



NZ Health Terminology Service Connectathon

FHIR® Terminology Services

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Welcome!

- If you're in the wrong room there's still time to escape!
- Show of hands:
 - Have you been to a Connectathon before?
 - Are you a developer/technical?
 - Do you have your own scenario/problem ready to solve/discuss?
- Let's meet everyone
 - Where are you from?
 - What do you want to get out of today?
 - How do you want to use the terminology server?
- WIFI – UN: EEC, PW: 2022
- Connectathon App: https://hinzdigitalhealthweek22.zerista.com/native_app/store_url
- FHIR Server –
 - Temporary (until 16/12/2022) DEV/Connectathon: <https://nz-connectathon.australiaeast.cloudapp.azure.com/fhir>
 - PROD: <https://nzhts.digital.health.nz/fhir>

CSIRO

NZHTS

NZ Health Terminology Service

Making it easy to use our standard terminologies and code sets for recording, using and sharing health information

Overview

<https://www.tewhatauora.govt.nz/our-health-system/digital-health/terminology-service/>

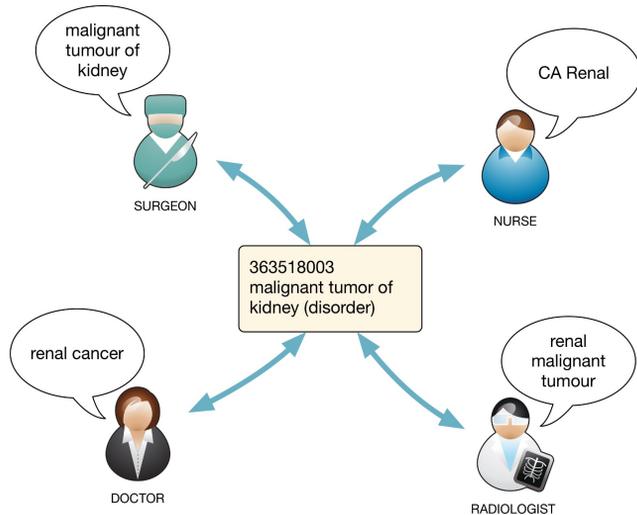
Syndication Endpoint

<https://nzhts.digital.health.nz/synd/syndication.xml>

FHIR® Endpoint

<https://nzhts.digital.health.nz/fhir>

Why Use a Terminology Server?



Barrier

Time consuming and expensive for software vendors to maintain, and just another thing to manage for adopting organisations

Challenge

How can we drive consistent, meaningful use while reducing the burden on the software industry?

How can we support localisation to meet the needs of different health professionals across NZ?

Outcome

National terminologies adopted by all public and private healthcare organisations and their software providers

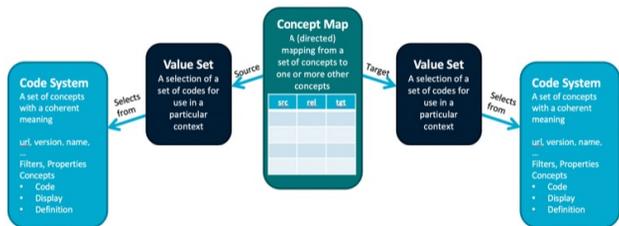
What sort of terminologies?

- Whatever is nationally applicable, belongs in the national server
- More specialised terminologies may be kept in a terminology server that's targeted for that audience (please explain)
- Examples of terminology CodeSystems
 - AdministrativeGender
 - Agency type code
 - Registration Status of Practitioners
 - Level 4 ethnicity codes
 - NZ Residency status
 - MedDRA
 - Clinical coding system code
 - NZ Citizenship status
 - NZ Iwi
 - LOINC v2.73
 - SNOMED CT core



Fast Healthcare Interoperability Resources

FHIR Terminology – (simplified) big picture



Terminology Resources CodeSystem

Declares the existence of and describes a code system or code system supplement and its key properties, and optionally defines a part or all of its content. Also known as Ontology, Terminology, or Enumeration

ValueSet

A ValueSet resource instance specifies a set of codes drawn from one or more code systems, intended for use in a particular context. Value sets link between CodeSystem definitions and their use in coded elements

ConceptMap

A statement of relationships from one set of concepts to one or more other concepts - either concepts in code systems, or data element/data element concepts, or classes in class models.



Admin

- About
- Resources
- Syndication
- Upload SNOMED

Apps

- Shrimp
- Snapper

CodeSystem (26) 🔍 Search × ☰

Drag headers here to group by

	Title ↑	Version	Status	Domain	Synd 	Actions
   >	Additional Authorisation	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	AdministrativeGender	4.0.1	active	hi7.org	<input type="checkbox"/>	
   >	AdministrativeGenderNZSupplement	1.0.0	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Admission source code	20221115	draft	standards.digital.health.nz	<input type="checkbox"/>	
   >	Admission type code	20221115	draft	standards.digital.health.nz	<input type="checkbox"/>	
   >	Agency type code	20221115	draft	standards.digital.health.nz	<input type="checkbox"/>	
   >	Clinical code type code	20221115	draft	standards.digital.health.nz	<input type="checkbox"/>	
   >	Clinical coding system code	20221115	draft	standards.digital.health.nz	<input type="checkbox"/>	
   >	ContactPoint purpose	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Coverage category	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Coverage type	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Datum codes	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Domicile Code	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Funded Programme	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Information Source	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Level 4 ethnicity codes	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	MedDRA	25.1	active	terminology.hi7.org	<input type="checkbox"/>	
   >	NZ Citizenship status	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	NZ DHB	20200401	draft	standards.digital.health.nz	<input type="checkbox"/>	
   >	NZ Iwi	2.0.0	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	NZ Residency status	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	PHO	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	PractitionerRole status reason	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Registration Status of Practitioners	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Scope of practice	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Type of Alias	2.0-ballot	active	standards.digital.health.nz	<input type="checkbox"/>	



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ValueSet (29) Search

Drag headers here to group by

	Title ↑	Version	Status	Domain	Synd	Actions
   >	Additional Practitioner authorisations	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	AdministrativeGender	4.0.1	active	hi7.org	<input type="checkbox"/>	
   >	AdministrativeGenderNz	1.0.0	active	standards.digital.health.nz	<input type="checkbox"/>	
   >	Admission source code	20221115	draft	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Admission type code	20221115	draft	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Agency type code	20221115	draft	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Alias types	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Clinical code type code	20221115	draft	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Clinical coding system code	20221115	draft	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	ContactPoint purpose	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Coverage Category	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Coverage Type	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Datum code	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Death date Information Source	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	District Health Board Identifier	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Domicile Code	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Ethnicity of a person	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Funded Programme	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Information Source	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	Iwi	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	LOINC Codes	4.0.1	draft	hi7.org	<input type="checkbox"/>	
   >	MedDRA	20221114	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	NZ Citizenship status	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	NZ Residency status	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	PHO	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
   >	PractitionerRole status reason	2.0-ballot	active	nzhts.digital.health.nz	<input type="checkbox"/>	
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Ontoserver Dashboard (1.3.2) <https://nzhts.digital.health.nz/fhir> (4.0.1) Login

CodeSystem ValueSet **ConceptMap** NamingSystem StructureDefinition Bundle

ConceptMap (undefined+)

Search × ☰

Drag headers here to group by

Title ↑	Version	Status	Domain	Synd 	Actions
<h2>What Concept Maps do you need?</h2>					
No records to display					

10 rows ▼ < 0-0 of 0 >

\$Operations? Example Please!

- ValueSet \$expand (Implicit) – An expansion of SCT codes contained within a refset based ValueSet
- ValueSet \$expand (composed) – A dynamic ValueSet, composed of codes that meet a definition provided by the client request
- CodeSystem \$lookup – Lookup the definition of a code, within a specified CodeSystem
- ConceptMap \$translate – Request the equivalent code in CodeSystem B, for the provided code in CodeSystem A, based on a ConceptMap within the terminology server
- ValueSet \$validate-code – Verify that the provided code exists in the specified ValueSet

Working Example – NCTS, fhir-view

<https://www.healthterminologies.gov.au/integration/R4/fhir/CodeSystem>

Why are you still here??

Go and look at the NCTS, as an example! Then you may return!

Part of digital.health.gov.au

National Clinical Terminology Service
<http://ncts.digital.health.gov.au>

CodeSystem CompositionStatus

URI <http://hl7.org/fhir/composition-status>

Description The workflow/clinical status of the composition

Metadata

Version	4.3.0
Status	draft
Publisher	HL7 (FHIR Project)
OID	2.16.840.1.113883.4.642.4.242
Contact Information	

Code System Excerpt

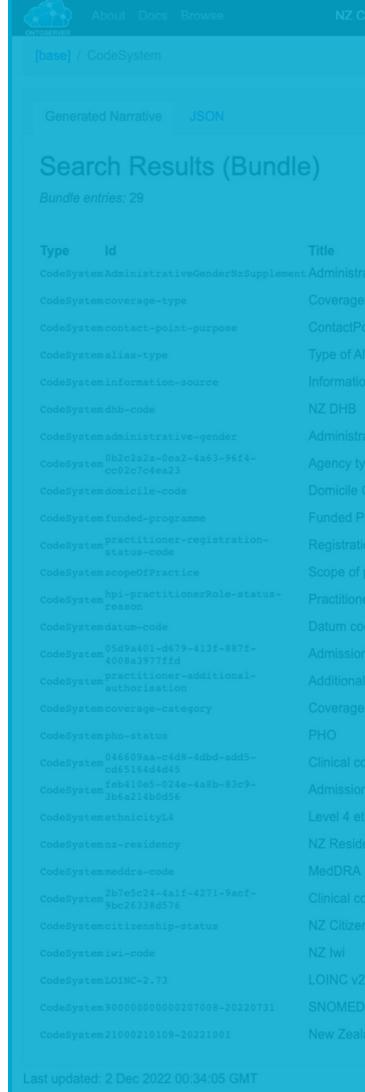
An excerpt of content is provided as part of this subset. For resources with fewer than 1,000 entries, they are shown in code only.

Code	Display	Definition
amended	Amended	The composition is a referenced resource that has been modified (edited or replaced) subsequent to being created and the composition is verified by an authorized user.
entered-in-error	Entered in Error	The composition was originally created, this is an amendment to the entire series of codes and is considered as valid.
final	Final	This version of the code is complete and verified by a person and no further changes are allowed. Any subsequent changes are considered as new versions of the code.
preliminary	Preliminary	This is a preliminary code that has not yet been verified by a person.

How about some NZHTS scenarios?!

Sure, but they sound like some great exercises for people at a connectathon...

- Search for or return all Level 4 ethnicity codes?
- List all active concepts within a specific SNOMED CT hierarchy
- \$lookup a concept definition and decomposition
- Compose a ValueSet specific to some context
- Get back an NZ localised set of “administrative-gender” codes
- Return ONLY a specified set of properties for a ValueSet \$expand
- Create a ConceptMap
- Search using the Expression Constraint Language (ECL)



How to integrate with the NZHTS?

- Have a play! We've setup a temporary NZHTS clone at <https://nz-connectathon.australiaeast.cloudapp.azure.com/fhir> (NOTE: This connectathon server DOES NOT require auth)
- Most code systems in the REAL NZHTS do not require auth, although a handful do. The capability statement outlines security and auth endpoints. For more information look at <https://www.tewhatuora.govt.nz/our-health-system/digital-health/terminology-service/>
 - Yell out if you want to work out the auth configuration for the real thing. We'd be happy to help
- Work out your use-case and construct the request(s) to make it happen (I recommend using Postman, at design time)
- Work from examples (Ontoserver Postman collection, FHIR® spec, etc...)
- If you want to see real FHIR® requests (as an example), open up the developer console and fire up shrimp to see how it integrates
- FHIR® terminology servers can return both JSON and XML, depending on your preferred format
- HAPI is a versatile library that makes integration much easier, providing an API interface, in most common coding languages
- You may want to syndicate a binary index down to your own terminology server

Resources

While not an exhaustive list the following will go a long way to you being successful with the NZHTS

- HL7 FHIR® specifications: <https://www.hl7.org/fhir>
- TA more in-depth overview of terminology servers, and FHIR®: <https://confluence.hl7australia.com/download/attachments/114755103/TerminologyServices.pdf>
- The FHIR® APIs are best explored using Postman (<https://www.postman.com/downloads>) or similar API development tool
- If using Postman, download our existing Postman collection from <https://ontoserver.csiro.au/docs/6>
- Integration walkthrough at Follow the Yellow Brick Code: <https://www.youtube.com/watch?v=Q3qx0jh8x4k>
- Example FHIR® implementation: <https://www.healthterminologies.gov.au/integration/R4/fhir/>
- Play with the SNOMED UI demonstrator to discover examples of how a UI might use the FHIR® Terminology Service API to support coded data entry (<http://snomed.org/ui>)
- Check out <https://aehrc.github.io/fhir-ts-exemplars/> for some simplified examples
- For a deeper understanding, consider the SNOMED Terminology Services certification. It gives a thorough coverage of FHIR®, and SNOMED CT (<https://courses.ihtsdotools.org/product?catalog=TSC>)

Thank you

Health & Biosecurity

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