

Dutch Exam Profile v4.0

Manifest Extensions Reference

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1. Introduction

This document is part of the technical documentation set for the *Dutch Exam Profile v4.0 (DEP)*. The DEP is a generic standard for specifying and transferring exams between parts of a computer based exam system (originally developed for the Dutch computer based exam system Facet). A common introduction and an overview of the available documentation and other source of information can be found in [DEP-FO]. The main goal of this technical documentation set is to supply content and software developers with enough information to implement the DEP.

This part of the documentation set describes the extensions the DEP defines for the Content Package manifest file `imsmanifest.xml`.

1.1. DEP Documentation Overview

The DEP v4.0 June 2, 2015 documentation set consist of several documents. References to other documents are always in square brackets, e.g. [DEP-MER]. The following table provides an overview:

Document:	Title:
[DEP-DRG]	Dutch Exam Profile v4.0 - Documentation Reading Guide
[DEP-FO]	Dutch Exam Profile v4.0 - Functional Overview
[DEP-MER]	Dutch Exam Profile v4.0 - Manifest Extensions Reference
[DEP-EDR]	Dutch Exam Profile v4.0 - Extension Documents Reference
[DEP-QAR]	Dutch Exam Profile v4.0 - QTI Adaptations Reference

1.2. Legend

- Columns marked **Pg.** indicate on which page more information can be found about a particular element, attribute or type.
- Columns marked **#** hold information about the occurrences of the element/attribute described
- The following indicators for occurrences are used:

Indicator:	Description:
1	The element or attribute must occur exactly once (single mandatory).
?	The element or attribute can occur (single optional).
*	The element must occur one or more times (multiple mandatory).
+	The element can occur zero or more times (multiple optional).

1.3. Copyright Notice

This document contains extracts from or derivatives of the IMS Global Learning Consortium specifications listed below and are available from the IMS Global Learning Consortium at <http://www.imsglobal.org>:

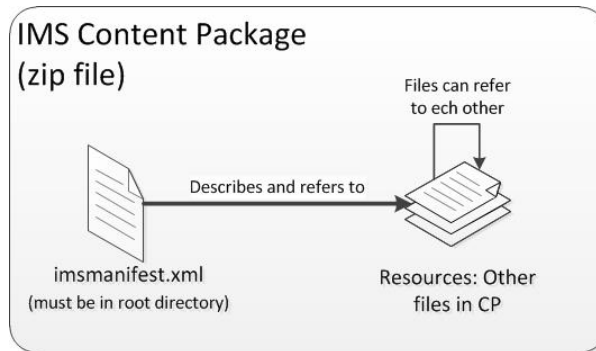
- IMS Question and Test Interoperability Specification, Version 2.1
<http://www.imsglobal.org/question/>
Copyright © 2012
- IMS Content Packaging Specification, Version 1.2
<http://www.imsglobal.org/content/packaging/>
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2. Overview

The DEP uses the IMS Content Packaging standard (see <http://www.imsglobal.org>) for packaging related content (XML documents, assets, etc.) into a single container, a so called *Content Package (CP)*. A CP is (in practice) a standard zip file with all relevant files grouped together inside. The root of this zip file must contain an XML *manifest file*, always called `imsmanifest.xml`. This manifest describes what's in the CP by providing metadata, structure information and references to all the contained files. The manifest groups the other files together in what is called *resources*.



Schematic drawing of a Content Package

The DEP extends the manifest with DEP specific metadata, both on the package and resource level. This metadata is in metadata sections and in DEP specific attributes. Here is a shortened example:

```
<?xml version="1.0" encoding="UTF-8"?>
<manifest xmlns:depcp="http://www.imsglobal.org/xsd/imscp_ext_vlp2"
  xmlns="http://www.imsglobal.org/xsd/imscp_v1p1" identifier="MANIFEST-id">

  <metadata>
    <schema>IMS Content</schema>
    <schemaversion>2.1</schemaversion>

    <!-- Global DEP metadata: -->
    <depcp:metadata >
      <depcp:id>FT-package Facet 3.0</depcp:id>
      <depcp:name>FT-package Facet 3.0</depcp:name>
      <depcp:version>53948274</depcp:version>
      <depcp:guid>9bb2831b-ab92-4fc3-9139-916088409f81</depcp:guid>
      <!-- ... -->
    </depcp:metadata>
  </metadata>

  <organizations>
    <!-- The organizations section is not used -->
  </organizations>

  <resources>

    <resource identifier="TST-FT-toets_Facet_3_0" type="imsqti_deptest" href="depitems/FT-toets_Facet_3.0.xml"
      depcp:version="19" depcp:guid="c03514df-5bda-4cfc-8196-0ac89082b5d3">
      <metadata>
        <depcp:testMetadata xmlns:imsqti="http://www.imsglobal.org/xsd/imsqti_v2p1">
          <depcp:id>FT-toets Facet 3.0</depcp:id>
          <depcp:name>FT-toets Facet 3.0</depcp:name>
          <depcp:itemCount>24</depcp:itemCount>
          <!-- ... -->
        </depcp:testMetadata>
      </metadata>
      <file href="depitems/FT-toets_Facet_3.0.xml" depcp:role="depTest"/>
      <file href="depitems/FT-toets_Facet_3.0_extension.xml" depcp:role="depExtension"/>
      <dependency identifierref="ITM-Beginscherm_FT"/>
      <!-- ... -->
    </resource>

    <resource identifier="ITM-Beginscherm_FT" type="imsqti_depitem" href="depitems/Beginscherm_FT.xml"
      depcp:version="8" depcp:guid="5545cd2a-1365-4633-a7fd-3e18069e584e">
      <metadata>
        <depcp:itemMetadata xmlns:imsqti="http://www.imsglobal.org/xsd/imsqti_v2p1">
          <depcp:maxScore>0</depcp:maxScore>
          <!-- ... -->
        </depcp:itemMetadata>
      </metadata>
      <file href="depitems/Beginscherm_FT.xml" depcp:role="depItem"/>
      <file href="depitems/Beginscherm_FT_extension.xml" depcp:role="depExtension"/>
      <dependency identifierref="RES-cito_itemstyle_css"/>
      <!-- ... -->
    </resource>

  </resources>
</manifest>
```

The information in this document about the DEP manifest extensions is organized in the following sections:

- Information about the exact rules for the manifest's structure: pg. 5
- Information about the manifest's global metadata (the `<depcp:metadata>` element): pg. 6
- Information about the attributes on the manifest's resources (like `type` and `depcp:role`): pg. 12
- Information about the metadata for assessment test resources in the manifest (the `<depcp:testMetadata>` element): pg. 13
- Information about the metadata for assessment item resources in the manifest (the `<depcp:itemMetadata>` element): pg. 14

3. Manifest Structure Rules

3.1. Schema

- The DEP XML Schema for the manifest extensions is called `imscp_ext_v2p1.xsd`.

3.2. Extensions namespace

- All DEP manifest extensions are in the `http://www.imsglobal.org/xsd/imscp_ext_v1p2` namespace.
- The proposed prefix for this namespace is `depcp` (`xmlns:depcp="http://www.imsglobal.org/xsd/imscp_ext_v1p2"`).
- The `depcp` prefix will be used throughout this document to refer to this namespace.

3.3. Ignored information

All information in the manifest not specifically mentioned in this document is ignored. For instance:

- All information in `xml:base` attributes. This means that all paths (in `href` attributes) in the manifest must be complete.
- All information in the `<organizations>` element
- Additional metadata beside the ones prescribed by DEP
- Additional resources

3.4. Mandatory CP directory structure

- All QTI Assessment Items *must* be in the CP zip file in a directory `/depitems/`. Other directory names are not prescribed.

3.5. Use of manifest dependency information

The dependency information in the manifest's resources must be complete and correct (`<dependency>` child elements of the `<resource>` elements). This means that:

- A test (`<resource type="imsqti_deptest">`) *must* have *all* the resources for the items it refers to mentioned in `<dependency>` elements. For instance:

```
<resource xmlns:depcp="http://www.imsglobal.org/xsd/imscp_ext_v1p2" identifier="TST-FT-toets_Facet_3_0"
  type="imsqti_deptest" href="depitems/FT-toets_Facet_3.0.xml" depcp:version="19"
  depcp:guid="c03514df-5bda-4cfc-8196-0ac89082b5d3">
  <metadata>...</metadata>
  <file href="depitems/FT-toets_Facet_3.0.xml" depcp:role="depTest"/>
  <file href="depitems/FT-toets_Facet_3.0_extension.xml" depcp:role="depExtension"/>
  <dependency identifierref="ITM-Beginscherm_FT"/>
  <dependency identifierref="ITM-Scrolltekst_50071"/>
  <dependency identifierref="ITM-Geluidsfragment_50075"/>
  <dependency identifierref="ITM-filmfragment02_50051"/>
  <dependency identifierref="ITM-KB-2014-B3-Radrennen_am_Nurburgring_inl"/>
  <dependency identifierref="ITM-KB-2014-B3-Radrennen_am_Nurburgring_vr1"/>
  <dependency identifierref="ITM-KB-2014-B3-Radrennen_am_Nurburgring_vr2"/>
  <dependency identifierref="ITM-Flash_Grafiek-Rekenmachine"/>
  <!-- ... -->
</resource>
```

- An assessment item (`<resource type="imsqti_depitem">`) *must* have *all* the resources for the assets and stylesheets it refers to mentioned in `<dependency>` elements. For instance:

```
<resource xmlns:depcp="http://www.imsglobal.org/xsd/imscp_ext_v1p2" identifier="ITM-filmfragment01_50049"
  type="imsqti_depitem" href="depitems/filmfragment01_50049.xml" depcp:version="6"
  depcp:guid="82426495-dfcc-4a18-be2c-67d47f291871">
  <metadata>...</metadata>
  <file href="depitems/filmfragment01_50049.xml" depcp:role="depItem"/>
  <file href="depitems/filmfragment01_50049_extension.xml" depcp:role="depExtension"/>
  <dependency identifierref="RES-cito_itemstyle_css"/>
  <dependency identifierref="RES-cito_userstyle_css"/>
  <dependency identifierref="RES-seqWebcamaangifte_fragment0_VP8_webm"/>
</resource>
```

4. Global Metadata

The CP's manifest contains global metadata that describes all the exams/test in the package. For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<depcp:metadata xmlns:depcp="http://www.imsglobal.org/xsd/ims_cp_ext_vlp2">
  <depcp:id>FT-package Facet 3.0</depcp:id>
  <depcp:name>FT-package Facet 3.0</depcp:name>
  <depcp:version>53948274</depcp:version>
  <depcp:guid>9bb2831b-ab92-4fc3-9139-916088409f81</depcp:guid>
  <depcp:profile>functionalTest</depcp:profile>
  <depcp:validFrom>2014-09-01T00:00:00</depcp:validFrom>
  <depcp:validUntil>2015-12-31T12:49:27</depcp:validUntil>
  <depcp:periodIndication>2014-2015</depcp:periodIndication>
  <depcp:durationIndication>PT1H</depcp:durationIndication>
  <depcp:examYear>2015</depcp:examYear>
  <depcp:examCodes>
    <depcp:examCode>
      <depcp:courseCode>0005</depcp:courseCode>
      <depcp:schoolTypes>
        <depcp:schoolType>
          <depcp:schoolLevel>V0-VMBO</depcp:schoolLevel>
          <depcp:schoolPath>VMBO-BB</depcp:schoolPath>
        </depcp:schoolType>
      </depcp:schoolTypes>
    </depcp:examCode>
  </depcp:examCodes>
  <depcp:status>assess</depcp:status>
  <depcp:context>Facet 3.0</depcp:context>
  <depcp:retries/>
  <depcp:structures/>
  <depcp:properties/>
</depcp:metadata>
```

Element <metadata>:

```
<metadata>
  <id>
  <name>
  <version>
  <guid>
  <profile>
  <testUsage>
  <testType>
  <testSpecialNeeds?>
  <validFrom>
  <validUntil>
  <periodIndication?>
  <durationIndication>
  <examYear>
  <examCodes>
  <meijerinkLevel?>
  <status>
  <context>
  <retries>
  <historicalAssessments>
  <structures>
  <regions>
  <variantDistribution>
  <properties?>
</metadata>
```

Child element:	#	Type:	Pg.	Description:								
id	1	xs:normalizedString		A identifying name for the exams in this CP. This is visible only in monitoring tooling and not by the student.								
name	1	xs:normalizedString		The name of the group of exams in this CP. This is visible for the student.								
version	1	xs:integer		Specifies the version number of this CP.								
guid	1	Guid.Type		Specifies the unique identifier of this CP.								
profile	1	TestProfile.Type		Determines the profile (base type) for the exams/test in this CP. <table><tr><td>flexible</td><td>The CP contains exams/test for which the time period in which the exam can be taken is flexible.</td></tr><tr><td>fixed</td><td>The CP contains exams/test for which the time period in which the exam can be taken is fixed.</td></tr><tr><td>mini</td><td>The CP contains exams/test in mini format.</td></tr><tr><td>nt2</td><td>The CP contains exams/test for NT2 (Dutch as a second language)</td></tr></table>	flexible	The CP contains exams/test for which the time period in which the exam can be taken is flexible.	fixed	The CP contains exams/test for which the time period in which the exam can be taken is fixed.	mini	The CP contains exams/test in mini format.	nt2	The CP contains exams/test for NT2 (Dutch as a second language)
flexible	The CP contains exams/test for which the time period in which the exam can be taken is flexible.											
fixed	The CP contains exams/test for which the time period in which the exam can be taken is fixed.											
mini	The CP contains exams/test in mini format.											
nt2	The CP contains exams/test for NT2 (Dutch as a second language)											

Child element:	#	Type:	Pg.	Description:										
testUsage	1	TestUsage.Type		<div>Determines the usage of the exams/test in this CP.<table><tr><td>regular</td><td>Regular (normal) exam</td></tr><tr><td>functionalTest</td><td>Specifies that this is not a real exam/test CP, but that its contents are for testing something in the processing applications.</td></tr><tr><td>try</td><td>The contents of this CP are for "Proef op de som". This value is deprecated and should no longer be used.</td></tr><tr><td>practice</td><td>The CP contains practice exams/tests</td></tr><tr><td>sanity</td><td>Special exam for performing sanity checks in/on the production environment.</td></tr></table></div>	regular	Regular (normal) exam	functionalTest	Specifies that this is not a real exam/test CP, but that its contents are for testing something in the processing applications.	try	The contents of this CP are for "Proef op de som". This value is deprecated and should no longer be used.	practice	The CP contains practice exams/tests	sanity	Special exam for performing sanity checks in/on the production environment.
regular	Regular (normal) exam													
functionalTest	Specifies that this is not a real exam/test CP, but that its contents are for testing something in the processing applications.													
try	The contents of this CP are for "Proef op de som". This value is deprecated and should no longer be used.													
practice	The CP contains practice exams/tests													
sanity	Special exam for performing sanity checks in/on the production environment.													
testType	1	TestType.Type		<div>Specifies whether this package contains tests or exams.<table><tr><td>test</td></tr><tr><td>exam</td></tr></table></div>	test	exam								
test														
exam														
testSpecialNeeds	?	TestSpecialNeeds.Type		<div>Any special needs for the tests/exams in this package.<table><tr><td>auditory</td><td>Specifies that these are auditive tests/exams (e.g. for visually impaired students).</td></tr></table></div>	auditory	Specifies that these are auditive tests/exams (e.g. for visually impaired students).								
auditory	Specifies that these are auditive tests/exams (e.g. for visually impaired students).													
validFrom	1	xs:dateTime		Specifies the start date of the period of validity of the exams/tests in this CP.										
validUntil	1	xs:dateTime		Specifies the end date of the period of validity of the exams/tests in this CP.										
periodIndication	?	xs:normalizedString		Provides an indication of the time period the exams/test in this CP are for, e.g. 2014-2015.										
durationIndication	1	xs:duration		Specifies the maximum duration of an exam/test in this CP, e.g. PT1H.										
examYear	1	xs:integer		Specifies the year the exams are taken, e.g. 2015.										
examCodes	1	ExamCodes.Type	8	Specifies the exam codes and school types for the exams/tests in this CP										
meijerinkLevel	?	MeijerinkLevel.Type		<div>Specifies the Meijerink level of the exam/test. This is a vocabulary for a reference level regarding Dutch language and mathematics.<table><tr><td>1S</td></tr><tr><td>1F</td></tr><tr><td>2S</td></tr><tr><td>2F</td></tr><tr><td>3S</td></tr><tr><td>3F</td></tr><tr><td>4S</td></tr><tr><td>4F</td></tr></table></div>	1S	1F	2S	2F	3S	3F	4S	4F		
1S														
1F														
2S														
2F														
3S														
3F														
4S														
4F														
status	1	TestStatus.Type		<div>Specifies whether the contents of the CP is for previewing or assessment purposes<table><tr><td>preview</td><td>The exams/tests in this CP are for previewing purposes only and should not be used for real.</td></tr><tr><td>assess</td><td>The exams/tests in this CP are for assessment purposes</td></tr></table></div>	preview	The exams/tests in this CP are for previewing purposes only and should not be used for real.	assess	The exams/tests in this CP are for assessment purposes						
preview	The exams/tests in this CP are for previewing purposes only and should not be used for real.													
assess	The exams/tests in this CP are for assessment purposes													
context	1	xs:normalizedString		Contains coding for special circumstances/uses. Values always in consultation with the delivery platform. Leave empty when not in use.										
retries	1	TestRetries.Type	9	Specifies re-examination options based on the results of tests/exams done in this period (exams/ tests in this CP).										
historicalAssessments	1	HistoricalAssessments.Type	9	Specifies re-examination options based on the results of tests/exams done in a previous period (in a different CP).										
structures	1	Structures.Type	10	Defines a metadata system used for reporting.										
regions	1	Regions.Type	11	Defines the geographical regions this CP is for.										
variantDistribution	1	VariantDistribution.Type	11	Defines how the variants of an exam/test are distributed when the exam is held.										
properties	?	Properties.Type	15	Optional additional properties.										

4.1. Exam codes

The global metadata `<examCodes>` describes the school-types and courses the exams/tests in the CP are for.

Element `<examCodes>` (`ExamCodes.Type`):

```
<examCodes>
  <examCode>+
</examCodes>
```

Child element:	#	Type:	Pg.	Description:
examCode	+	ExamCode.Type		See below.

```
<examCode>
  <courseCode>
  <schoolGrade?>
  <schoolTypes>+
</examCode>
```

Child element:	#	Type:	Pg.	Description:
courseCode	1	xs:normalizedString		Code for the course that is examined/tested. Values in consultation with the delivery platform.
schoolGrade	?	xs:integer (1..8)		The school grade (school year) the tests/exams are for.
schoolTypes	+	SchoolTypes.Type		See below.

```
<schoolTypes>
  <schoolType>+
</schoolTypes>
```

Child element:	#	Type:	Pg.	Description:
schoolType	+	SchoolType.Type		See below.

```
<schoolType>
  <schoolLevel>
  <schoolPath?>
</schoolType>
```

Child element:	#	Type:	Pg.	Description:																								
schoolLevel	1	SchoolLevel.Type		Indicator of the level (school-type within the Dutch educational system) for the exams/tests in the CP <table><tr><td>VO-HAVO</td></tr><tr><td>VO-VWO</td></tr><tr><td>VO-VMBO</td></tr><tr><td>MBO-1</td></tr><tr><td>MBO-2</td></tr><tr><td>MBO-3</td></tr><tr><td>MBO-4</td></tr><tr><td>NT2-I</td></tr><tr><td>NT2-II</td></tr><tr><td>PO-VVE</td></tr><tr><td>PO-BAO</td></tr><tr><td>PO-SBAO</td></tr><tr><td>PO-SO</td></tr><tr><td>PO-VSO</td></tr><tr><td>VO-PRO</td></tr><tr><td>HBO-AD</td></tr><tr><td>HBO-BA</td></tr><tr><td>HBO-MA</td></tr><tr><td>HBO-PM</td></tr><tr><td>HBO-O</td></tr><tr><td>WO-BA</td></tr><tr><td>WO-MA</td></tr><tr><td>WO-PM</td></tr><tr><td>WO-O</td></tr></table>	VO-HAVO	VO-VWO	VO-VMBO	MBO-1	MBO-2	MBO-3	MBO-4	NT2-I	NT2-II	PO-VVE	PO-BAO	PO-SBAO	PO-SO	PO-VSO	VO-PRO	HBO-AD	HBO-BA	HBO-MA	HBO-PM	HBO-O	WO-BA	WO-MA	WO-PM	WO-O
VO-HAVO																												
VO-VWO																												
VO-VMBO																												
MBO-1																												
MBO-2																												
MBO-3																												
MBO-4																												
NT2-I																												
NT2-II																												
PO-VVE																												
PO-BAO																												
PO-SBAO																												
PO-SO																												
PO-VSO																												
VO-PRO																												
HBO-AD																												
HBO-BA																												
HBO-MA																												
HBO-PM																												
HBO-O																												
WO-BA																												
WO-MA																												
WO-PM																												
WO-O																												
schoolPath	?	Leerstroom-v02		Further sub-school-type indicator. Values in consultation with the delivery platform. For Facet currently used for the VMBO school-type only.																								

4.2. Retry settings

Retry settings specify which exams/tests can be performed as a re-examination of another exam/test. Both must be in this CP and are therefore in the same period. In addition to this you can also specify re-examinations based on the results of previous periods with the `<historicalAssessments>` element (pg. 9).

The `<retries>` element specifies *chains* of test/exams that can be used for re-examinations. For example, assume we have the exams B and C (in this order) as re-examinations of A and the exams E and F (in this order) as re-examinations of D (A => B => C, D => E => F). These two chains in the retry settings will look like this:

```
<retries>
  <retry qtiTestIdentifierRef="T-A" qtiRetryTestIdentifierRef="T-B" qtiRetryTestSequenceNumber="1"/>
  <retry qtiTestIdentifierRef="T-A" qtiRetryTestIdentifierRef="T-C" qtiRetryTestSequenceNumber="2"/>
  <retry qtiTestIdentifierRef="T-D" qtiRetryTestIdentifierRef="T-E" qtiRetryTestSequenceNumber="1"/>
  <retry qtiTestIdentifierRef="T-D" qtiRetryTestIdentifierRef="T-F" qtiRetryTestSequenceNumber="2"/>
</retries>
```

The following additional rules apply:

- The lengths of all chains of retries must be always be equal. So, for instance, you cannot have one chain with two re-examinations and another one with four.
- If the CP contains a retry structure, all tests/exams must be mentioned/used. There must not be any "orphan" tests/exams in the CP.
- The starting point of every chain of re-examination tests/exams must be unique. It is not allowed to have multiple chains of re-examinations start with same test/exam.
- The combination of the `qtiTestIdentifierRef` and `qtiRetryTestSequenceNumber` attribute must be unique.

Element `<retries>` (`TestRetries.Type`):

```
<retries>
  <retry>*
</retries>
```

Child element:	#	Type:	Pg.	Description:
retry	*	TestRetry.Type		See below.

```
<retry qtiTestIdentifierRef = xs:normalizedString
       qtiRetryTestIdentifierRef = xs:normalizedString
       qtiRetryTestSequenceNumber = xs:integer />
```

Attribute:	#	Type:	Pg.	Description:
qtiTestIdentifierRef	1	xs:normalizedString		The identifier of the main exam/test.
qtiRetryTestIdentifierRef	1	xs:normalizedString		The identifier of the exam/test that is a retry of the one referenced by the <code>qtiTestIdentifierRef</code> attribute.
qtiRetryTestSequenceNumber	1	xs:integer		The sequence number for this retry exam/test.

4.3. Historical assessments

The `<historicalAssessments>` element determines which test/exams can be taken by the student, based on the exams taken *in a previous period* (which are in a different CP). This is an addition to the information in the `<retries>` element (pg. 9).

For example, assume test T1-T10 are for the first period and T11-T20 for the second period. The historical assessment information (present in the CP for the second period) might look like this:

```
<historicalAssessments>
  <retry PreviousTestGuid="GUID-of-T1-previous-period" qtiTestIdentifierRef="T14"/>
  <retry PreviousTestGuid="GUID-of-T10-previous-period" qtiTestIdentifierRef="T14"/>
  <retry PreviousTestGuid="GUID-of-T1-previous-period" qtiTestIdentifierRef="T18"/>
  <retry PreviousTestGuid="GUID-of-T10-previous-period" qtiTestIdentifierRef="T18"/>
</historicalAssessments>
```

Remark: The GUID-s in the `qtiPreviousTestGuid` attribute are not in correct GUID format to make the example more readable.

This means that:

- A student that has done test T1, T10 in the first period will get T10 or T14 (chosen randomly) in the second period.
- A student that has done no test will get a random regular variant from the second period.
- A student that has done T14 in the second period (and T1 or T10 in the first period) will get T18 for re-examination and vice versa.

Element `<historicalAssessments>` (`HistoricalAssessments.Type`):

```
<historicalAssessments>
  <historicalAssessment>*
</historicalAssessments>
```

Child element:	#	Type:	Pg.	Description:
historicalAssessment	*	HistoricalAssessment.Type		See below.

```
<historicalAssessment qtiPreviousTestGuid = xs:normalizedString
qtiTestIdentifierRef = xs:normalizedString />
```

Attribute:	#	Type:	Pg.	Description:
qtiPreviousTestGuid	1	xs:normalizedString		GUID of a test in a different CP (for a different period)
qtiTestIdentifierRef	1	xs:normalizedString		Identifier of a test in this CP.

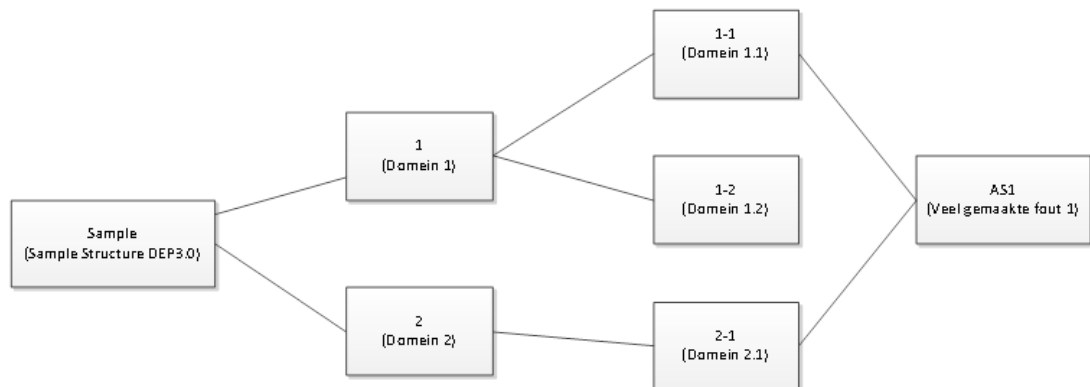
4.4. Structures

One of the options for the delivery system is attach metadata on a student-response level. A response can be categorized in what is called a "concept".

For instance, assume the question is: "What is the square root of 9?":

- Student response: "3": Concept "square roots"
- Student response: "81": Concept "Often made error square-root/square"

These concepts have relationships, which is a *networked* data structure. For example:



How exactly responses are linked to concepts is not defined and dependent on how the exam/test is processed. This could be done by for instance the adaptive test driver (see [DEP-QAR]). For implementation questions, please consult your delivery system documentation/supplier.

The concept-data-structures (there can be more than one) for the exams/test in the CP are expressed in the manifest in the `<structures>` element. Concepts are defined in `<structureElement>` elements. Here is an example that defines the structure for the concept relations in the figure above:

```
<depcp:structures xmlns:depcp="http://www.imsglobal.org/xsd/ims_cp_ext_vlp2">
  <depcp:structure name="SampleStructure">
    <depcp:structureElement code="Sample" title="Sample Structure DEP 3.0" type="Part"/>
    <depcp:structureElement code="2" title="Domein 2" parent="Sample" type="Domain"/>
    <depcp:structureElement code="2-1" title="Domein 2.1" parent="2" type="SubDomain"/>
    <depcp:structureElement code="AS1" title="Veelgemaakte fout 1" parent="2-1" type="ResponseStrategy"/>
    <depcp:structureElement code="1" title="Domein 1" parent="Sample" type="Domain"/>
    <depcp:structureElement code="1-1" title="Domein 1.1" parent="1" type="SubDomain"/>
    <depcp:structureElement code="AS1" title="Veelgemaakte fout 1" parent="1-1" type="ResponseStrategy"/>
    <depcp:structureElement code="1-2" title="Domein 1.2" parent="1" type="SubDomain"/>
  </depcp:structure>
</depcp:structures>
```

Element `<structures>` (Structures.Type):

```
<structures>
  <structure>*
</structures>
```

Child element:	#	Type:	Pg.	Description:
structure	*	Structure.Type		See below.

```
<structure name? = xs:normalizedString >
  <structureElement>*
</structure>
```

Attribute:	#	Type:	Pg.	Description:
name	?	xs:normalizedString		Name of this concept-data-structure

Child element:	#	Type:	Pg.	Description:
structureElement	*	StructureElement.Type		See below.

```
<structureElement code = xs:normalizedString
title = xs:normalizedString
parent? = xs:normalizedString
type? = xs:normalizedString />
```

Attribute:	#	Type:	Pg.	Description:
code	1	xs:normalizedString		Code for this concept. It must be unique for this CP. It can be any string and does not need to be an identifier.
title	1	xs:normalizedString		Title (user friendly name) of this concept element.
parent	?	xs:normalizedString		The code (value of its code attribute) of the parent of this concept.
type	?	xs:normalizedString		The type of this concept (not bound to an enumeration).

Remark: When a concept has more than one parent, it must be mentioned *once for each parent*. For example see the <structureElement> with code="AS1" in the example above. This is mentioned twice, once for parent="1-1" and once for parent="2-1".

4.5. Geographical regions

The <regions> element defines the geographical regions the test/exams in this CP are for.

Element <regions> (Regions.Type):

```
<regions>
  <region>+
</regions>
```

Child element:	#	Type:	Pg.	Description:
region	+	Region.Type		Specification of a (Dutch) geographical region (ISO 3166-3).
			BES	BES islands
			CUW	Curacao
			ABW	Aruba
			SXM	St. Maarten
			NLD	The Netherlands

4.6. Variant distribution

The <variantDistribution> element defines the way variants of a test/exam are distributed among the exam candidates.

Element <variantDistribution> (VariantDistribution.Type):

```
<variantDistribution>
  <variantDistributionType>
  <maximumNrOfVariants>
</variantDistribution>
```

Child element:	#	Type:	Pg.	Description:	
variantDistributionType	1	xs:string		Determines how the variant distribution among the exam participants is determined.	
				manual	The distribution of the exam variants is done by the exam planner.
				automatic	The distribution of the exam variants is done by the exam/delivery system.
maximumNrOfVariants	1	xs:positiveInteger		The maximum number of variants that can be used within a group of exam candidates	

5. Resource Attributes

A manifest groups files in so-called *resources*. In a DEP CP, a resource carries additional information, so the application that interprets the manifest knows what kind of information it can expect and act accordingly. For examples see the DEP manifest example listing on pg. 3 and the examples on pg. 13 and pg. 14.

5.1. Resource type attribute

A `<resource>` element has a mandatory `type` attribute. In a DEP CP, its values are restricted to:

Type value	Description
imsqti_deptest	The resource is a QTI assessment test document. This means it must contain: <ul style="list-style-type: none"> - A single <code><file></code> element that refers to a QTI assessment test document. This <code><file></code> element must have a <code>depcp:role="depTest"</code> attribute (see pg. 12). - An optional single <code><file></code> element that refers to a QTI assessment test <i>extension</i> document. These extension documents are described in [DEP-EDR]. This <code><file></code> element must have a <code>depcp:role="depExtension"</code> attribute (see pg. 12).
imsqti_depitem	The resource is a QTI assessment item document. This means it must contain: <ul style="list-style-type: none"> - A single <code><file></code> element that refers to a QTI assessment item document. This <code><file></code> element must have a <code>depcp:role="depItem"</code> attribute (see pg. 12). - An optional single <code><file></code> element that refers to a QTI assessment item <i>extension</i> document. These extension documents are described in [DEP-EDR]. This <code><file></code> element must have a <code>depcp:role="depExtension"</code> attribute (see pg. 12).
imsqti_depdriver	This resource is a control file for a module (an adaptive test driver).
imsqti_depmodule	This resource is an adaptive test driver.
associatedcontent/dep_xmlvlp0/learning-application-resource	The resource contains additional files used by other resources, like for instance an asset or a movie.
controlfile/dep_xmlvlp0	This is an additional resource, like for instance a schema.
webcontent	The item is additional web-related content like for instance a <code>.css</code> file.

Resources with other values for the `type` attribute are ignored.

5.2. DEP Resource Extension Attributes

The DEP requires that resources in a CP manifest are extended with the following mandatory DEP specific attributes:

Attribute name	On element	#	Type	Description
depcp:guid	<code><resource></code>	1	GUID	Specifies the unique identifier of this specific resource
depcp:version	<code><resource></code>	1	integer	Specifies the version number of this specific resource.
depcp:role	<code><file></code>	1	Role.Type	Specifies the role of a file in a resource, e.g. whether its a test or an item. See below.

Enumeration Role.Type:

This enumeration lists the values for the `depcp:role` extension attribute of the manifest's `<file>` element. It determines the role of the file within the resource.

Value:	Description:
depTest	The file is a QTI assessment test document.
depSection	The file is a QTI assessment section document. Do not use: separate section documents are currently not supported.
depItem	The file is a QTI assessment item document.
depExtension	The file is a test or item extension document. See [DEP-EDR] for more information.

6. Test Resource Metadata

Every resource in the manifest that specifies a QTI assessment test (`type="imsqti_deptest"`) must have test resource metadata present (`<depcp:testMetadata>` element). For instance:

```
<?xml version="1.0" encoding="UTF-8"?>
<resource identifier="TST-FT-toets_Facet_3_0" type="imsqti_deptest" href="depitems/FT-toets_Facet_3.0.xml"
  depcp:version="19" depcp:guid="c03514df-5bda-4cfc-8196-0ac89082b5d3">
  <metadata>
    <depcp:testMetadata xmlns:depcp="http://www.imsglobal.org/xsd/imsdep_ext_v1p2">
      <depcp:id>FT-toets_Facet_3.0</depcp:id>
      <depcp:name>FT-toets_Facet_3.0</depcp:name>
      <depcp:itemCount>24</depcp:itemCount>
      <depcp:maxScore>40</depcp:maxScore>
      <depcp:tools>
        <depcp:tool>notepad</depcp:tool>
        <depcp:tool>symbolPicker</depcp:tool>
      </depcp:tools>
    </depcp:testMetadata>
  </metadata>
  <file href="depitems/FT-toets_Facet_3.0.xml" depcp:role="depTest"/>
  <file href="depitems/FT-toets_Facet_3.0_extension.xml" depcp:role="depExtension"/>
</resource>
```

The structure of the test resource metadata is as follows:

Element `<testMetadata>`:

```
<testMetadata>
  <id>
  <name>
  <itemCount>
  <maxScore>
  <tools>
  <properties>?
</testMetadata>
```

Child element:	#	Type:	Pg.	Description:
id	1	xs:normalizedString		A identifying name for this test. This is visible only in monitoring tooling and not by the student.
name	1	xs:normalizedString		The name of this test. This is visible for the student.
itemCount	1	xs:integer		The number of assessment items this test references.
maxScore	1	xs:decimal		The maximum score for this test. For non-adaptive tests, this must be the sum of the maximum scores of the assessment items referenced by this test.
tools	1	Tools.Type	13	Tooling that can be used by the student during the execution of this test.
properties	?	Properties.Type	15	Optional additional properties.

Remark: The values for `<itemCount>` and `<maxScore>` could have been derived automatically. However, DEP CPs must sometimes be processed by administrative applications that need no further knowledge of its contents and only inspect the CP manifest. Therefore, this metadata, that is important to these applications, is stated explicitly in the manifest's metadata.

6.1. Tools

The `<tools>` element specifies which tools are available to the student during the execution of a test. More information about tools in [DEP-EDR].

Element `<tools>` (Tools.Type):

Specifies the tools the student has access to during the exam/test.

```
<tools>
  <tool>*
</tools>
```

Child element:	#	Type:	Pg.	Description:
tool	*	Tool.Type		The tool the student has access to during the exam/test.
				<div>calculator</div> <div>notepad</div> <div>spellCheck</div> <div>ruler</div> <div>protractor</div> <div>triangle</div> <div>symbolPicker</div> <div>formulaEditor</div> <div>formulaList</div> <div>mediaPlayer</div> <div>textMarker</div> <div>reset</div>

7. Item Resource Metadata

Every resource in the manifest that specifies a QTI assessment item (`type="imsqti_depitem"`) must have item resource metadata present (`<depcp:itemMetadata>` element). For instance:

```
<?xml version="1.0" encoding="UTF-8"?>
<resource identifier="ITM-Scrolltekst_50071" type="imsqti_depitem" href="depitems/Scrolltekst_50071.xml"
  depcp:version="5" depcp:guid="79953989-86b5-4ae0-b91c-87178de9b2ee">
  <metadata>
    <depcp:itemMetadata xmlns:depcp="http://www.imsglobal.org/xsd/imscp_ext_v1p2">
      <depcp:maxScore>1</depcp:maxScore>
    </depcp:itemMetadata>
  </metadata>
  <file href="depitems/Scrolltekst_50071.xml" depcp:role="depItem"/>
  <file href="depitems/Scrolltekst_50071_extension.xml" depcp:role="depExtension"/>
</resource>
```

The structure of the item resource metadata is as follows:

Element `<itemMetadata>`:

```
<itemMetadata>
  <maxScore>
  <properties?>
</itemMetadata>
```

Child element:	#	Type:	Pg.	Description:
maxScore	1	xs:decimal		The maximum score for this specific item. Specify as 0 when this item has no score/no interaction.
properties	?	Properties.Type	15	Optional additional properties.

8. Global types

8.1. Properties

All DEP specific metadata sections in the manifest can have a list of open properties. Names and values of these properties are not specified here.

Although usage is discouraged, they can be used temporarily for experimental purposes. Properties that are used more often and thereby become part of the DEP are supposed to get a metadata element of their own in a next version of the DEP.

Element `<properties>` (`Properties.Type`):

```
<properties>
  <property>*
</properties>
```

Child element:	#	Type:	Pg.	Description:
property	*	Property.Type		See below.

```
<property>
  <name>
  <value>
  <description>?
</property>
```

Child element:	#	Type:	Pg.	Description:
name	1	xs:normalizedString		Name of the property.
value	1	xs:string		Value of the property.
description	?	xs:normalizedString		Optional description of the property.