field (see Section 5.4.1.2).

5.4.1.1 Concept Linkage box

The **Concept Linkage** box controls the relationship between the Component view and the other parts of the AMT Viewer. By default it is in 'Hierarchy' mode, which links the Component view to the Hierarchy view.

Table 2: Concept Linkage box modes

Image	Mode	Description
	Hierarchy	In this mode the Component view displays details of the concept selected in the Hierarchy panel.
	Search	In this mode the Component view displays details of the concept selected in the Search panel.
	Unlinked	This mode disengages the Concept work area from the other panels. This option can be useful when you wish to use a particular concept for comparison with others, since it does not change when you select another concept in the hierarchy or from the search results.
	List	This mode links the Concept work area to the concept selected in the List View. This option is only available under the **List** tab.[10]

Click on either the up or down arrows to the right of the icon to switch between the available options.
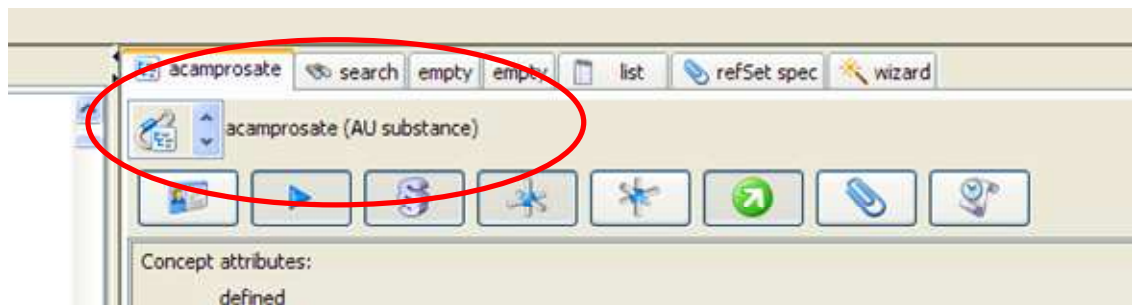
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[9]   This view is sometimes described as the 'Taxonomy view' or 'Tree view' in other documents.

[10]   Not functional in the current release.

5.4.1.2   Concept Name field

The **Concept Name** field displays the name of the concept displayed in the Component view. It is adjacent to the Concept Linkage box, as depicted below.

Figure 14: Concept Name field

Since the **Concept Linkage** box determines the relationship between the Component view and the rest of the AMT Viewer (Section 5.4.1.1), the typical behaviour of this field is controlled by the mode of the Concept Linkage box. That is, if the **Concept Linkage** box is in Hierarchy mode, then the **Concept Name** field displays the concept selected in the Hierarchy view, and so on.

An additional function of this field is to override the **Concept Linkage** box by dragging a concept from any part of the AMT Viewer interface. The details of the concept dropped onto this field will then display in the Component view in the usual fashion.

5.4.1.3   History button

 Click on this button to display a list of the concepts displayed under the active tab. You can select a concept from the displayed list to immediately display that concept again.

Apart from the concept tabs, this button also appears:

- under the **list** tab when the Component view is displayed; and
- under the **refSet spec** tab.
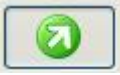
5.4.1.4   Display buttons

The **Display** buttons toggle the display of different fields in the Concept work area, as described in Table 3 below.

Table 3: Display buttons

	ID: Activates the identifiers for the concept, descriptions and relationships. The 'id' column displays the concept ID as well as the UUID on separate rows.
	Concept Attributes: Shows the status of the concept and whether the concept has been fully defined or not (i.e. true or false).
	Descriptions: Shows the description details for the concept. The columns include the text of the description, the type of description (which could include XHTML fully specified name or XHTML preferred term) and the remaining columns are for case sensitivity, language and status.

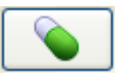|	
	Source Relationships: Shows the relationships where the concept is the source. This includes IS A hierarchical relationships as well as AMT-specific relationships. The columns include the type of relationship, destination concept, characteristic of the source relationship, refinability, grouping and status. These are the attribute relationships for the selected concept.
	Destination Relationships: Shows the relationships where the concept is the destination. This includes IS A hierarchical relationships as well as AMT-specific relationships. The columns include the origin concept, relationship type, destination concept, characteristic of the source relationship, refinability, grouping and status. These relationships are where the concept serves as an attribute value for another concept.
	Lineage: Provides a visual aid to help identify where the selected concept resides in the hierarchy. The selected concept is designated with a blue arrow to highlight where it is when multiple lineages exist (if any).
	Refsets: Toggles the display of the reference sets that the selected concept is a member of. **Concept attributes** need to be displayed for these reference sets to be visible.
	History Records: Provides a historical view of the status for the selected concept and its associated descriptions and relationships that may be added or removed. This information is displayed in 'Version' and 'Path' columns in the **Id**, **Concept attributes**, **Descriptions**, **Source relationships** and **Destination relationships** panels.

5.4.1.5 Concept Model buttons

The **Concept Model** buttons toggle the display of different concept models in the Search panel, as tabulated below.

Table 4: Concept Model buttons

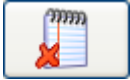|	
(Left)	**Fully Specified Names:** Displays the concept in the AMT concept model, using Fully Specified Names.
(Right)	**Preferred Terms:** Displays the concept in the AMT concept model, using Preferred Terms.

To hide the displayed concept model, click on either:

- the **Binoculars** button (Section 5.5);
- the **Signpost** button (Section 5.5); or
- the resizable separators (as shown in Figure 4).

5.4.2   List tab

The **List** tab is used to store concepts in a convenient list format. This tab contains three unique buttons, as tabulated below. See also Figure 15.

Table 5: Buttons under the List tab

	Component View: Click on this button to display the component view associated with this concept.
	Clear: Click on this button to clear the list.
	Select Input File: Click on this button to select an input file to add a list to concepts to the current view.
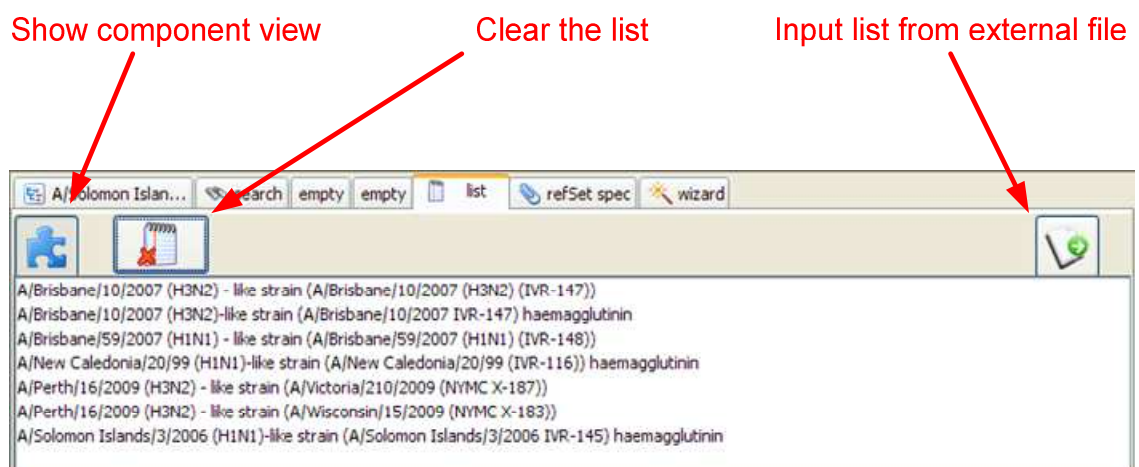
Figure 15: List tab

You can populate the List tab by any of the following methods:

- You can drag a concept directly from the Hierarchy view into the list.

- You can select the List mode in the **Concept Linkage** box (see Section 5.4.1.1), followed by the appropriate selection from the Hierarchy view or search results (see Section 5.5.1).

- You can click on the **Save To List** button in the search panel, which sends all concepts in the search panel to the list (see Section 5.5.1).

- You can drag a concept onto a **Lightning** icon, and select '*Add to list*' from the pop-up menu (see Section 5.3).

- You can click on the **Select Input File** button to select an external file and add it to your list.

Details of the concept selected in the list are displayed in the concept work area below. (If they are not, click on the **Component View** button to display the concept details.)

To delete a concept from the **List** tab, simply select it and press **Delete**. Concepts can only be deleted one at a time.

5.4.2.1   Export contents of the list view

To export all of the concepts from the list view to file, select the **Save list to file** button from within the list view tab.

In the file dialog, choose a directory and either select a file or enter a new filename. Click **OK**.

Note: Existing files will be overwritten.

5.4.2.2   Import concepts from file

You can import a file containing concepts in the same format produced from the export processes. The concepts listed in this file will be added to the list view. This makes it possible to save lists of concepts and retrieve them later, for example after the viewer has been restarted.

To import all of the concepts from a file into the list view, select the **Read a list from a file** button from within the **list view** tab.

After clicking the import button, a file selection window will be displayed. Choose the file to be imported and click **OK**.

Each concept listed in the file will then be added to the list in the list view. It will not affect concepts already in the list.

The process will verify that, for each row in the file, the term corresponds to the specified identifier to ensure validity of the item. The status of the term (e.g. it may have been retired) does not affect the import process.

5.4.3   RefSet Spec tab

The **RefSet Spec** tab can be used to examine reference sets. Like all tabs it includes the **History** button (Section 5.4.1.3). It also includes the **History Records** button, which is described in Table 3.

Unique features of this tab include the **RefSet Name** field and the **taxonomy**, **tree**, **members** and **comments** tabs, all of which are described in Section 4.3.

Lastly, it should be noted that this tab also includes the Specification panel, which can be used to detail the specification logic used to generate certain reference sets. This panel is not functional in this release, however, because AMT does not yet include any reference sets with this detail exposed.

5.5   Search Bar

The Search Bar is at the bottom of the AMT Viewer, and displays three buttons, as described below.

Table 6: Search Bar buttons

	Binoculars button: Toggles the display of the search panel. See Section 5.5.1 for more information.
	Lightning icon: Use this icon to quickly populate a concept work area tab with a concept, or to locate a concept in the hierarchy. (See Section 5.3 for more information.)
	Signpost button: Toggles the display of component information in the bottom panel.

5.5.1   Search panel

The Search panel is displayed by clicking on the **Binoculars** button in the Search Bar. You can use the Search panel to search the hierarchy with the assistance of multiple search parameters as well as related functions such as saving search criteria for later re-use.

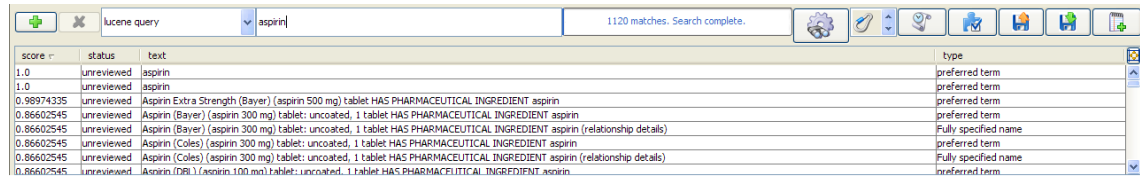The Search panel displays a number of fields and buttons along the top, and the search results are displayed below.
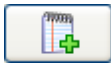
Figure 16: Search panel

The buttons and fields in the Search panel are as follows:

Table 7: Search panel buttons

	Add Criteria button: Add additional search criteria for advanced searches. See Section 5.5.4 for more information.
	Remove Criteria button: Removes additional search criteria (one at a time). See Section 5.5.4 for more information.
	Search Type Menu: Use this drop-down menu to select either the standard ('Lucene') query or a regex query. See Sections 5.5.2 and 5.5.3 for more information.
	Search field: Enter your search criteria here.
	Search Summary field: This field displays a summary of the search status.
	Execute Search button: Click on this button to execute a search.
	Search Concept Linkage box: when it is in this mode the search results *are not* connected to the Hierarchy view.
	Search Concept Linkage box: when it is in this mode the search results *are* connected to the Hierarchy view (i.e. clicking a search result displays the selected concept in the hierarchy panel).
	Historical Search button: click this button before a search to include historical descriptions (including retired descriptions and descriptions of retired concepts).
	Filter search button: This button is not active in this release of the Viewer.

	Retrieve Saved Search button: Retrieves saved searches. See Section 5.5.5 for more information.
	Save Search button: Saves the current search for future re-use. See Section 5.5.5 for more information.
	Save To List button: Saves the current search results to the List tab. See Section 5.4.1.1 for more information.
	Search Criterion button: Toggles the display of search criteria.

5.5.2   Basic search

To execute a basic ('Lucene') search[11], enter text in the search field and click on the

Execute Search button   on the right of the search field. The results will display in the bottom part of the Search panel, along with summary information about the search.

Search results are ranked by a score indicating their relevance to the search parameters. The search results also display the returned text (of course), as well as the type of entity returned.

Most searches should return their results almost instantly. During longer searches, the **Execute Search** button in the Search panel is replaced by the **Stop** button. Click on this button if you wish to cancel the search.

Searches can be executed in a number of ways, and can include variables to indicate inclusion or exclusion of words and phrases, as summarised in the following table.

Table 8: Inclusion/exclusion syntax

Inclusion/exclusion syntax	Sample search term	Partial sample results
Asterisks are wildcards	asp*	• Adenosine (Aspen) • Aspalgin • Aspirin (Bayer)
Searching defaults to an (inclusive) OR search, not an AND search.	aspirin codeine	• aspirin • aspirin 250 mg + codeine 5.89 mg tablet HAS SPECIFIC ACTIVE INGREDIENT aspirin • codeine monohydrate

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[11]   Lucene is the name of the open source package that powers the search engine in this application. See http://lucene.apache.org/java/docs/ for an overview. For query syntax, see http://lucene.apache.org/java/2_3_2/queryparsersyntax.html.

Inclusion/exclusion syntax	Sample search term	Partial sample results
To set up an AND search, insert a plus sign (+) in front of the search phrase. All search results will be required to include the search phrase.	+"aspirin 300"	• aspirin 300 mg tablet, 18 HAS MPUU aspirin 300 mg tablet • Solprin (aspirin 300 mg) tablet: dispersible, 96 tablets HAS TPUU Solprin (aspirin 300 mg) tablet: dispersible, 1 tablet
To exclude a word or phrase from the search, insert a minus sign (-) in front of the word or phrase you want to exclude. All search results will be required to exclude concepts containing the identified word or phrase.	aspirin -codeine	• Alka-Seltzer lemon (aspirin 324 mg + sodium bicarbonate 1.7 g + citric acid 1.2 g) tablet: effervescent, 1 tablet • ascorbic acid 60 mg + aspirin 324 mg + chlorpheniramine maleate 2 mg + phenylephrine tartrate 7.79 mg tablet HAS SPECIFIC ACTIVE INGREDIENT chlorpheniramine maleate • Disprin Max (aspirin 500 mg) tablet: dispersible, 1 tablet
To search for descriptions that are similar to, but not exactly the same as, the search phrase, insert a tilde (~) at the end of the search phrase. (All search results are considered to be an exact match unless the search phrase contains a tilde at the end of the phrase.)	codeine~	• cocaine • Prodeine

Tip: To sort the results of a search, click on the relevant column of the results to sort by that parameter. Furthermore, Ctrl-click on a column to perform a secondary sort by that parameter.

5.5.3   Regex search

Regex searches use 'regular expressions', which offer powerful ways to execute searches based on patterns in the text being searched for.

To issue a regular expression search, select
Search type > regex query

The regular expression syntax supported by this application is summarised in the following tables[12].

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[12]   These tables are sourced from sub-pages of Sun's Regular Expression tutorial at http://java.sun.com/docs/books/tutorial/essential/regex/index.html.

Table 9: Character classes

`[abc]`	a, b, or c (simple class)
`[^abc]`	Any character except a, b, or c (negation)
`[a-z A-Z]`	a through z, or A through Z, inclusive (range)
`[a-d[m-p]]`	a through d, or m through p: [a-dm-p] (union)
`[a-z&&[def]]`	d, e, or f (intersection)
`[a-z&&[^bc]]`	a through z, except for b and c: [ad-z] (subtraction)
`[a-z&&[^m-p]]`	a through z, and not m through p: [a-lq-z] (subtraction)

Table 10: Predefined character classes

`.`	Any character (except for line terminators)
`\d`	A digit: `[0-9]`
`\D`	A non-digit: `[^0-9]`
`\s`	A whitespace character: `[ \t\n\x0B\f\r]`
`\S`	A non-whitespace character: `[^\s]`
`\w`	A word character: `[a-zA-Z_0-9]`
`\W`	A non-word character: `[^\w]`

Table 11: Quantifiers

Greedy	Reluctant	Possessive	Meaning
X?	X??	X?+	X, once or not at all
X*	X*?	X*+	X, zero or more times
X+	X+?	X++	X, one or more times
X{n}	X{n}?	X{n}+	X, exactly n times
X{n,}	X{n,}?	X{n,}+	X, at least n times
X{n,m}	X{n,m}?	X{n,m}+	X, at least n but not more than m times

Table 12: Boundary matchers

`^`	The beginning of a line
`$`	The end of a line
`\b`	A word boundary
`\B`	A non-word boundary
`\A`	The beginning of the input
`\G`	The end of the previous match
`\Z`	The end of the input but for the final terminator, if any
`\z`	The end of the input

5.5.4 Advanced search options

You can search with multiple search criteria by means of the Advanced Search function. To initiate an advanced search, click the **Add Criteria** button [+] to the left of the query field. An additional search line will appear below the first one.

You can create detailed searches by adding additional search lines in the same fashion, as shown below. To remove a search line, simply click on the **Remove Criteria** button [✖].

Each new search field includes a drop-down menu with the following search options:

- **Status kind:** Filters a search by concept status. (See Section 5.5.4.1.)
- **Is child of:** Filters a search by hierarchy branch, excluding the concept itself and its children. (See Section 5.5.4.2.)
- **Is kind of:** Filters a search by hierarchy branch, including the concept itself and its children. (See Section 5.5.4.2.)
- **Refset member:** Returns those concepts that are members of the specified reference set. (See Section 5.5.4.3.)
- **Rel kind:** Filters a search by relationship type and relationship destination. (See Section 5.5.4.4.)

5.5.4.1 'Status kind' searches

AMT status concepts can be found in the Hierarchy view under
Terminology Auxiliary concept > status. You can drag these status concepts to the status kind field to refine your search, as depicted below.
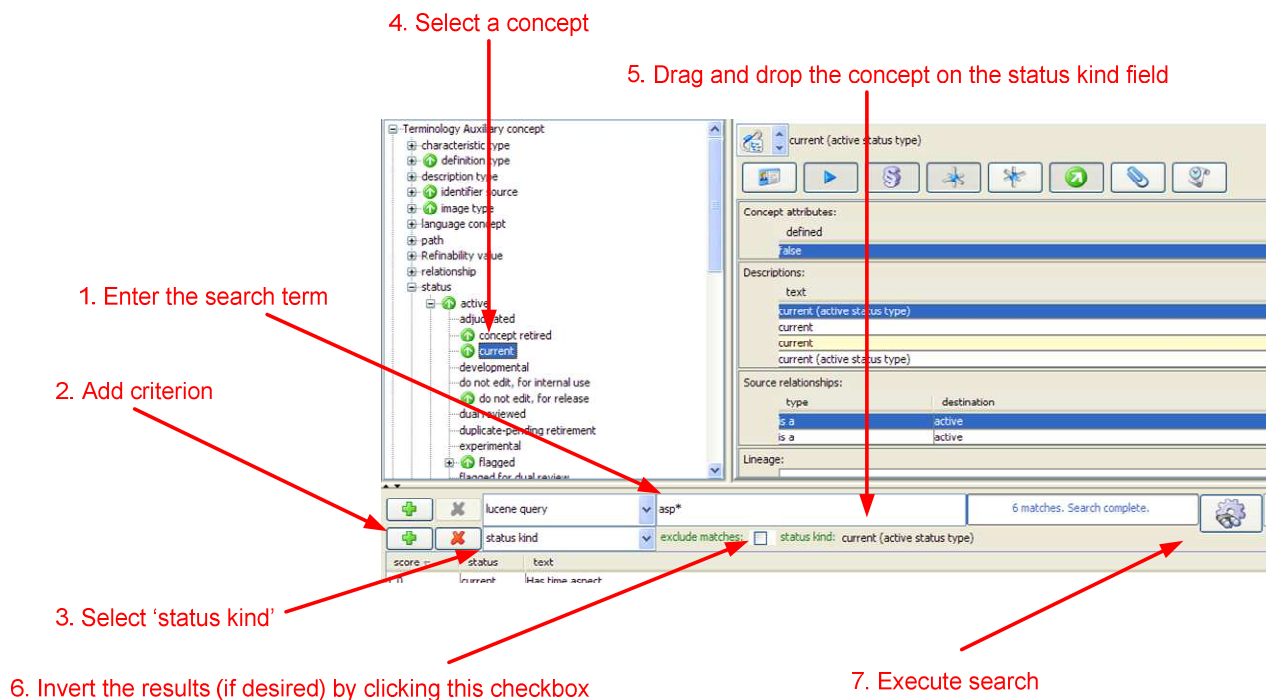
Figure 17: 'Status kind' search

The following sample search might help to illustrate the application of this kind of search option. (Results are based on AMT release version 2.25 – later releases may yield different results.)
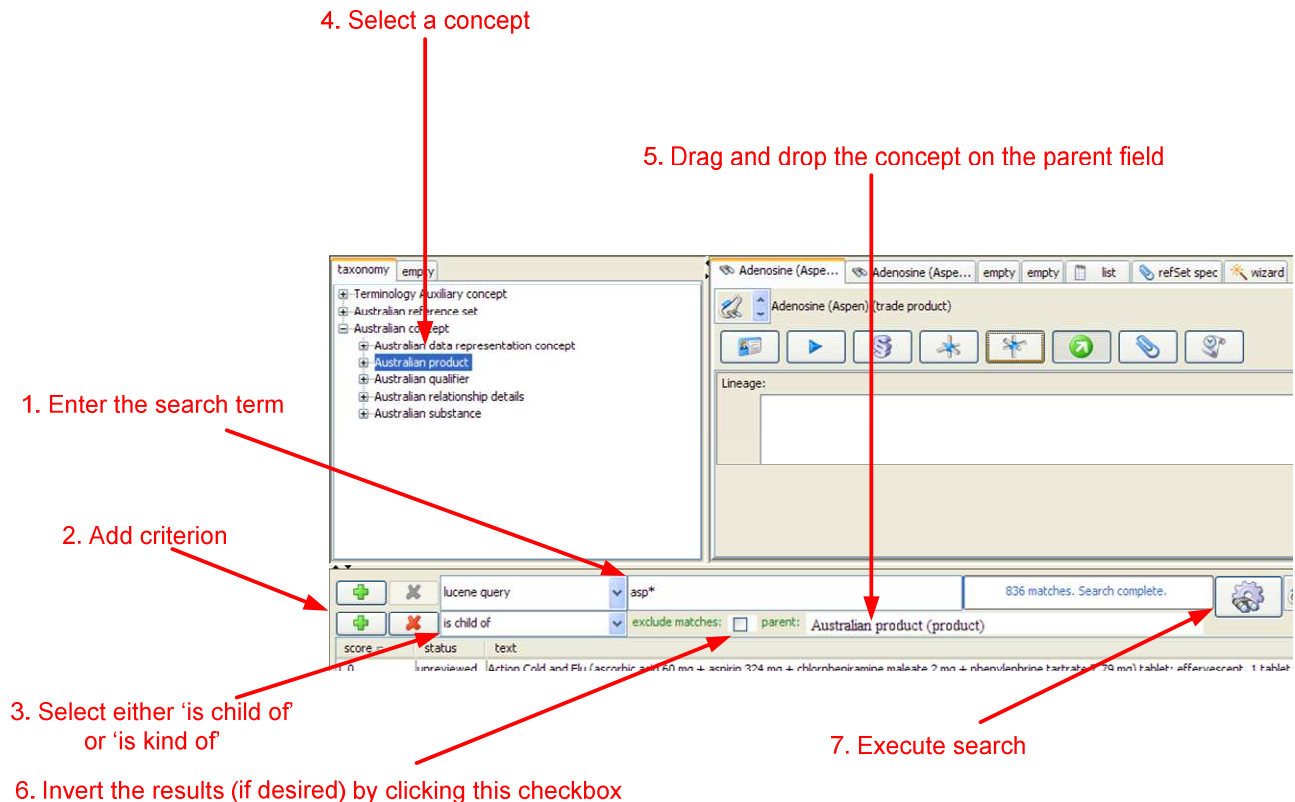
Table 13: Sample 'status kind' search

Search term	Additional parameters	Result
asp*	None	2120 matches
asp*	Status kind is 'current (active status type)'	6 matches
asp*	Status kind is **not** 'current (active status type)'	2114 matches

5.5.4.2   'Is child of' and 'Is kind of' searches

Note: 'Is child of' and 'Is kind of' searches are very similar, so both types of searches are described together in this section.

The parents of any individual concept are readily seen by selecting that concept in the Hierarchy view, and then clicking on the **Lineage** button [ ], if the lineage is not already displayed. However, if you wish to explore the lineage of a *range* of concepts, the 'Is child of' and 'Is kind of' search options should be useful.

'Is kind of' searches differ from 'is child of' in that the former return the concept itself and all its descendants, whereas the latter exclude the concept itself from the search results.

4. Select a concept

5. Drag and drop the concept on the parent field

1. Enter the search term

2. Add criterion

3. Select either 'is child of' or 'is kind of'

6. Invert the results (if desired) by clicking this checkbox

7. Execute search

Figure 18: 'Is child of'/'is kind of' search

The following sample search might help to illustrate the application of these search options. (Results are based on AMT release version 2.31 – later releases may yield different results.)

Table 14: Sample 'is child of'/'is kind of' searches

Search term	Advanced option	Additional parameters	Result
ani*	None	None	187 matches
ani*	is child of	parent is 'animal origin (AU qualifier)'	0 matches
ani*	is kind of	parent is 'animal origin (AU qualifier)'	2 matches
ani*	is child of	parent is **not** 'animal origin (AU qualifier)'	187 matches
ani*	is kind of	parent is **not** 'animal origin (AU qualifier)'	185 matches

As the above results indicate, 'is child of' and 'is kind of' search results differ in that 'is child of' excludes the parent concept, but 'is kind of' includes it.

5.5.4.3 'Refset member' searches

AMT reference set concepts can be found in the Hierarchy view under **Australian reference set**. In addition, the reference sets that contain a particular concept can be seen by clicking on the **Refsets** button ![button], if the reference sets are not already displayed.
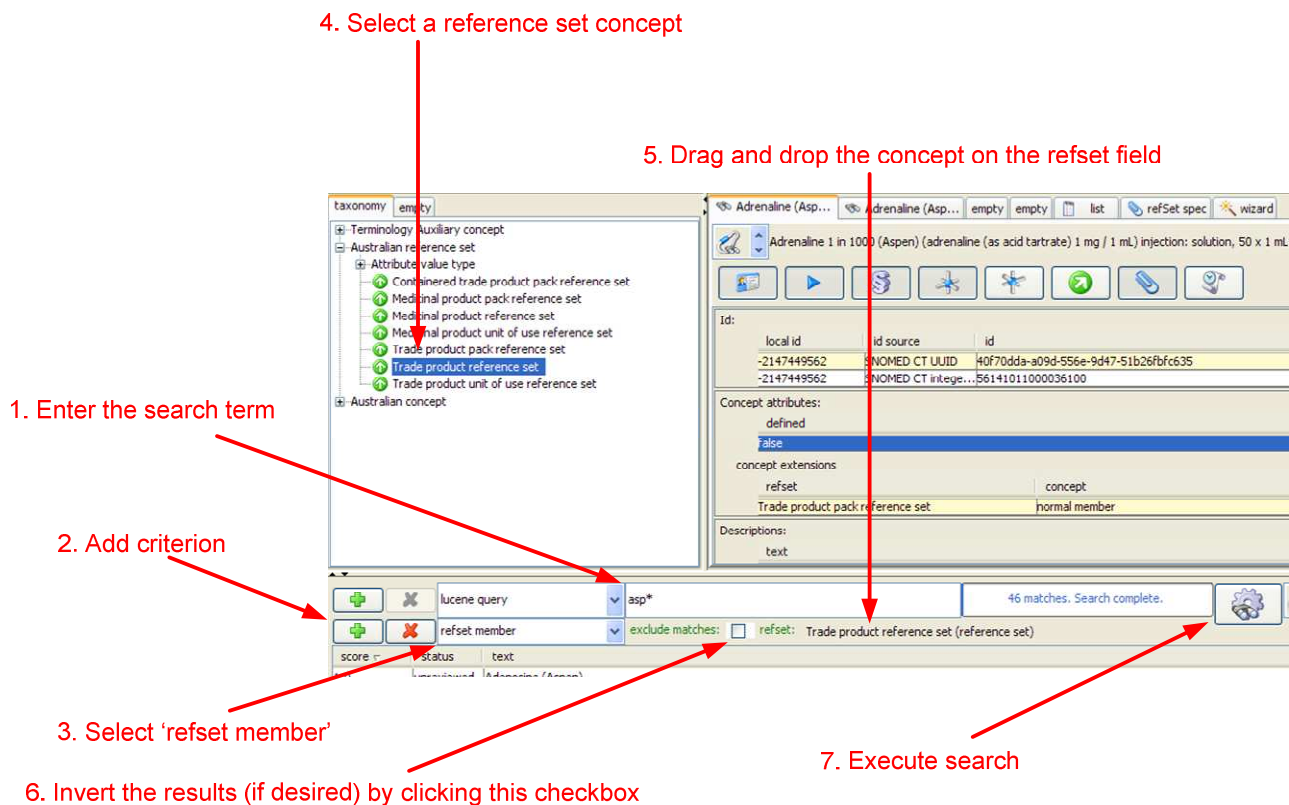
Figure 19: 'refset member' search

The following sample search might help to illustrate the application of this kind of search option. (Results are based on AMT release version 2.25 – later releases may yield different results.)

Table 15: Sample 'refset member' search

Search term	Additional parameters	Result
asp*	None	2120 matches
asp*	Refset is 'Trade product reference set (reference set)'	46 matches
asp*	Refset is **not** 'Trade product reference set (reference set)'	2074 matches

5.5.4.4   'Rel kind' searches

'Rel kind' is short for 'relationship kind'. Searching for a relationship kind is a little more complex than other types of searches because there are more parts to it, namely:

- the two concepts being related; and
- the kind of relationship between the two concepts.

One of the concepts in the relation will be in the search results, but you'll need to specify the other concept in the relation (i.e. the 'restriction concept'), as well as the kind of relationship. The relevant concepts can be located as follows:

- AMT relationship concepts can be found in the Hierarchy view under **Terminology Auxiliary concept > relationship**.
- Restriction concepts can be found under **Australian concept**.

As with other advanced searches, the required concept fields need to be populated by dragging concepts onto them.

Another unique feature of this type of search is the **Use subsumption** checkbox. When this checkbox is *not* ticked, only the direct results of the search are returned. When it is ticked, the search results also include those concepts that are subsumed by the direct results of the search.

Figure 20: 'rel kind' search

The following sample search might help to illustrate the application of this kind of search option. (Results are based on AMT release version 2.25 – later releases may yield different results.)

Table 16: Sample 'rel kind' search

Search term	Additional parameters	Result
asp*	None	2120 matches
asp*	• Relationship kind is IS A • Restriction kind is 'Australian concept (concept)'	0 matches
asp*	• Relationship kind is IS A • Restriction kind is 'Australian concept (concept)' • With Subsumed concepts	2114 matches

asp*	• Exclude:
	   – Relationship kind is IS A
	   – Restriction kind is 'Australian concept (concept)'
	   – With Subsumed concepts
		6 matches

5.5.5   Saving searches

You can save search criteria (as distinct from search results) for future re-use. To save a search string, click on the **Save Search** button. Enter a name for the search and click the **Save** button.

To retrieve a saved search, click on the **Retrieve Saved Search** button. Select the desired search and click the **Open** button.

5.6   Concept export

The Terminology Viewer provides a number of functions for exporting sets of concepts to a text file. You can:

1. Export the members of a reference set (as a list of concepts) to file.

2. Export the contents of the list view (as a list of concepts) to file.

3. In addition, concepts may also be transferred to the list view where they may then be exported to file. You can:

   a. transfer all the members of a reference set to the list view; or

   b. transfer the results of a search to the list view.

5.6.1   File format

The export process will create a standard text file in a spreadsheet-like format. It defines two columns that are delimited by a tab character. Each row (or line) of the file is a discrete concept. It does not provide a header row.

The two columns provided are, in order:

1. The concept identifier. This will be a SNOMED CT identifier.

2. A valid description term. If defined, a description of type preferred term will be chosen. If none are defined, the fully specified name will be used.

5.6.2   Export reference set members

You can export all the members of a reference set to a text file. This provides a simple, human readable file format.

Currently the export process only supports member reference sets, otherwise known as the 'notable' concept reference sets.

To export the members of a reference to file:

1. In the Hierarchy view, select the concept that represents the reference set by right-clicking on it. This will display a popup menu.

2. In the popup menu, select **Refset**. This menu option will not be present if the selected concept does not represent a reference set.

3. In the **Refset** sub-menu, select **Export refset members to file**.
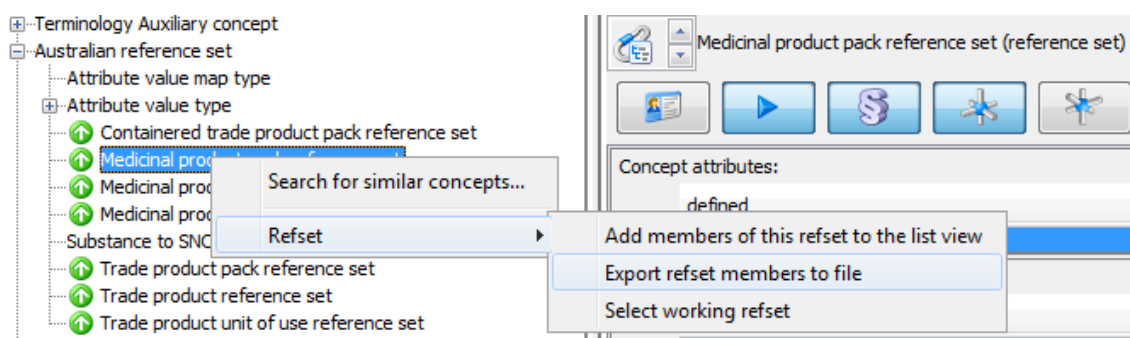
4. In the file dialog, choose a directory and either select a file or enter a new filename. Click **OK**.

   Note: Existing files will be overwritten.

5. An activity window will be displayed to report the status and progress of the export process. Click the **STOP** button to cancel the process.

6. When completed, a message box will be displayed stating the number of concepts exported (if greater than zero). Click **OK** to clear the message.

5.6.3   Transfer concepts to the list view

You can add and remove concept to the list view and then export the contents of the list to a text file.

See Section 5.4.2.1 in this document for details of exporting the contents of the list view to a file.

Concepts can be added to the list view in various ways; the following sub-sections describe two different methods.

5.6.3.1   Hierarchy View

1. Add all reference set members.

    You can select a concept that represents a reference set and then, by right-clicking on the concept to display the contextualised popup menu, select **Add members of this refset to the list view** from the **Refset** sub-menu.
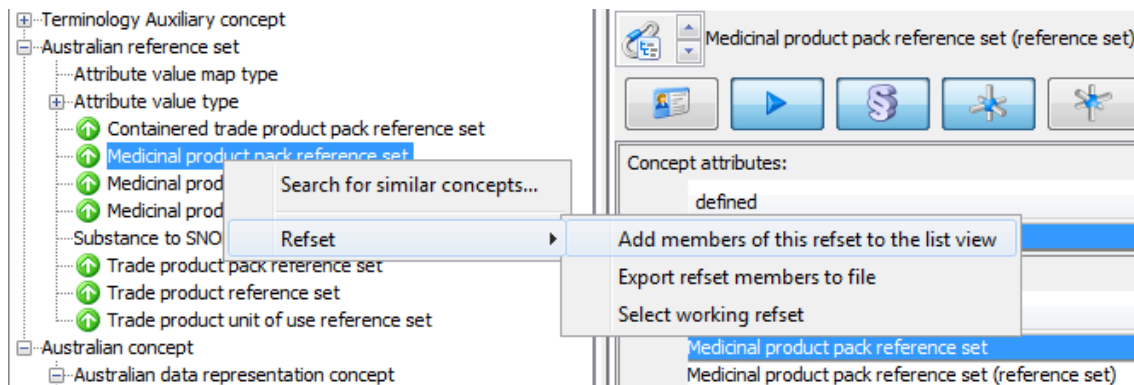
2. Drag and drop.

    You can drag any individual concept in the Hierarchy view tree over the list view and drop it into the list to add it.

5.6.3.2   Search Results View

1. Add all results.

    After performing a search you can click the **Save to List** button (from the list tab) to add all the concepts list in the search results into the list view.

2. Drag and drop.

    You can drag any individual term from the search results list over to the list view and drop it into the list to add the concept for that term.

Appendix A: Glossary

AMT	Australian Medicines Terminology
NCTIS	National Clinical Terminology and Information Service
NEHTA	National E-Health Transition Authority
SNOMED CT	Systematized Nomenclature of Medicine – Clinical Terms