nehta

v2 to v3 Migration Guide

Australian Medicines Terminology

Version 1.0 - 20120229

Final

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Document management

Document control

Name of document:	v2 to v3 Migration Guide: Australian Medicines Terminology
Document owner:	National Clinical Terminology and Information Service (NCTIS), NEHTA
Document coordinator:	Clinical Terminology Product Manager
Author(s):	NCTIS
Document approver:	AMT Product Management Group

Document authoring and review

Version:	Date	Author	Status and nature of amendments
0.1	20120208	NCTIS, with input from author of NHS dm+d Implementation Guide (Secondary Care)	First draft
0.2	20120215	NCTIS	Update following NCTIS review.
0.3	20120220	NCTIS	Update following external comment
1.0	20120229	NCTIS	Final, for external release.

Document publication

Publication:	☐ Internal ☑ External
Published version and date:	1.0/20120229
Date of next review and update:	June 2012

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1 Executive summary

The Australian Medicines Terminology (AMT) uniquely and unambiguously codes and describes medicines, using a set of defining properties, and is intended to cover commonly used medicines in Australia.

AMT has been available in v2 model format since 2007. In 2012, it will be upgraded, in both content and structure, to the v3 model. This upgrade will address stakeholder feedback on the v2 model, bring AMT into compliance with the SNOMED CT Release Format 2 specification and facilitate integration of AMT with SNOMED CT-AU.

Because of the upgrade, those who have implemented v2 will need to migrate to v3. This document provides support for that migration, and should be read in conjunction with the full set of AMT v3 documentation (provided separately by the NCTIS).

1.1 Summary of this document

This document contains the following sections:

Introduction	Contains a brief overview of the purpose, intended audience and scope of this document.
Key differences between v2 and v3	Describes the main differences between the two versions of AMT.
Migrating from v2 to v3	Provides a suggested approach to migrating between the two versions, with a focus on mapping (as this is the most likely way that AMT v2 is used at present).
Migration plan and timeline	Explains how the NCTIS will be introducing AMT v3 data, and the extent of continued support for v2 releases once v3 is published.
References	Lists the documents referred to by this document, and provides details of how to access them.
Glossary	A short list of acronyms relevant to this document.

2 Introduction

2.1 Purpose

This document provides guidance for those currently using AMT v2 in some form within their IT systems, who will need to prepare for and migrate to AMT v3.

2.2 Intended audience

This guide is intended primarily for:

- Health sector managers and analysts defining scope and requirements for clinical systems in their domains.
- Clinical software vendors with a specific interest in medicines management.

In both cases, this document will be relevant because the audience will have already implemented AMT v2 in some form within their systems. For those who have not implemented AMT v2, but wish to implement v3, please see the *AMT v3 Implementation Guide* (1).

This document assumes a certain level of technical competence in data management and database design, and a familiarity with the use and nomenclature of medicines is also assumed.

2.3 Scope

This document provides guidance to users who have implemented AMT v2 data who wish to migrate to AMT v3. It is not relevant to other current and potential users of AMT.

2.4 Questions and feedback

Because of the limited audience of this document, questions and feedback should be addressed directly to the NCTIS Terminology Product Support Specialist, at terminologies@nehta.gov.au.

Questions, feedback and requests for assistance are encouraged; the NCTIS will endeavour to assist implementers of AMT v2 to make the smoothest possible migration to AMT v3.

3 Key differences between v2 and v3

The aim of remodeling AMT is to bring it into compliance with the SNOMED CT Release Format 2 specification, and in so doing simplify the AMT model. The process of simplifying the AMT v2 model structures included stakeholder input from clinical and technical perspectives. The AMT v3 model structures also enhance the ease of integration of AMT with SNOMED CT-AU going forward.

The result of this remodeling should be to reduce the effort and complexity required to implement AMT within clinical IT systems, and thereby to further NEHTA's goal of interoperability of health data.

The overall logical structure of key AMT components, i.e. the seven Australian Product or "notable" classes, remains consistent between the two versions. However, there are a number of detailed differences between the versions, which are described in more detail below.

3.1 AMT v2

As a consequence of the purpose and intended audience of this document, it should not be necessary to provide here any detailed information about AMT v2.

3.2 AMT v3

As AMT v3 is newly published at the time of writing, it is likely that the intended readers of this document will have had little exposure to it. Further details about the AMT v3 model, and how to implement it, can be found in the following documents and releases:

AMT v3 Implementation Guide	Provides instructions and guidance on how to extract and implement AMT v3 (1).
AMT v3 Implementation Scripts	These scripts define methods for transforming and loading AMT data from the SNOMED CT RF2 release format into an example relational database structure (2).
AMT Mapping Guidelines	Provides suggestions on how to structure and manage the process of creating and maintaining mappings between AMT and locally-used medicine data files (3).
AMT v3 Editorial Rules	Provides an understanding of the standard naming conventions used to construct descriptions for v3 model concepts (4).[1]

The two diagrams below respectively display the semantic hierarchies of AMT v3 (Figure 1) and a UML representation of the key or "notable" components of AMT v3 along with the relationships between them (Figure 2).

KEY

- A blue box denotes a concept of an AMT Australian Product or "notable" class.
- A red box denotes data supplied by an AMT reference set.
- A grey box denotes an AMT concept *not* from the notable classes.

[1] This document will be made available in Q1, 2012.

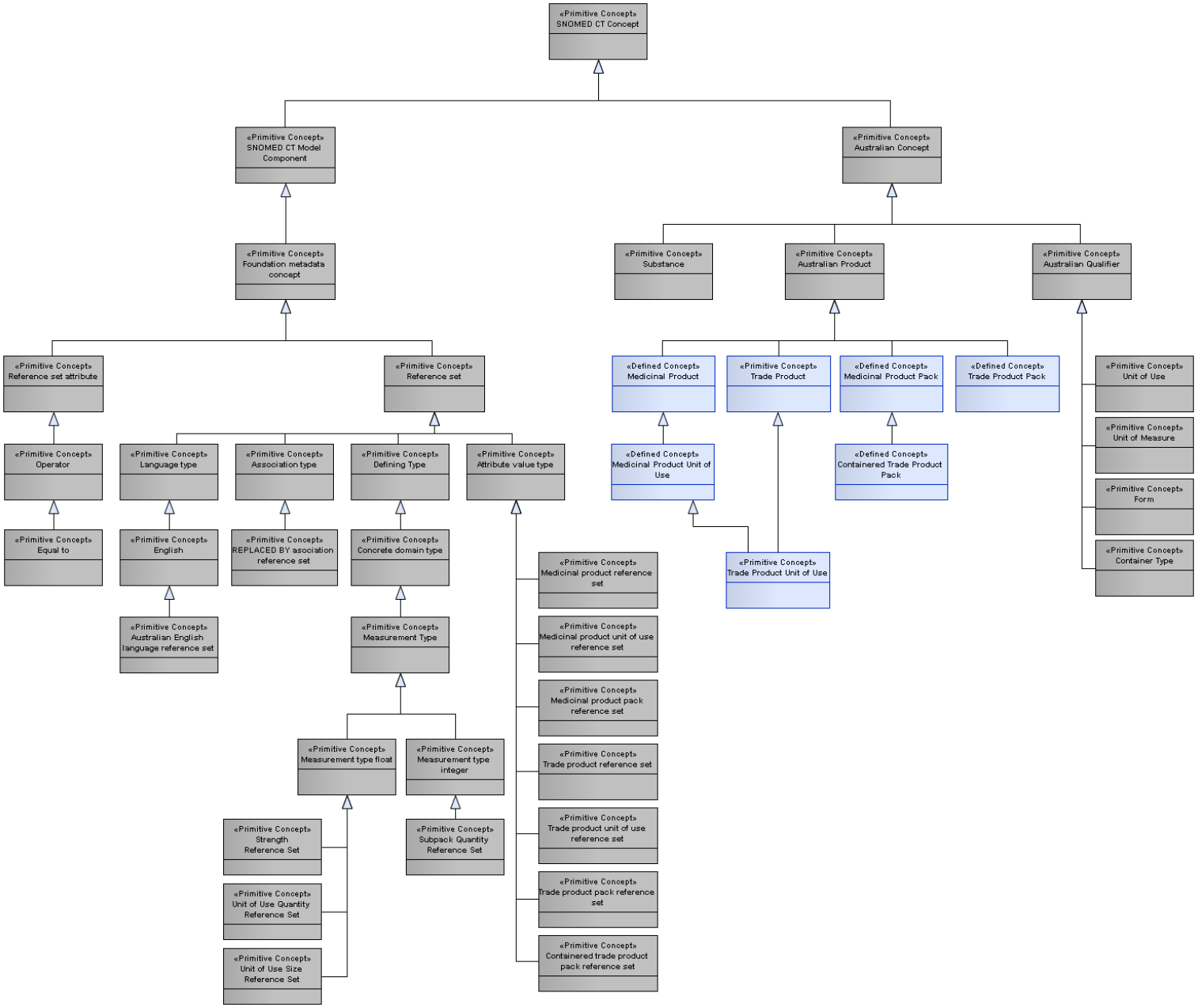

Figure 1: AMT v3 concept hierarchy

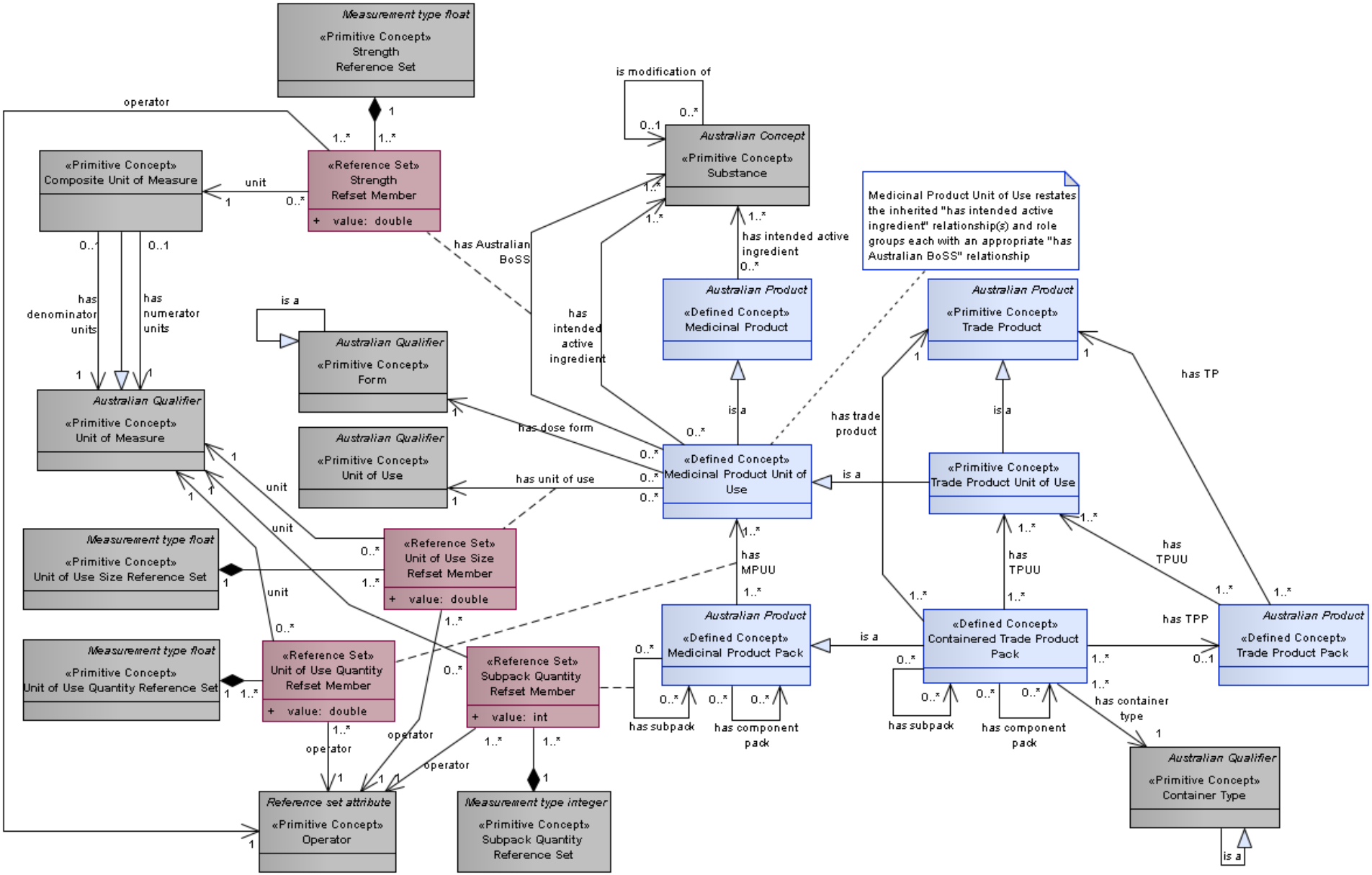

Figure 2: UML representation of the notable AMT v3 components and associated structures

3.3 Specific differences

There are four categories of change between v2 and v3, each of which is discussed in a dedicated subsection.

1. Retained v2 components (Section 3.3.1).
2. Amended v2 components (Section 3.3.2).
3. Deprecated v2 components (Section 3.3.3).
4. New v3 components (Section 3.3.4).

In addition, the diagram below provides a simplified, high-level overview of these changes in relation to the v3 concept hierarchy shown above.

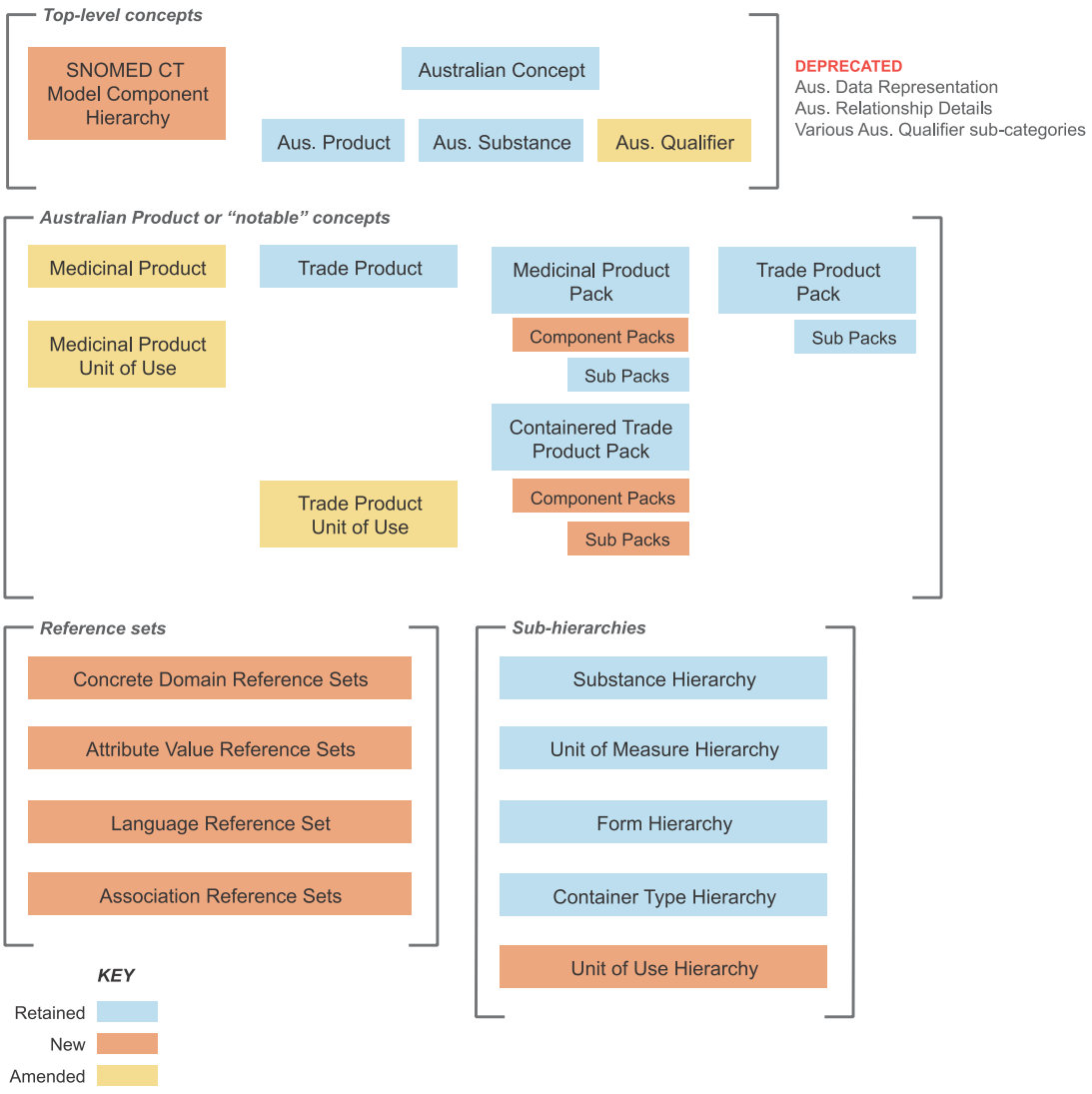

Figure 3: Simplified overview diagram of changes between v2 and v3

3.3.1 Retained components

Many v2 components are retained in the v3 model with no structural changes (content changes are noted below). Where a concept is retained (i.e. its concept Id (of SctId data type) remains the same), its Fully Specified Name and Preferred Term are also retained.

Generally, the retained concept's relationships are also retained, although there may be some changes to these to reflect the move to the v3 model structure.

The retained v2 concepts are summarised in the following lists.

Top-level concepts

- Australian concept.
- Australian product.
- Australian substance and all its sub-hierarchies.

Australian Product or "notable" concepts

- Medicinal product (MP) concepts:
  - Only MP concepts (immediate children of |30497011000036103 *Medicinal product*|) with a direct relationship with an MPUU concept are retained in v3.
    - e.g. |21239011000036106 *Aciclovir*|
  - Where a hierarchy of MP concepts existed in v2 (i.e. for clinically significant salts [2]) then only the MP concept that is the immediate parent of the associated MPUU concept is included in v3.
    - For example, in v2 the following relationship existed: |21806011000036104 *Atropine sulfate*| IS A |32675011000036108 *Atropine*|. In v3, this relationship will no longer exist: *Atropine* will be retired, and *Atropine sulfate* will remain.
- Medicinal product unit of use (MPUU) concepts:
  - Only MPUU concepts (immediate children of |30450011000036109 *Medicinal product unit of use*|) with a direct relationship with a TPUU concept are retained in v3.
    - e.g. |22933011000036105 *Abacavir 300 mg tablet*|
  - Where a hierarchy of MPUU concepts existed in v2 (i.e. for clinically relevant salts [3]) then only the MPUU concept that is the immediate parent of the associated TPUU concept is included in v3.
    - For example, in v2 the following relationship existed: |23276011000036108 *Diclofenac sodium 25 mg tablet*| IS A |23998011000036100 *Diclofenac 23.27 mg tablet*|. In v3, this relationship will no longer exist: *Diclofenac 23.27 mg tablet* will be retired, and *Diclofenac sodium 25 mg tablet* will remain. *Diclofenac sodium* represents the Basis of strength substance (BoSS).
- Medicinal product pack (MPP) concepts.
- Trade product (TP) concepts:
  - Not all immediate children concepts of |30560011000036108 *Trade product*| are included from v2. If the TP has an associated TPUU or TPP with a "trade product suffix" description, the TP is generally retired and a new TP is added that includes the suffix in their descriptions (effectively replacing the original, retired TP). Retirement of a TP is based on a set of v3 editorial rules (see (4)). If a v2 TP concept is not retired it is retained in v3.
    - For example, in v2 |3219011000036105 *Accomin*| is an example of a TP concept that has a TPUU and TPP both having a "trade product suffix" description of "adult mixture". This concept will be deprecated and replaced in v3 with the new TP concept of *Accomin adult mixture*.
- Trade product unit of use (TPUU) concepts. See Section 3.3.3 below for deprecation of TPUU Preferred Terms.
- Trade product pack (TPP) concepts.

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[2] To understand clinical significance rules, please refer to Appendix II (Sections 10.2.1 to 10.2.5) of the *AMT v2 Editorial Rules* (5).

[3] To understand clinical relevance rules, please refer to Appendix II (Section 10.2.6) of the *AMT v2 Editorial Rules* (5).

- Containered trade product pack (CTPP) concepts.

Sub-hierarchies

- Australian qualifier:
  - Container type and all its sub-hierarchies.
  - Form and all its sub-hierarchies.
  - Unit of measure and all its sub-hierarchies.

3.3.2 Amended components

Some v2 components undergo minor amendments in v3, without a change to their meaning (e.g. minor change in spelling/case of term). There is no change to the concept identifier.

The amended v2 concepts are summarised in the following list.

Metadata hierarchy

- HAS BOSS (v2) becomes HAS BoSS (v3).
- HAS AUSTRALIAN BOSS (v2) becomes HAS AUSTRALIAN BoSS (v3).

3.3.3 Deprecated components

Many v2 components are deprecated in the v3 model due to various factors[4], including the adoption of the RF2 reference set structures, removing redundant components/attributes and the overall simplification of the AMT model to support its use cases.

Metadata hierarchy

- HAS INGREDIENT relationship is deprecated.

Included in the v3 release files (as inactive components)	• Retired (deprecated) concepts, descriptions and source relationships belonging to the AMT seven notable product classes.
Not included in the v3 release files	• Deprecated concepts, descriptions and source relationships that do not belong to the AMT seven notable product classes. • Deprecated target relationships.

The following sub-sections provide greater detail on the above summary of deprecated v2 concepts.

3.3.3.1 Deprecated top-level concepts

- *Australian data representation* concept and all its sub-hierarchies.
- *Australian relationship details* and all its sub-hierarchies.
- The following qualifier concepts:
  - *Animal origin*
  - *Availability status*
  - *Biotech descriptor*
  - *Ingredient activity status*
  - *Organisation*
  - *Medication sponsor organisation*

[4] Deprecated v2 components may change based on further technical development.

- *Pack manufacture indicator*
- *Pack size indicator*
- *Plant part*
- *Plant preparation*
- *Preferred strength representation type*
- *Proprietary form*
- *Route of administration*
- *Trade product group*
- *Unit dose form indicator*

3.3.3.2 Deprecated Australian Product or "notable" concepts

- Medicinal product (MP) concepts:

  Where a hierarchy of MP concepts existed in v2, then only the MP concept that does not have a direct relationship with an MPUU concept is deprecated in v3.

  MP concepts representing a multi-component product (e.g. esomeprazole (&) clarithromycin (&) amoxycillin) will be deprecated in v3.

- Medicinal product unit of use (MPUU) concepts:

  Where a hierarchy of MPUU concepts existed in v2 then only the MPUU concept that does not have a direct relationship with a TPUU concept is deprecated in v3. See Section 3.3.1 for an example.

- Trade product (TP) concepts:

  If a TP has an associated TPUU or TPP with a "trade product suffix" description and the TP is to be retired based on v3 editorial rules, the TP is deprecated in v3. See Section 3.3.1 for an example.

- Trade product unit of use (TPUU) Preferred Terms:

  Most v2 TPUU PT terms are to be retired and replaced. This is because the v3 editorial rules require the removal of the ingredients and/or strength information from these terms.

  An example v2 TPUU Preferred Term would be |6714011000036105 *Actonel (risedronate sodium 30 mg) tablet: film-coated, 1 tablet*|.

  In v3 this TPUU PT will be retired and replaced by Actonel 30 mg tablet: film-coated, 1 tablet – *only the PT term of the original concept is retired, the AMT concept that the term belongs to will be retained in v3 unchanged.*

3.3.3.3 Miscellaneous notes

All v2 descriptions with a description type of "0" (unspecified) are deprecated in v3. Many are deprecated due to the introduction of reference sets.

Some data elements (e.g. links to the ARTG) within v2 concepts have been deprecated in v3. If the omission of any of these elements causes problems with migration and continued use of AMT, please contact the NCTIS.

3.3.4 New components

New components are added into the v3 model per identified use cases. Some components are brand new and others are replacements for certain components in the v2 model. Many additions are due to the adoption of SNOMED CT RF2 specifications (e.g. reference sets).

Where a new concept or class is added their associated defining relationships are also added.

The newly-added v3 components are summarised in the following sub-sections.

3.3.4.1 New Australian Product or "notable" concepts

- Component pack CTPP concepts.
- Subpack CTPP concepts.
- Component pack MPP concepts.
- Trade product (TP) concepts:
  - If a v2 TP is deprecated because of v3 editorial rules, a new TP is added in v3 to replace the deprecated concept.
  - Following on from the example above, the new TP concept would be *Accomin adult mixture*.
- Trade product unit of use (TPUU) Preferred Terms:
  - Any v2 TPUU PT terms retired are replaced with new PT terms in v3 reflecting removal of ingredients and/or strength. See Section 3.3.3 for an example.

3.3.4.2 New reference sets

- Concrete Domain reference sets. (These files provide additional information about AMT components that cannot be described in the core SNOMED CT concept model, e.g. numerical information such as strength or concentration values, or pack sizes.)
  - *Strength reference set*.
  - *Unit of use size reference set*.
  - *Unit of use quantity reference set*.
  - *Subpack quantity reference set*.
- Attribute Value reference sets. (These files provide an alternative mechanism to identify AMT components of each of the seven core product types.)
  - *Medicinal product reference set*.
  - *Medicinal product unit of use reference set*.
  - *Medicinal product pack reference set*.
  - *Trade product reference set*.
  - *Trade product unit of use reference set*.
  - *Trade product pack reference set*.
  - *Containered trade product pack reference set*.
- Language reference set. (This type of reference set specifies which descriptions are preferred terms and which are acceptable or synonymous terms.)
  - *Australian English language reference set*.
- Association reference sets. (This type of reference set file provides further information about associations between two or more components)
  - *REPLACED BY association reference set*.

3.3.4.3 New sub-hierarchies

- *SNOMED CT Model Component* hierarchy (also known as the "*Metadata* hierarchy").

3.3.4.4 Miscellaneous components

- Inert substance (AU substance).
- Composite Unit of measure concepts.
  - For example, “mg/mL”.
- Unit of use qualifier class.
  - For example, “capsule”.
- HAS INTENDED ACTIVE INGREDIENT relationship.

3.4 Other significant changes

3.4.1 Relationships between notable concepts

In v3, CTPP is now a direct child of MPP, whereas previously it was a grandchild of MPP (a direct child of TPP). TPP is no longer a direct child of MPP – it is now the target of the aggregation relationship “has TPP” from CTPP.

3.4.2 Change history

In v3, component history is managed via the history tracking mechanism within the release files, i.e. the append-only model where every change is represented by a new row with new effectiveTime and active fields per RF2 specifications. Historical association reference sets are also used to manage component history in v3, e.g. where a deprecated concept has an active replacement concept both components are represented in the *REPLACED BY association reference set*. In v2 this reference set is called *History mapping reference set*.

3.4.3 Component statuses

The component status model has been considerably simplified in v3, with only two statuses being used in the release files: active and inactive. These statuses are indicated by the Boolean values of "1" (i.e. “yes”), and "0" (i.e. “no”) respectively.

3.4.4 Effective time

The effectiveTime of any component of AMT specifies the date at which the component was first released in the terminology, or when the component’s state has changed in subsequent releases. The effectiveTime format is represented to the day of the year, using ISO 8601 basic representation of YYYYMMDD.

In AMT v3, the effectiveTime for legacy data (i.e. data brought over from v2) will be true only back up to AMT v2 release 2.0 (June 2009). Anything released or edited from June 2009 onwards will reflect the relevant release date. Anything released or edited prior to June 2009 will have effectiveTime of June 2009.

Please refer to the *AMT v3 Implementation Guide* (1) for further information about the use of effectiveTime.

4 Migrating from v2 to v3

The migration path from v2 to v3 will be dependent on the way that the v2 data has been implemented. Before undertaking a migration, a full analysis should be performed on the impact that the changes in the model will have on your current implementation.

Those implementers who have only mapped their local datasets to AMT v2 concepts should have a relatively simple migration path. In this instance the majority of migration effort will be in implementing an instance of AMT v3 and then reviewing existing v2 mappings to see if the AMT "destination" concepts have changed, as per Section 3.17 in the *AMT Mapping Guidelines* (3).

4.1 Implementing an instance of AMT v3

The first stage of migration will be to implement an instance of the AMT v3 content; the *Implementation Guide* (1), *Implementation Scripts* (2) and associated AMT v3 preview test files[5] (5) have been provided by NCTIS to expedite this process. The v3 preview test files are not intended for use in a clinical setting.

The AMT v3 web-based viewer[6] can also be used to review v3 content, although using this alone to review manually a large set of existing v2 mappings would be extremely labour intensive, and is not recommended.

There will also be a beta release of AMT v3 provided which will not be for clinical use but will provide a finalised version of the v3 data model. Its purpose will be to allow software vendors and healthcare delivery organisations to further develop and test against as appropriate for their implementations.

4.2 Assessing the impact of changes between v2 and v3

When assessing the changes between v2 and v3, for components implemented from previous AMT v2 releases (along with an assumption that some or all of the seven Australian Product concepts have been implemented), the following categories of change are possible:

- No change (Section 4.2.1).
- No match in AMT v3, i.e. concept deprecated (Section 4.2.2).
- Changed description without a change in concept, i.e. change in description text and description ID only (Section 4.2.3)

In each case, the need for review depends on whether it is a mapping or native implementation.

- A typical mapping implementation[7] is one that maps local datasets to the AMT notable product concepts.
- A native implementation is one in which AMT components are employed in the clinical application, database and user interface.

For those cases where an existing implementation of AMT v2 involves more than simply mapping local medicine file concepts to one or more of the seven Australian Product concepts or other AMT components have been implemented, please contact the NCTIS for support with migration, via <terminologies@nehta.gov.au>.

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5 The *AMT Implementation Kit Readme* (7) should be read to understand known issues relating to the AMT v3 preview test files.

6 The *AMT Implementation Kit Readme* (7) contains details for accessing the web-based viewer.

7 Other types of mapping implementations are possible, e.g. substance mapping.

4.2.1 No change

This category of change applies to those instances where there are no changes to the concept IDs or descriptions. These v3 components are retained as they are from v2.

In such situations there should be no need to review or update these components in the existing implementation, whether it is a mapping or native implementation.

4.2.2 No match in AMT v3

This category of change applies to those instances where there is no match found between the AMT v2 component and AMT v3 (i.e. the v2 component has been deprecated). In these cases there are two possibilities:

1. If the concept has an active replacement concept, a component history link exists between the deprecated concept and a new v3 concept via the *REPLACED BY association reference set*. Deprecated concepts from the seven notable product classes are represented as "inactive" rows in the v3 Concepts file.
2. If the concept does *not* have an active replacement concept, then no links exist from the deprecated concept.

4.2.2.1 Mapping implementations

- If the deprecated v2 concept has an active replacement concept, then you should re-map your local concept to point to the new replacement concept.
- If the deprecated v2 concept does *not* have an active replacement concept, then you should confirm that the removal of this concept will not adversely affect your implementation. If adverse impacts are expected, please contact the NCTIS for further guidance.

4.2.2.2 Native implementations

- If the deprecated v2 concept has an active replacement concept, then you should implement the new replacement concept and its terms.
- If the deprecated v2 concept does *not* have an active replacement concept, then you should confirm that the removal of this concept will not adversely affect your implementation. If adverse impacts are expected, please contact the NCTIS for further guidance.

4.2.3 Changed description without a change in concept

This category of change applies to those instances where there is a change in description without a change in concept ID (i.e. change in description text and description ID only).

An illustration of this category of change is where the ingredient and strength information is removed from a TPUU concept description. For example, the term
"Actonel (risedronate sodium 30 mg) tablet: film-coated, 1 tablet"
would change to
"Actonel 30 mg tablet: film-coated, 1 tablet".

4.2.3.1 Mapping implementations

No re-mapping is required in these instances.

4.2.3.2 Native implementations

You need to review the new term to confirm that this change will not adversely affect your implementation. If no adverse impacts are found, you will need to implement this new term in your system. If adverse impacts are however expected, please contact the NCTIS for further guidance.

5 Migration plan and timeline

The migration from v2 to v3 will proceed according to the following milestones.

Q1 2012: AMT v3 preview test release	This preview release will contain a test version of the AMT v3 content release files, the *Implementation guide*, the implementation scripts and a "readme" file.
Q2 2012: AMT v3 beta release	This preview release will contain a beta version of the AMT v3 content release files.
Q3 2012: AMT v3 production release	• The AMT v2.x package will be released simultaneously with the first release of AMT v3 intended for use in a clinical setting. • AMT v2 will enter sunset or maintenance mode and AMT v3 released regularly. No alterations (i.e. changes or improvements) will be made to the v2 model from this point on, although the v2 content will be maintained in line with the v3 content, in accordance with the *AMT v2 Editorial Rules* (6). • AMT v2 will continue to be released to the same schedule as v3, for a maximum period of 12 months from the first production v3 release. This maintenance period may be shortened depending on stakeholder demand. • After this point, AMT v2 will be discontinued.

The full sequence of dates, once confirmed, will be published on the NCTIS website.

Throughout this migration and beyond, requests for additions or alterations to AMT content (for both v2 and v3) can be made to the NCTIS, by accessing the NCTIS Site[8] and following the link to "Request submission".

[8] https://nehta.org.au/aht/index.php

6 References

1. **NEHTA.** *AMT v3 Implementation Guide.* Sydney : NEHTA, 2012.
2. —. *AMT v3 Implementation Scripts.* Sydney : NEHTA, 2012.
3. —. *AMT Mapping Guidelines.* Sydney : NEHTA, 2012.
4. —. *AMT Editorial Rules v3 Model.* Sydney : NEHTA, 2012.
5. —. AMT v3 preview test files. Sydney : NEHTA, 2012.
6. —. *AMT Editorial Rules v2 Model.* Sydney : NEHTA, 2011. (Revision of 2009).
7. —. *AMT Implementation Kit Readme.* Sydney : NEHTA, 2012.

Note: The suite of currently-available AMT documentation can be found on the NCTIS site at: https://nehta.org.au/aht/index.php.

Appendix A Glossary

AMT	Australian Medicines Terminology
BoSS	Basis of strength substance
CTPP	Containered trade product pack
FSN	Fully Specified Name
MP	Medicinal product
MPP	Medicinal product pack
MPUU	Medicinal product unit of use
NCTIS	National Clinical Terminology and Information Service
NEHTA	National E-Health Transition Authority
PT	Preferred Term
RF2	Release Format 2.0
TP	Trade product
TPP	Trade product pack
TPUU	Trade product unit of use