

## Version History

Date	Version	Release	Update	Description
2014-11-05	0	1	0	Fisrt draft bases on previous GTC initiatives
2015-05-04	0	3	9	Working document up till version 0.3.9
2015-05-13	0	4	0	Working document . <order_code> and <product_id> in 3.11package_assortment.xml description updated
2015-05-22	0	4	1	Working document . Put the p21 file attributes in <i>italic</i> , and some minor sentence change
2015-05-29	0	4	2	Working document . Remove <order_code> from assortment file
3333332015-06-01	1	1	0	Working document . Annex A added to clarify different product identifiers
2015-06-03	1	1	1	Working document . Update on Annex A.
2015-06-04	2	0	0	<b>Set as First official release.</b>

# GTC Package Specification

## 1 Introduction

Generic Tool Catalog (GTC)\* is a format introduced as a complement to ISO 13399, with the purpose of facilitating cutting tool catalog exchange between cutting tool vendors, system vendors, end users, and other stakeholders.

This document specifies the GTC package format for delivering a catalog of cutting tool items described according to ISO13399, which includes the folder structure and general requirement for each folder and file. Every package created by a tool vendor will have this format, even if it contains only a small number of tools.

### General notes:

- **This package specification harmonizes previous GTC initiatives.**
- **A package will not include more than one catalog**
- **All files and directories names are case sensitive**
- **A file can be part of the GTC package or there could be a http web reference**

## 2 GTC Package Folder Structure

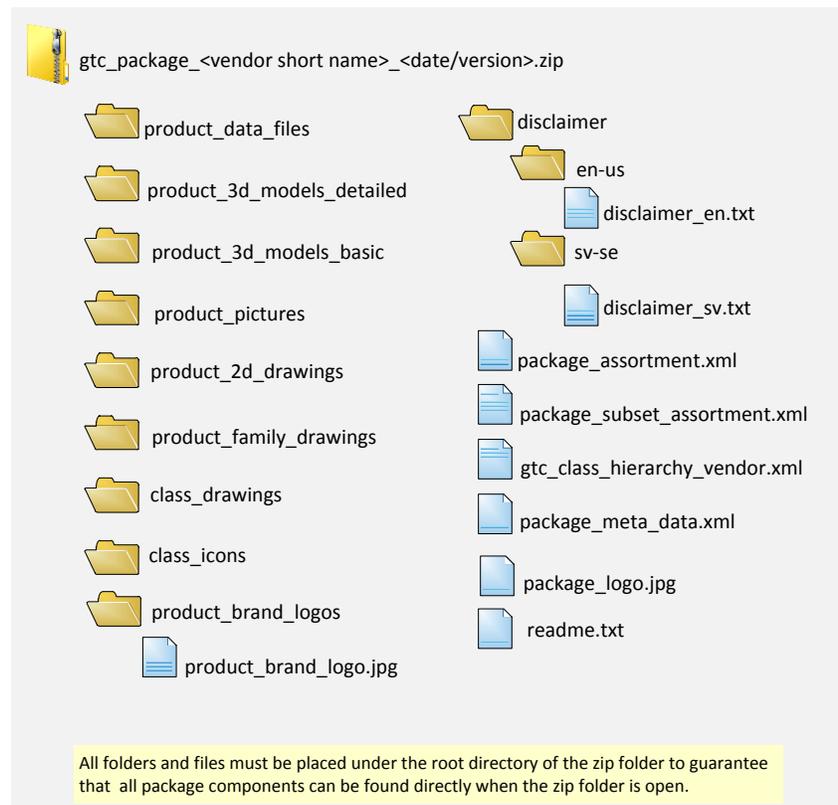


Figure 1. GTC package format.

\*GTC was called Generic Tool Classification before, from 2015-01-15, it is changed to Generic Tool Catalog.

The GTC package typically includes information on both the GTC classification hierarchy and product data however it is possible to ship both (hierarchy and products) in one package or provide a package only for the hierarchy or only for the product data. The file “[gtc\\_class\\_hierarchy\\_vendor.\\*](#)” is an indicator that the class hierarchy is included in the package. The file “[package\\_assortment.xml](#)” indicates that product data is included in the package as well. It is mandatory that at least one of them to be included in a GTC package.

Folder/File	GTC Hierachy Mandatory	Data Package Mandatory	Note
product_data_files	No	Yes	
product_3d_models_detailed	No	Yes	Folder can be empty
product_3d_models_basic	No	Yes	Folder can be empty
product_pictures	No	Yes	Folder can be empty
product_2d_drawings	No	Yes	Folder can be empty
product_family_drawings	No	Yes	Folder can be empty
class_drawings	Yes	No	Recommended
class_icons	Yes	No	Recommended
product_brand_logos	No	Yes	Folder can be empty
disclaimer	No	No	
package_assortment.xml	No	Yes	For all products in the package
package_subset_assortment.xml	No	No	For a defined subset of products in the package
gtc_class_hierarchy_vendor.xml	Yes	No	
package_meta_data.xml	Yes	Yes	
package_logo.jpg	No	No	For those who has a specific logo for the released catalog
readme.txt	Yes	Yes	Describes known issues with this package

### 3 Detailed specification for each folder

#### 3.1 product\_data\_files



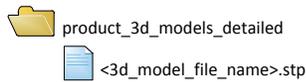
product\_data\_files



<product\_data\_file\_id>.p21

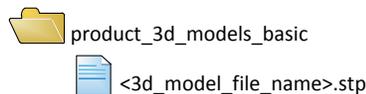
- This folder contains product data files which describe cutting tools parameters. The product data file is a STEP file which uses EXPRESS schema defined in ISO 13399-1 Annex C, and the file format is defined in ISO 10303-21 (.p21).
- File name must be unique.
- File name must be the same as the corresponding document name (case sensitive) stated in the assortment file (package\_assortment.xml).
- One product data file is mandatory for each product.

## 3.2 product\_3d\_models\_detailed



- This folder contains detailed 3D models of cutting tools. File format is defined in ISO 10303-21 (the same format as product data file, but use “.stp “extension for differentiation), and use EXPRESS schema defined in ISO 10303 part 203, or 214.(Note: part 242 is published on 2014-12-01 to revise part 203 and 214, but at the time when this document is written, the commercial implementation of part 242 is limited. Going forward, GTC will support 242 model instead of 203 and 214)
- ISO13399-80 defines needs/requirements for cutting tool 3D models. Part 80 is currently being revised, and GTC adopts the recommendation of the new revision. Examples can be found in released and upcoming ISO 13399 part 2xx, 3xx, 4xx.
- File name must be the same as the corresponding external document name (case sensitive) stated in the product data p21 file.
- *product\_3d\_model\_detailed* is the document description that points to this file within the P21 file.
- The model detail level should be enough to produce tool assembly drawings for the shop floor use of assembling and measuring the tool assembly. This model may also be used by receiving applications to create a basic model.

## 3.3 product\_3d\_models\_basic



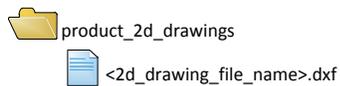
- This folder contains basic 3D models of cutting tools. File format is defined in ISO 10303-21 (the same format as product data file, but use “.stp “ extension for differentiation), and use EXPRESS schema defined in ISO 10303 part 203 or 214.(Note: part 242 is published on 2014-12-01 to revise part 203 and 214, but at the time when this document is written, the commercial implementation of part 242 is limited. Going forward, GTC will support 242 model instead of 203 and 214)
- ISO13399-80 defines needs/requirements for cutting tool 3D models. Part 80 is currently being revised, and GTC adopts the recommendation of the new revision.Examples can be found in ISO 13399 part 2xx, 3xx, 4xx.
- File name must be the same as the corresponding external document name (case sensitive) stated in the product data p21 file.
- *product\_3d\_model\_basic* is the document description that points to this file within the P21 file.
- The model detail level should be enough for simulation and collision detection of the tool with the part or the machine tool.

### 3.4 product\_pictures



- These folders contain pictures of cutting tools.
- File name must be the same as the corresponding external document name stated in the product data p21 file.
- *product\_picture* is the document description that points to this file within the P21 file.
- Recommended bitmaps formats: ".jpeg", ".jpg", ".png", ".gif" (, ".bmp", ".tif". Data provider needs to check with data receiver which formats are actually supported.)
- Recommended bitmaps minimum size is 400x300 pixels.
- Aspect ratio is not restricted.

### 3.5 product\_2d\_drawings



- This folder contains the 2D drawings of cutting tools, which shows the tool to scale, in a side view defined in the standard ISO 13399-70.
- ".dxf" format.
- Needs and requirements are defined in ISO13399-70 (layers, colors, etc).
- File name must be the same as the corresponding external document name stated in the product data p21 file.
- *product\_2d\_drawing* is the document description that points to this file within the P21 file.
- The drawing detail level should be enough to produce tool assembly drawings for the shop floor use of assembling and measuring the tool assembly.

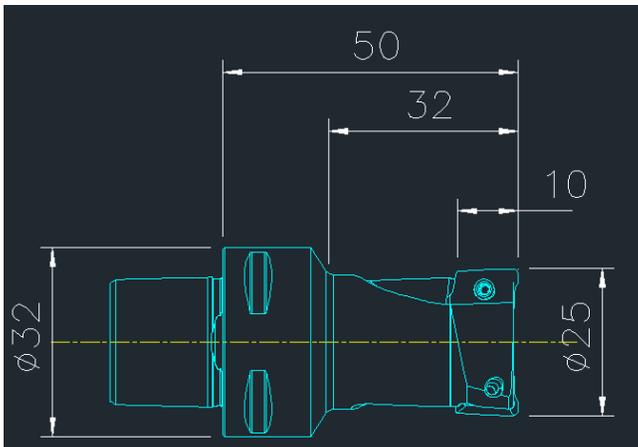
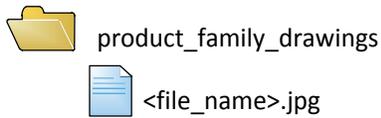


Figure 2. An example of product 2d drawing.

### 3.6 product\_family\_drawings



- This folder contains the descriptive drawings of the properties for a product. The drawing may not be to scale as it is intended for display purposes only
- File name must be the same as the corresponding external document name stated in the product data p21 file.
- *product\_family\_drawing* is the document description that points to this file within the P21 file.
- Both bitmap and vector formats are accepted. Vector formats are preferred considering the pictures can be zoomed in for detail view. (Which formats are actually supported depends on the receiving systems, so it's suggested that data provider check with data receiver which formats will work on corresponding receiving systems.)
- Recommended vector formats: “.cgm”, “.dwg”, “.dxf”, “.hpg”, “.hpgl”.(Data provider needs to check with data receiver which formats are actually supported.)
- Recommended bitmaps formats: “.gif”, “.jpeg”, “.jpg”, “.png” (, “.bmp”, “.tif”. Data provider needs to check with data receiver which formats are actually supported.)
- Recommended minimum size of bitmaps drawings: 400x300 pixels.
- Recommended aspect ratio for bitmap drawings is 4:3, but other aspect ratios are accepted as well since tool shapes are various.

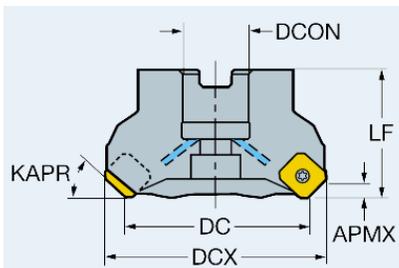
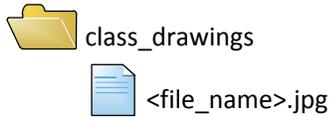


Figure 3. An example of product property descriptive drawing

### 3.7 class\_drawings



- A drawing showing important properties in each GTC leaf node class. This can be one of the product property descriptive drawings selected to represent the general properties that are applicable to products which belong to the GTC class node.
- File name must be the same as the corresponding reference file name stated in gtc\_class\_hierarchy\_vendor.xml
- Both bitmap and vector formats are accepted. Vector formats are preferred considering the pictures can be zoomed in for detail view. (Which formats are actually supported depends on the receiving systems, so it's suggested that data provider check with data receiver which formats will work on corresponding receiving systems.)
- Recommended vector formats: “.cgm”, “.dwg”, “.dxf”, “.hpg”, “.hpgl”.(Data provider needs to check with data receiver which formats are actually supported.)
- Recommended bitmaps formats: “.gif”, “.jpeg”, “.jpg”, “.png” (, “.bmp”, “.tif”. Data provider needs to check with data receiver which formats are actually supported.)
- Recommended minimum size of bitmaps drawings: 400x300 pixels.
- Recommended aspect ratio for bitmap drawings is 4:3, but other aspect ratios are accepted as well since tool shapes are various.

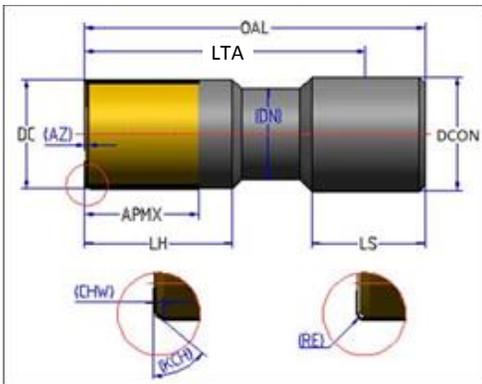
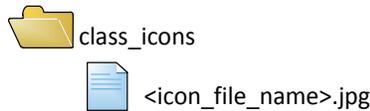


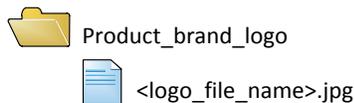
Figure 4. An example of class drawing.

### 3.8 class\_icons



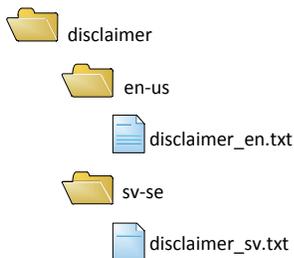
- This folder contains icon pictures of GTC class nodes.
- File name must be the same as the corresponding reference file name stated in gtc\_class\_hierarchy\_vendor.xml.
- Recommended bitmaps formats: “.png”, “.jpg”, “.jpeg” and “.gif”. (Data provider needs to check with data receiver which formats are actually supported.)
- Recommended icons should have square aspect ratio (1:1), but other aspect ratios are accepted as well since tool shape are various.
- Recommended pixel size : 128x128 pixels (Recommended min 32x32 pixels, max 300x300 pixels).

### 3.9 product\_brand\_logos



- Brands under a tool vendor
- The tool supplier who owns the products in the catalog is considered as a vendor.
- Can be multiple pictures in case of more than one brands in the catalog.
- The file name must be the same as the brand name stated in the product P21 file.
- Recommended bitmaps formats: “.png”, “.jpg”, “.jpeg” and “.gif” .”(Data provider needs to check with data receiver which formats are actually supported.)
- Recommended pixel size is 400x200. But other sizes are accepted as well.
- Aspect ratio is not restricted.

### 3.10 disclaimer



- Disclaimers in different languages.
- Legal disclaimer.
- If disclaimer is provided, the application reading the package must display the disclaimer text and ask for user agreement. If the user declines the catalog package is not read.

### 3.11 package\_assortment.xml

- List of all products in the delivered data package.
- This file states where a product fits in the GTC class hierarchy.
- <product\_id> must be an unambiguously unique identifier for the product from the tool vendor to be used by the receiving system to uniquely identify the product from the vendor in the system.
- <p21\_value\_change\_timestamp> and <p21\_structure\_change\_timestamp> provides timestamp information to enable updating.
- <effectivity\_active\_start\_date> and <effectivity\_active\_end\_date> specify a period when a product is active.

	effectivity_active_start_date		effectivity_active_end_date		Description
	n/a		n/a		The product is <i>always</i> active
▲	<start_date>		n/a		The product will be active starting <start-date>
	<start_date>	▲	n/a		The product is active (since <start-date>)
	n/a	▲	<end_date>		The product will be discontinued starting <end-date>
	n/a		<end_date>	▲	The product is obsolete (since <end-date>)
▲	<start_date>		<end_date>		The product will be active starting <start-date>
	<start_date>	▲	<end_date>		The product is active but will be discontinued
	<start_date>		<end_date>	▲	The product is obsolete (since <end-date>)

▲ = current\_date

- <replacement\_product\_id> indicates that there is a replacement product for this product if the current product is in process of being obsolete or is obsolete.
- <gtc\_version> indicates the GTC version number which the assortment is based on.
- Every product has a unit. <unit\_system> indicates in which unit system (metric or imperial) the vendor intends the data to be presented to the user.

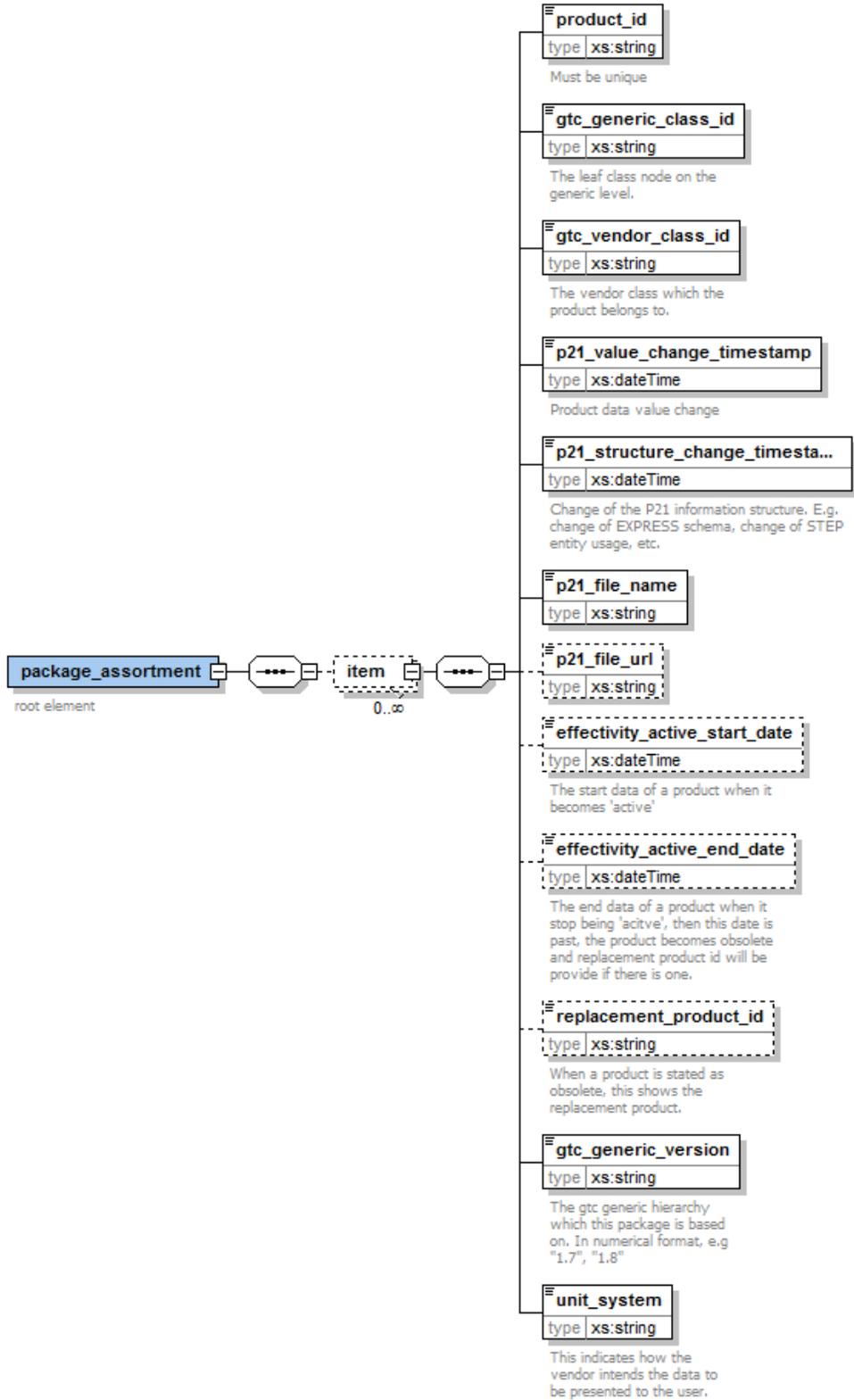


Figure 5. Package assortment XML schema

### 3.12 package\_subset\_assortment.xml

- This file is the assortment for a subset of products. (e.g. assortment for milling only, assortment for new products only). Assortment for all catalog product **is specified in section 3.11**
- The purpose of this file to make it easier for data receiver to import defined subsets of products in the provided package without retrieving the full assortment.
- The content of string\_value is determined by cutting tool vendor.

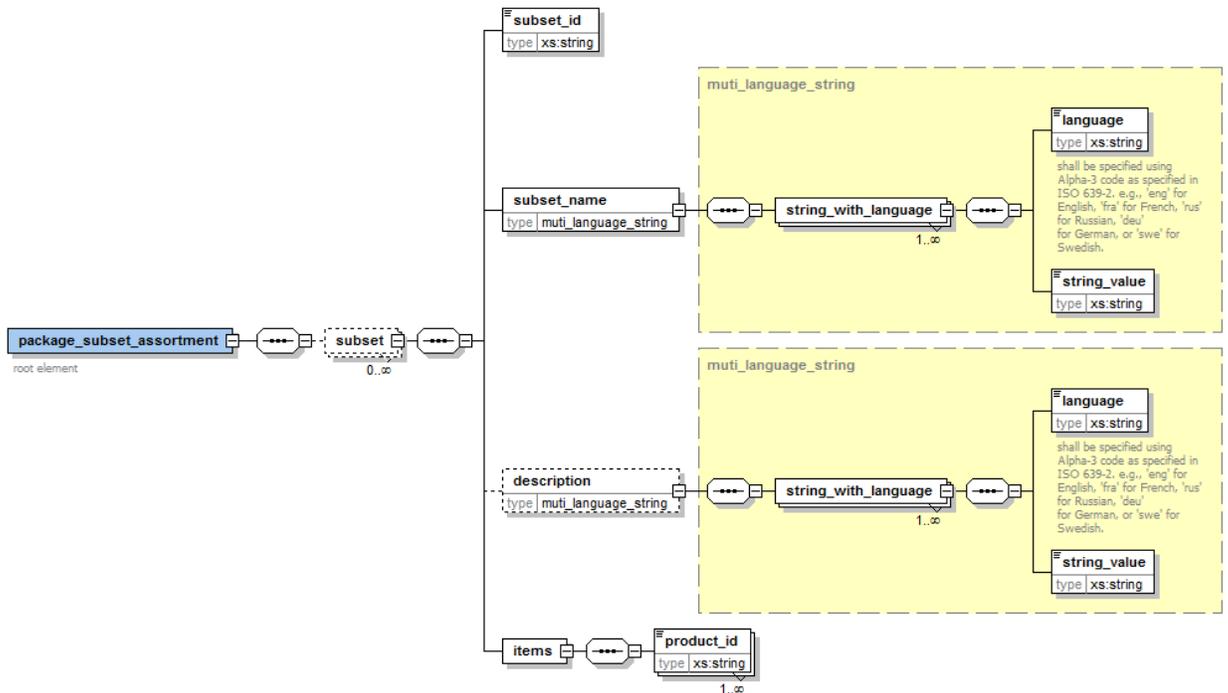
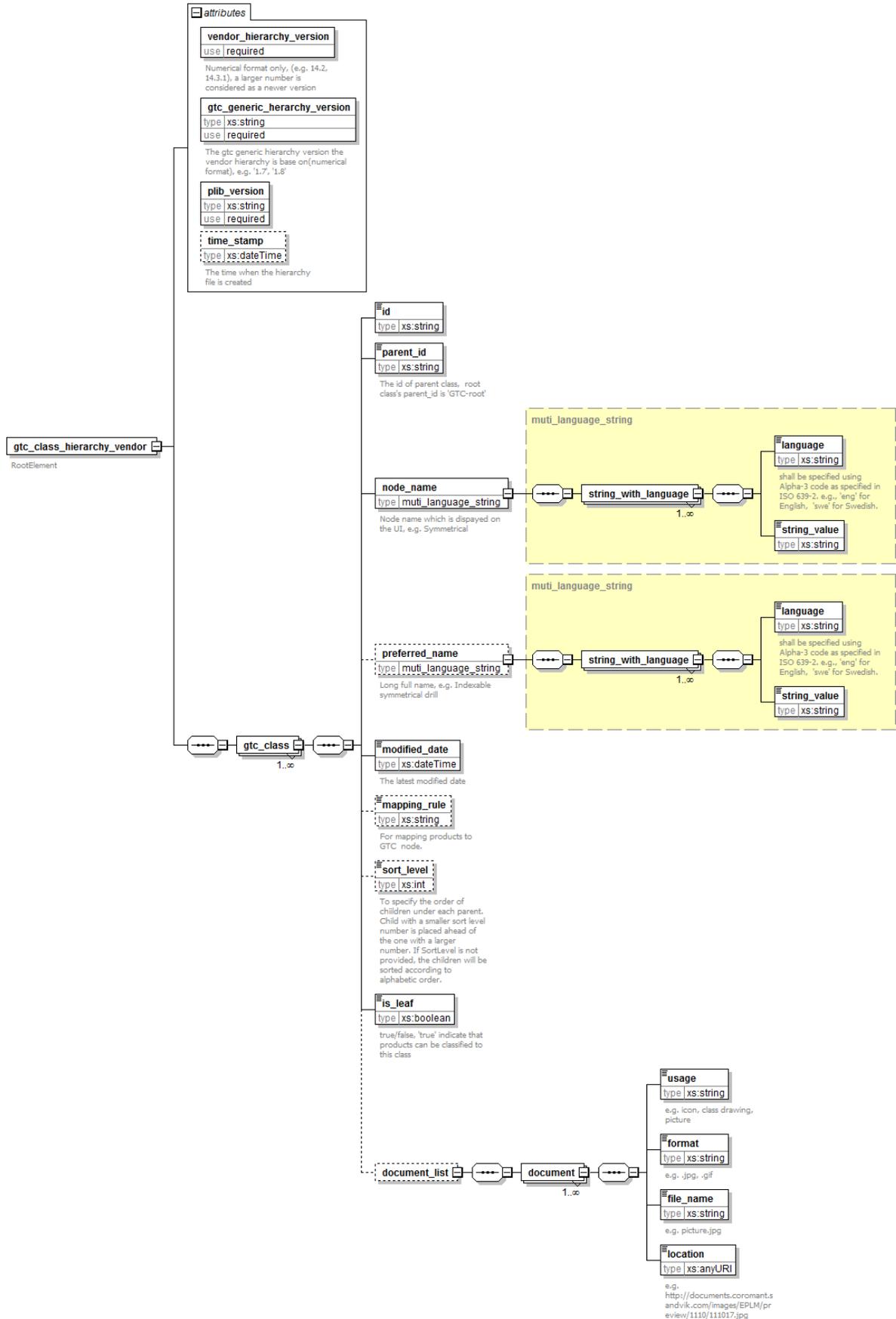


Figure 6. package subset assortment XML schema

### 3.13 gtc\_class\_hierarchy\_vendor.xml

- This file is created based on the GTC generic hierarchy and the products the vendor has.
- The vendor hierarchy should include all the classes that the tool vendor has.
- GTC generic hierarchy will be provided by GTC governance organization on a webpage and it includes also rules for creating vendor level classes under each leaf-level generic class.



### 3.14 package\_meta\_data.xml

- This file describes the generic information on the package.
- Supported GTC generic versions includes the generic version that the package is based on as well as all backward compatible generic versions. In case of multiple versions, version numbers should be divided by command, e.g. '1.7, 1.8'
- Vendor hierarchy version that the package is based on (numeric format, e.g. 14.1), this number will be compared with the current version stored in the receiving system of the GTC vendor hierarchy version, if larger(in numeric order), the whole hierarchy will be re-read.
- Include vendor name and acronym.
- Include the package creation date, package ID, the version of the vendor system.
- Enable a short description, and optionally a long description in different languages.
- <online\_connection\_configuration> and <download\_security> are optional and are used for online package only. <online\_connection\_configuration> points to an url address which can be seen as the entrance door for accessing to the online data. The url address can be the root address of the online package, or technical configuration file for online delivery interface.

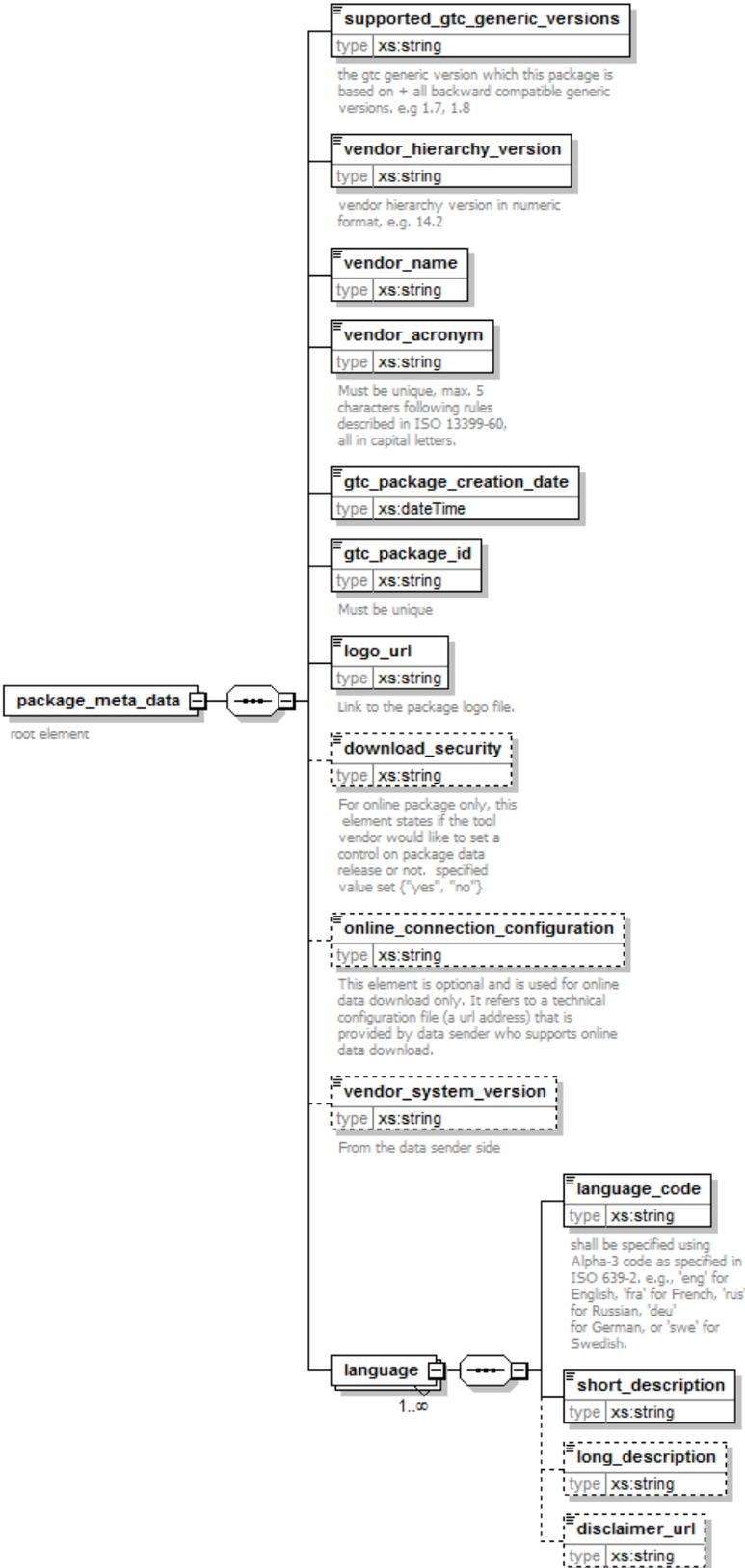
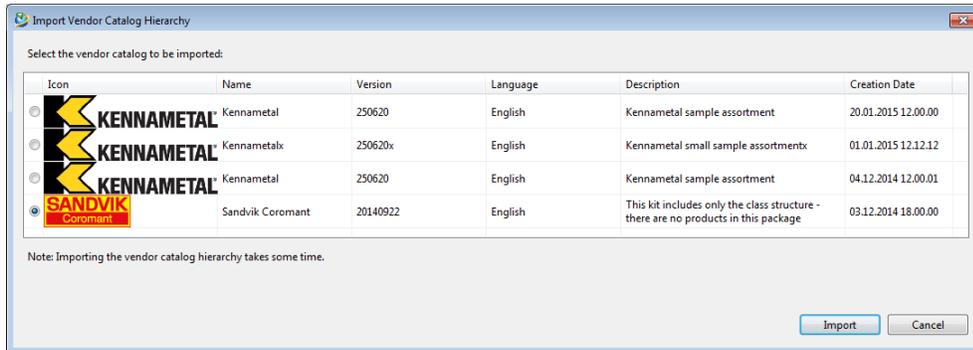


Figure 7. Package meta data XML schema

### 3.15 package\_logo.jpg

- If there is a specific logo for the package being delivered. It is shown in the picture below in the column “Icon”
- Supported bitmap formats: “.png”, “.jpg”, “.jpeg” and “.gif”.
- Recommended maximum logo size is 300 x 110 pixels



### 3.16 readme.txt

- Regular text file containing the list of known issues and other important information for the package deployment.

## Annex A

Terminology to clarify difference of usable product identifiers.

GTC definition	Purpose	P21 Attr.
<b>Product ID</b>	<b>Unique Data Base id</b> in the tool vendor data base and the application data base. In some tool vendors this is equivalent to the Material ID in SAP.–May not be visible to the user.	ITEM.ID
<b>Order Code</b>	Is the code to be used by the user <b>to order</b> this product. Can be identical to the Product ID. Includes grade value. This is the identifier for e-commerce or automatic systems.	(ext ref. library) ORDCODE
<b>Product designation</b>	Descriptive code to be <b>displayed to the user</b> to help identifying the product <b>geometry</b> when browsing a catalog or in a result of a search. Used for looking for additional catalog information which is not exchanged between the tool vendor and the application. Can be identical to Order code. May or may not include the grade.	ITEM.NAME
<b>Grade</b>	Identification for the material (substance) from which a cutting item (e.g. insert, solid tools) is made	GRADE