Lembaga Hasil Dalam Negeri
XBRL Taxonomy Framework Architecture

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Index

Introduction

The purpose of this document is to present and explain the architecture of the framework of XBRL taxonomies created by LHDNM. In particular, it explains the scope (coverage of information requirements), modularization in files, manner of defining concepts and relations and other important design aspects.

This document is aimed at users of the LHDNM XBRL taxonomy, in particular business users working with the taxonomy in order to produce instance documents (by applying mappings to internal systems or assigning XBRL tags with values in any other manner) as well as developers of IT solutions facilitating reporting in the XBRL format or analysis of XBRL data.

LHDNM XBRL Taxonomy Architecture

This section presents and explains the details of the technical architecture of the LHDNM XBRL Taxonomy. In particular, it explains the scope (coverage of information requirements), modularization in files, manner of defining concepts and relations and other important design aspects.

1. Scope of the framework

The LHDNM XBRL taxonomy framework reflects information requirements for tax return forms and supporting tax working sheets. Under the current version, the scope of the framework is limited to the contents prescribed by the Business Requirement Specification document (BRS) which is a formal statement based on requirement analysis conducted with the LHDNM business users.

2. Data model

Prior to the development of a taxonomy, information requirements were analysed in order to identify reportable concepts and relations between them. This was prepared in the form of data model. The data model for the LHDNM XBRL Taxonomy was created as a result of analysis of the business requirement specification document.

All information is represented in Microsoft Excel format. The workbook id designed in a fashion that allows specifying general characteristics of each concept, in particular the English and Bahasa Malay labels, period and data types, purpose of each item and its placement in relation to other concepts.

Structure of the current data model is divided into five main sections:

- *Overview* tab that contains list of all tax working sheets and entry points defined in the taxonomy;
- *Concepts* tab that contains all elements defined in the taxonomy;
- *Enum* tab that contains structures for all drop down lists applicable in the taxonomy;
- *Header* tab that contains all common information structures defined in the taxonomy;
- A set of other tabs that contain all hierarchies and structures used in order to arrange the information scope to be part of the taxonomy:

Data model, jointly review by the international XBRL experts and LHDNM business and IT personnel, was used as a basis for development of the LHDNM XBRL taxonomy files (defining concepts, their properties and relations).

3. Location and modularization in folder and files

3.1. Location

The official root location of all files in the framework (root URL) is *http://www.hasil.gov.my/xbrl/.* This domain is under control of the authority publishing the taxonomy which is the Lembaga Hasil Dalam Negeri Malaysia.

Components of the framework are placed in folders under the root URL followed by the date of publication according to the pattern: *{root URL}/{date of publication in format YYYY-MM-DD}/{abbreviated name of a component of the framework}/{file name}*.

3.2. Physical modularization of the LHDNM XBRL taxonomy

Below diagram presents the physical modularization applied in the LHDNM XBRL taxonomy:

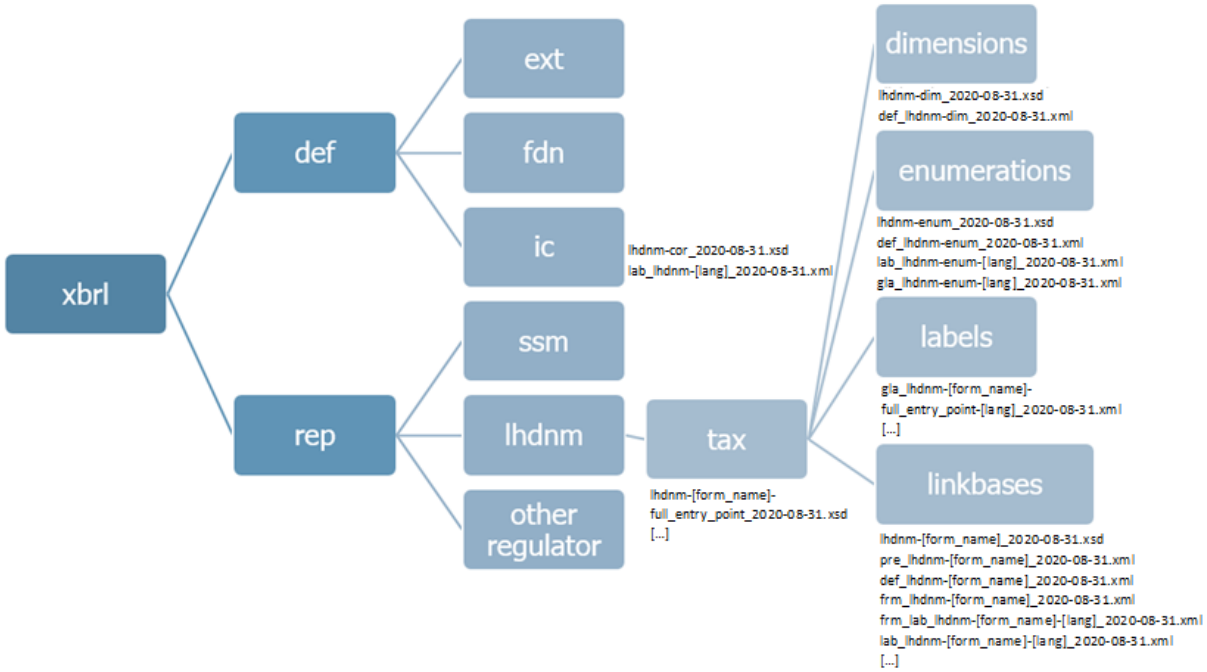

Figure 1: Physical modularization of the LHDNM XBRL Taxonomy

LHNDM XBRL Taxonomy set recognizes two main components for the definition of reporting requirements, including:

- Definition layer (*def*) which stores common dictionary, reusable by different report types along with locally stored external schemas that are used across the taxonomy;
- Reports layer (*rep*) reflecting representations of submission reports containing all necessary relations between elements defined in the common dictionary

that serves as a main containers for the tax information prescribed by the LHDNM.

3.2.1. Definition layer

All parts of the LHDNM XBRL Taxonomy are defined within *def* folder as common dictionaries, reusable by all set of forms that are part of the information requirements. Definition layer consists of three subfolders:

- *ext* folder that contains all external schema files, stored locally, that may be reused in the future across the LHDNM submission reports
- *fdn* folder that contains *lhdnm-fdn_2020-08-31.xsd* schema file that defines custom technical constructs created for the purposes of LHDNM XBRL Taxonomy (not covered by standard XBRL specification), including custom extended link roles for template-specific labels (described later in this document).
- *ic* folder contains core schema (*lhdnm-cor_2020-08-31.xsd*) file with the definition of business concepts and their XBRL properties along with Label Linkbase file (*lab_lhdnm-en_2020-08-31.xml* and *lab_lhdnm-my_2020-08-31.xml)* that provides human readable etiquettes (both in English and Bahasa Malaysia) for all elements defined in the dictionary.

The current version of the LHDNM XBRL Taxonomy, due to the incorporation of full SSM XBRL Taxonomy, contains core schema and label linkbase of the IFRS XBRL Taxonomy 2012, within the *ext* folder. In the future version of the LHDNM XBRL Taxonomy, the *ext* folder may become obsolete, depending on the approach of the future SSMT.

LHDNM XBRL Taxonomy does not make use of any custom data types (as defined in the SSMT 2012), however within the *fdn* schema, there is a set of custom role types defined for the labels (both standard and documentation). This solution provides the ability to apply more than one label/documentation for the single element within one extended link role. Below example presents code definition of the custom role `occurance1Label`:

```
<link:roleType roleURI="http://www.hasil.gov.my/role/occurance1Label" id="occurance1Label">
  <link:definition>Occurance 1 label</link:definition>
  <link:usedOn>link:label</link:usedOn>
</link:roleType>
```

Code example 1: occurance1Label custom role type definition

Apart from the set of custom roles defined by the *fdn* schema, another technical attribute *orientation* was created for the purpose of forms visualisation. It holds the information about the axes orientation, with available options prescribed by the simple type restriction, including:

- *rows* that corresponds to the Y axis
- *columns* that corresponds to the X axis
- *header* that corresponds to the Z axis
- *hidden* which is additional option for all technical dimensions no to be displayed to the end user in the rendered view of the tables

This attribute does not have impact on the browsing of the LHDNM Taxonomy within the software solutions available on the market, it was purely created for the purposes of the LHDNM internal reporting platform. Below example presents the code definition of the *orientation* attribute:

```
<xsd:attribute name="orientation">
  <xsd:simpleType>
    <xsd:restriction base="xsd:token">
      <xsd:enumeration value="rows"/>
      <xsd:enumeration value="columns"/>
      <xsd:enumeration value="header"/>
      <xsd:enumeration value="hidden"/>
    </xsd:restriction>
  </xsd:simpleType>
</xsd:attribute>
```

Code example 2: Orientation custom role type example

3.2.2. Reports layer

Visualisation of the tax forms (part of the LHDNM reporting requirements) is defined within the reports layer in form of linkbase files that provide the relationships between concepts defined in the core schema. Depending on the architecture and contents of particular type of submission, there are four main components recognized in the reports folder:

- *dimensions* folder that contains technical dimensional structures used by the taxonomy,
- *enumerations* folder that contains enumeration elements and structures defined according to the Extensible Enumerations 1.0 specification, and reused in the visualised templates in form of a drop-down list;
- *labels* folder that contains generic labels for the extended link roles storing the structures of visualised templates, used for ordering purposes of particular group of forms
- *linkbases* folder that contains Presentation and Definition relationships in order to reflect the original submission templates, as well as Formula Linkbase defining the set of business rules to be applied across the templates, modelled according to the Formula 1.0 and supporting specifications

3.2.3. Entry points

Apart from the linkbase files, each type of report has each own entry point schema in the *rep/tax/* folder. Entry point imports core schema file from the Definition layer along with all required relationships to allow users of the taxonomy to view selected submissions.

The list of all available entry points in the taxonomy is provided within the *taxonomyPackage.xml* file, listed under the *META-INF* container within the root folder of the taxonomy (as described later in this document).

Name of these entry point files start with the regulator name followed by abbreviated contents of the entry point and a publication date in format YYYY-MM-DD, according to the below pattern:

{regulator name}_{ content}_entry_point_{date stamp in format YYYY-MM-DD}.xsd

The current version of the taxonomy allows selecting between eight various entry point schema files. The following figure presents the list of available entry points in the LHDNM XBRL taxonomy:

Entry point	Name	Number of forms
lhdnm-form_c-full_entry_point_2020-08-31	Form C	63
lhdnm-form_b-bt-full_entry_point_2020-08-31	Form B & BT	34
lhdnm-form_m-mt-full_entry_point_2020-08-31	Form M & MT	31
lhdnm-form_p-full_entry_point_2020-08-31	Form P	22
lhdnm-form_cpp-full_entry_point_2020-08-31	Form CPP	4
lhdnm-form_cpe-full_entry_point_2020-08-31	Form CPE	2
lhdnm-form_tf-full_entry_point_2020-08-31	Form TF	24
lhdnm-form_c1-full_entry_point_2020-08-31	Form C1	34

Table 1: Overview of the entry points used in LHDNM XBRL Taxonomy

Template	Form C	Form B & BT	Form M & MT	Form P	Form CPP	Form CPE	Form TF	Form C1
HK-PC1	x							x
HK-PC1A	x							
HK-PC2	x							x
HK-PC3	x							
HK-PC4	x							x
HK-PC5	x							x
HK-PC6	x							
HK-PC7	x							
HK-PC8	x							
HK-PC9	x							x
HK-PC9A	x							x
HK-PC10	x							
HK-PC10A	x							
HK-PC10B	x							
HK-PC11	x							
HK-PC12	x							
HK-PC13	x							
HK-PC14	x							
HK-PC15	x							
HK-C14	x							x
HK-C15	x							x
HK-C16	x							x
HK-C30								x
HK-C31								x
HK-D	x	x	x	x			x	x
HK-E	x							x
HK-F	x							x
HK-G	x							
HK-H							x	
HK-M	x							x
HK-N	x							
HK-O	x							
HK-P	x							
Appendix A1	x							x
Appendix A2	x							x
Appendix A2A	x							x
Appendix A3	x							x
Appendix A3A	x							x
Appendix B2	x							x

Appendix B3	x							x
Appendix B4	x							x
HK-1		x	x				x	
HK-1A				x				
HK-1B		x	x				x	
HK-1E		x	x				x	
HK-1F				x				
HK-1.1	x	x	x	x			x	x
HK-1.2	x	x	x	x			x	x
HK-1.2.1	x	x	x	x			x	x
HK-1.2.2	x	x	x	x			x	x
HK-1.2.3	x	x	x	x			x	x
HK-1.2.4	x	x	x	x			x	x
HK-1.2A	x	x	x	x			x	x
HK-1.3		x	x				x	
HK-1.4		x	x				x	
HK-2		x	x					
HK-2.1		x	x					
HK-2.2		x	x					
HK-2.3		x	x					
HK-2.4		x	x					
HK-2.5		x	x					
HK-2.6		x	x					
HK-2.7		x	x					
HK-4		x	x	x				
HK-4B							x	
HK-5		x		x			x	
HK-6		x	x	x			x	
HK-8		x	x				x	
HK-8A				x				
HK-9		x	x				x	
HK-9A				x				
HK-10		x	x					
HK-11		x	x	x			x	
HK-13		x						
HK-14		x						
HK-15		x	x	x			x	
HK-16		x	x	x			x	
CP30				x				
Form C (RK-T) [Amend. 2011]	x							
Form C (RK-S) [Amend. 2011]	x							
Form 2 (Sek 34A ACP 1967)	x							
LHDN/BT/DD/POE/S/2003-1	x							
LHDN/BT/DD/POE/PD/2003-1	x							
LHDN/BT/DD/POE/PS/2003-1	x							
LHDN/BT/DD/BNG/2003-1	x							
LHDN/BT/DD/POT/2003-1	x							
EX/AIE/2003-1 Pin. 2012	x							
EX/AIES/2003-1Pin.2012	x							
LHDN/BT/DD/POE/HE/2004	x							
LHDN/BT/EX/SI/2005 Pin. 2012	x							
LHDN/BT/RA/2007 - EPS Pin. 2012	x							
LHDN/BT/DD/POE/2007	x							
LHDN/BT/SD/POE/2007	x							
Form Contractor	x	x	x	x			x	x
Form Developer	x			x				x
Form CPP					x			
Form CPE						x		

Form PEL_S					x			
Form PEL_T					x			
Form C1								x
HK-FIC	x							
HK-FIB		x						
HK-FIM			x					
HK-FIP				x				
HK-FITF							x	

Table 2: Detailed list of LHDNM XBRL Taxonomy entry point's contents

4. Definitions of concepts, dimensional constructs and other

Concepts, dimensional constructs and other artefacts are defined in XBRL schema files.

In particular, XBRL schema files contain definitions of:

- reportable concepts (items),
- non-reportable concepts (abstracts) used to support browsing of the taxonomy tree structures (relations),
- drop-down lists (enumeration items),
- dimensional constructs (hypercube items, dimension items and domain members) that reflect breakdowns or special characteristics applicable for reportable concepts,
- `roleTypes` used on definition extended links that combine relationships of a specific nature or application (e.g. Form B - Filing information, HK-1.1: Mining allowances).

4.1. Namespaces

Namespaces are used to differentiate between concepts defined by different regulations or applicable for different purposes. They are used in order to avoid name clashes and indicate the origin of each defined concept or construct.

Namespaces in this framework is constructed using the base part *http://www.hasil.gov.my/xbrl/{date of publication in format YYYY-MM-DD}/* followed by a component of a framework.

Recommended prefix	Namespace
lhdnm	http://www.hasil.gov.my/xbrl/2020-08-31
lhdnm-enum	http://www.hasil.gov.my/xbrl/2020-08-31/enum
lhdnm-fdn	http://www.hasil.gov.my/xbrl/2020-08-31/fdn

Table 3: Namespaces and prefixes used in LHDNM XBRL Taxonomy

4.2. Concepts and constructs

As described above, the LHDNM XBRL taxonomy contains definitions of reportable concepts (items), non-reportable concepts (abstracts) and dimensional constructs (hypercubes, dimensions and domain members).

All concepts are defined in `item` substitution group or derived from it (`hypercubeItem` for hypercubes and `dimensionItem` for dimensions). All concepts are nillable (`@nillable="true")` hence, they could be reported as nilled (`@xsi:nil="true"`). Although semantically unimportant, values of `@id` attribute

(used for the purpose of creating links in XLink) are constructed basing on the pattern: *{recommended prefix}_{element name}*[1].

Naming convention for LHDNM XBRL taxonomy concepts follows, in general, IFRS rules and principles defined in Appendix C: Style Guide.[2]

4.2.1. Reportable concepts

Definition of a reportable (non-abstract, i.e. *@abstract="false"*) concept must at minimum consist of:

- unique local (within a namespace) name,
- indication of a period type,
- identification of a data type.

Names of reportable concepts are corresponding to the L3C (Label CamelCase Concatenation) representation of meaningful standard labels in English.

Value of *@periodType* attribute is either *instant* for these concepts that are reported at a point of time (as of specified date) or *duration* for concepts representing flows and changes (between specified dates or infinite). In cases where the period type is not obvious, the period type attribute is set to *duration*[3]. This information must be taken into consideration in instance document when constructing contexts for facts based on reportable concepts. For textual concepts (i.e. concepts whose data type is *stringItemType*) start and end dates should reflect the boundary dates for which a report is created, for example, if the financial statement covers the third quarter of 2010 then the dates are 2010-07-01 and 2010-09-30 respectively. Similarly reasoning applies for concepts that represent dates. For instance in an annual report commencing June 2009 the context start and end dates for date concepts such as "Reporting period end date", "Reporting period start date" and "Date of approval of report" would be 2009-07-01 and 2010-06-30 respectively.

```
<xsd:element name="CapitalAllowanceAbsorbedInCurrentYear" id="lhdnm_CapitalAllowanceAbsorbedInCurrentYear" type=
"xbrli:monetaryItemType" substitutionGroup="xbrli:item" abstract="false" nillable="true" xbrli:periodType="duration"/>
```

Code example 3: Reportable concept example

4.2.1.1. Data types

Data type defines constraints on possible to report values. It is assumed that LHDNM XBRL Taxonomy may apply any of the standard XBRL data types[4] as well as their extensions and restriction. Currently, the LHDNM XBRL taxonomy make use of the following data types for reportable concepts:

---

[1] As defined in http://www.xbrl.org/technical/guidance/FRTA-RECOMMENDATION-2005-04-25+corrected-errata-2006-03-20.htm (FRTA) rule 2.1.5. This pattern applies to items, abstracts, dimensional constructs, `roleType`s, data types and enumerations for custom data types.

[2] http://www.ifrs.org/XBRL/IFRS-Taxonomy/2014/Documents/ITG%20Guide%202014_complete.pdf

[3] This is for the reasons that it is always possible to indicate a moment in time using two identical dates (more precisely data and time) while it is not possible to describe a period of time using just a single date. The same approach was taken by the IFRS taxonomy.

[4] As defined in http://www.xbrl.org/2003/xbrl-instance-2003-12-31.xsd

- `stringItemType` (base XBRL type),
- `percentItemType` (base XBRL type),
- `dateItemType` (base XBRL type)
- `monetaryItemType` (base XBRL type),
- `decimalItemType` (base XBRL type),
- `integerItemType` (base XBRL type),
- `domainItemType` (XBRL International Registry type)[5],
- `enumerationItemType` (Extensible Enumerations 1.0. Specification type)[6].

```
<xsd:element name="NameOfEntity" id="lhdnm_NameOfEntity" type="xbrli:stringItemType" substitutionGroup="xbrli:item"
abstract="false" nillable="true" xbrli:periodType="duration"/>
```

Code example 4: stringItemType element definition

All elements that are used as to be serving as dropdown lists are defined in accordance to the Extensible Enumerations 1.0. Specification within the *definition* layer under the folder *enumerations.* Those elements are using data type `enum:enumerationItemType` and are described in the `lhdnm-enum_2020-08-31.xsd` schema with additional attributes:

- `enum:linkrole` pointing to the Extended Link Role with the hierarchy defined for the enumeration options,
- `enum:domain` pointing to the parent domain member storing the available enumeration options,
- `enum:headUsable` describing the usability of the parent domain member.

```
<xsd:element name="CountryCode" id="lhdnm-enum_CountryCode" type="enum:enumerationItemType" enum:domain=
"lhdnm-enum:CountryCodeList" substitutionGroup="xbrli:item" enum:linkrole=
"http://www.basil.gov.my/role/enum/country-code" enum:headUsable="false" abstract="false" nillable="true"
xbrli:periodType="duration"/>
```

Code example 5: enumerationItemType element definition

Elements treated as enumeration options are defined as domain members and structured within the Definition linkbase (as described later in this document).

4.2.2. Abstract constructs

All not-reportable concepts have *@abstract="true".*

Names of abstract constructs are corresponding to the L3C (Label CamelCase Concatenation) representation of meaningful standard labels in English followed by the word *Abstract* (e.g.

[5] As defined in http://www.xbrl.org/dtr/type/nonNumeric-2009-12-16.xsd
[6] As defined in http://www.xbrl.org/2014/extensible-enumerations.xsd

@name="IntangibleAssetsAbstract") in order not to occupy meaningful names that may be otherwise assigned to reportable concepts and differentiate from other constructs.

```
<xsd:element name="FilingInformationAbstract" id="lhdnm_FilingInformationAbstract" type="xbrli:stringItemType"
substitutionGroup="xbrli:item" abstract="true" nillable="true" xbrli:periodType="duration"/>
```

Code example 6: Element definition with *abstract="true"*

Although it is semantically unimportant, all abstracts should have *@periodType="duration"* and *@dataType="stringItemType".*

4.2.3. Dimensional constructs

Definition of dimensional constructs are following the rules of the XBRL Dimensions 1.0 specification and the recent recommendations and deliverables of the XBRL International Working Group on Interoperable Taxonomy Architecture.

According to the above, all dimensional constructs are defined as abstracts *(@abstract="true").* Moreover, hypercubes should be defined in *hypercubeItem* and dimensions in *dimensionItem* substitutions groups[7], data type of domain members are *domainItemType*[8], and, although semantically unimportant, all dimensional constructs have *@periodType="duration"* and hypercubes and dimensions have *@dataType="stringItemType"*.

Names of dimensional constructs are corresponding to the L3C (Label CamelCase Concatenation) representation of meaningful standard labels in English followed by one of the following words:

- Table for hypercube items (e.g. @name="TypeOfIncentiveTable"),
- Axis for dimension items (e.g. @name="TypeOfBusinessAxis"),
- Member for domain member (e.g. @name="InterestBearingLoansMember"),

in order not to occupy meaningful names that may be otherwise assigned to reportable concepts and differentiate from other constructs.

As a result of application of certain modelling techniques which rationales are described later in this document, the LHDNM XBRL taxonomy defines a number of typed dimensions and hence also typed domains. Definition of a typed domain must consist of a `@name`, `@dataType` and `@id` (semantically unimportant but required in order to reference from a declaration of a typed dimensions). Names of typed domains reflect the camel-case description of their content followed by the component `identifier` (e.g. `identityNumber`). `@dataType` of typed domains is `integer` (XML Schema data type).

[7] As defined in http://www.xbrl.org/2005/xbrldt-2005.xsd
[8] As defined in http://www.xbrl.org/dtr/type/nonNumeric-2009-12-16.xsd

```
<xsd:element name="ComputationOfStatutoryIncomeForInsuranceBusinessTable" id=
"lhdnm_ComputationOfStatutoryIncomeForInsuranceBusinessTable" type="xbrli:stringItemType"
substitutionGroup="xbrldt:hypercubeItem" abstract="true" nillable="true" xbrli:periodType="duration"/>

<xsd:element name="TypeOfFundAxis" id="lhdnm_TypeOfFundAxis" type="xbrli:stringItemType"
substitutionGroup="xbrldt:dimensionItem" abstract="true" nillable="true" xbrli:periodType="duration"/>

<xsd:element name="LifeFundMember" id="lhdnm_LifeFundMember" type="nonnum:domainItemType"
substitutionGroup="xbrli:item" abstract="true" nillable="true" xbrli:periodType="duration"/>
```

Code example 7: Hypercube, dimension and domain member definitions

4.3. Roles used on extended links

XBRL schema files contain declarations of `roleType`s used on extended links. Their role is to distinguish and to name the sets of relations defined in linkbase files.

Declaration of a `roleType` should consist of a *@roleURI* attribute (which is a unique identification of a role in a form a Unified Resource Identifier[9] that allows to create networks of relations spread across many files), an *@id* attribute (used for linking purposes with no semantic meaning) and subelements: *definition* (containing human readable description in a single language) and *usedOn* specifying the kinds of extended links (or resources) where the declared *roleType* can be applied.

In general, *roleTypes* are created for two purposes:

- due to business reasons - in order to support browsing of a taxonomy by separating information sets (concepts and relations between them) that represent certain parts of reporting requirements (particular tax working sheets, e.g. HK-PC1 for businesses or HK-PC9 for insurance businesses),
- due to technical reasons, as a consequence of rules defined in specifications (e.g. disallowing undirected cycles for certain types of relations, algorithms for inheritance of dimensional information ancestors, etc.)

Due to the reasons defined above all `roleType`s defined in the LHDNM XBRL Taxonomy contain a number component. It should consist of a main three-digit identifier of an information set from business perspective, followed by a dot and followed by a three-digit identifier of a subset of relations for a given information set (e.g. *[002.001]*). This number component is included on each `roleType` as part of generic label. This component serves the ordering purposes in the absence of an order identifier on extended links. Its use and construction are explained later in this section.

In terms of structuring of relationships in the definition linkbase, the LHDNM XBRL Taxonomy should distinguish between the following two types of `roleType`s, which are used to define:

a) general information sets containing items linked to commonly applied dimensional information,
b) enumeration sets containing items structured in form of drop down lists,

[9] http://en.wikipedia.org/wiki/Uniform_Resource_Identifier

c) technical set facilitating discovery of default members.

Description of a type of information set (regarding which group it applies to) should be expressed by the pattern applied for the number component and construction of a value of *@roleURI* attribute, *definition* element and generic labels for *roleTypes*.

For the taxonomy main information scope, the ordering component starts with three digits identifier taking values from *000* to *998,* followed by a dot followed by another three digits identifying parts of the particular tax working sheet (if split due to technical reasons mentioned above in this section). For the split identifier, *000* is reserved for standalone tables while each subsequent number from *001* to *999* is corresponding to the particular part of the table. As a supportive mechanism for the split tables distinction, textual description (e.g. *part a, b, c*, etc.*)* is provided on the *definition* element of the extended link role (e.g. *[001.002] Appendix A1: Computation of adjusted income for business, part b*; etc.*)*, as well as the *@id* and *@roleURI* attributes are accommodated with such distinction by providing a suffix constructed with a dash and part *identifier* (e.g. *appendix-a1; appendix-a1-a; appendix-a1-b;* etc.).

Ordering component *[000.000]* is reserved for each entry point as a container of the common filing information (e.g. *[000.000] Filing information: Form C*).

Three digit identifier with values *999* is reserved for storing Extensible Enumeration 1.0 structures within the Definition Linkbase. It is followed by a subsequent number from *001* to *998*, corresponding to the separately stored enumeration lists (e.g. *[999.032] Enumeration: Export status of the product*).

[999.999] is restricted to the technical set facilitating discovery of default members (*Axis: Defaults).*

As explained above, value of *definition* subelements should consist of a number component (in square brackets) followed by the human description (in English and Bahasa Malay in the generic labels) of the content of the extended link for the purpose of which the *roleType* is defined (e.g. *[011.000] HK-1.3: Adjustment of losses for business and partnership*). Additionally, for detailing enumeration list dropdowns a word Enumerations is used followed by a colon followed by an identification of the information set (e.g. *[999.024] Enumeration: Type used for research*).

Construction of *@roleURIs* should begin with the following base URI: *http://www.hasil.gov.my/xbrl/{component of the framework if required}/role* followed by @id distinguishing type of information stored as a content of the extended link for the purpose of which the `roleType` is defined (each component should be separated with a slash, e.g. *http://www.hasil.gov.my/xbrl/role/appendix-a1-a*).

All `roleType`s defined in the LHDNM XBRL Taxonomy are defined in the schema files corresponding to the information set they are reflecting, and are used on *presentationLink*, *definitionLink, labelLink* and *gen:link.* In the future they can also indicate other type of linkbases to be used on, depending on the requirements.

Example of a `roleType` declaration defined in *lhdnm-hk-pc1_2020-08-31.xsd* is presented below on the code example:

```
<link:roleType roleURI="http://www.hasil.gov.my/role/hk-pc1" id="hk-pc1">
  <link:definition>HK-PC1: Computation of statutory income for business</link:definition>
  <link:usedOn>link:presentationLink</link:usedOn>
  <link:usedOn>link:definitionLink</link:usedOn>
  <link:usedOn>link:labelLink</link:usedOn>
  <link:usedOn>gen:link</link:usedOn>
</link:roleType>
```

Code example 8: Example of a roleType declaration in the LHDNM XBRL Taxonomy

5. Sets of relations

The LHDNM XBRL Taxonomy contains relations in the presentation, definition and generic linkbases. Relations in the presentation should be constructed as defined in the XBRL 2.1 Specification. Definition linkbase relations should be constructed using arcs with arcroles defined in XBRL Dimensions 1.0. Generic linkbase relations should be constructed using arcs with arcroles defined in the Generic Labels 1.0. and Formula 1.0. with the supporting specifications.

Relations provides semantic information on:

- placement of concepts (items with or without dimensional information) in particular information sets (such as *Filing information, HK-MNE,* etc.),
- application of dimensional information for items,
- hierarchical structures between items and members of dimensions,
- compliance checks between items and members of dimensions.

The linkbase files are containing relationships between concepts and dimensional constructs created in standard (XBRL 2.1) presentation linkbase, definition linkbase and formula linkbase using arcs and arcroles as defined in the XBRL 2.1, XBRL Dimension 1.0 and Formula 1.0. Specifications; naming convention for these files is as follows:

- **pre_{owner code}_{form code}_{date stamp in format YYYY-MM-DD}.xml** for presentationLink type of the extended link, storing complete hierarchies reflecting a particular tax working sheet;
- **def_{owner code}_{form code}_{date stamp in format YYYY-MM-DD}.xml** for definitionLink type of the extended link, storing complete (for standalone tables, distinguished by the *roleType* ordering component *[xxx.000]*) or partial (for split tables, distinguished by the *roleType* ordering component *[xxx.001-999]*) hierarchies reflecting particular tax working sheet;
- **frm_{owner code}_{form code}_{date stamp in format YYYY-MM-DD}.xml** for formula linkbase set of relationships, storing business rules and compliance checks described later in this document.

All linkbase files listed above are referenced directly from the tax working sheet schema files.

6. Labels

The LHDNM XBRL taxonomy contains English and Bahasa Malaysia labels for each concept for easier browsing of the taxonomy contents.

Each element in the single form can have its own specific label. These labels are provided in English and Bahasa Malaysia and connected to single role; naming convention for these files is as follows:

- **lab_{component abbreviation}_{ form code}-{language code}_{date stamp in format YYYY-MM-DD}.xml;** these linkbase files are referenced from the schema file.

Apart from the standard labels (which role is `http://www.xbrl.org/2003/role/label`) the LHDNM XBRL taxonomy includes also other labels for certain concepts.

Id	Label role
occurance1Label	http://www.hasil.gov.my/role/occurance1Label
occurance2Label	http://www.hasil.gov.my/role/occurance2Label
occurance3Label	http://www.hasil.gov.my/role/occurance3Label
occurance4Label	http://www.hasil.gov.my/role/occurance4Label
occurance5Label	http://www.hasil.gov.my/role/occurance5Label
occurance6Label	http://www.hasil.gov.my/role/occurance6Label
occurance7Label	http://www.hasil.gov.my/role/occurance7Label
occurance8Label	http://www.hasil.gov.my/role/occurance8Label
occurance9Label	http://www.hasil.gov.my/role/occurance9Label)
occurance10Label	http://www.hasil.gov.my/role/occurance10Label
occurance1Documentation	http://www.hasil.gov.my/role/occurance1Documentation
occurance2Documentation	http://www.hasil.gov.my/role/occurance2Documentation
occurance3Documentation	http://www.hasil.gov.my/role/occurance3Documentation
occurance4Documentation	http://www.hasil.gov.my/role/occurance4Documentation
occurance5Documentation	http://www.hasil.gov.my/role/occurance5Documentation
occurance6Documentation	http://www.hasil.gov.my/role/occurance6Documentation
occurance7Documentation	http://www.hasil.gov.my/role/occurance7Documentation
occurance8Documentation	http://www.hasil.gov.my/role/occurance8Documentation
occurance9Documentation	http://www.hasil.gov.my/role/occurance9Documentation
occurance10Documentation	http://www.hasil.gov.my/role/occurance10Documentation

Table 4: Label roles used in the LHDNM taxonomy

In order to present different labels for particular element within the same form, a custom role (as described in the previous section) is created to facilitate this requirement. These label roles are later referenced from arcs in the presentation linkbase using a standard `@preferredLabel` attribute (as defined in the XBRL 2.1 Specification[10]).

[10] http://www.xbrl.org/Specification/XBRL-RECOMMENDATION-2003-12-31+Corrected-Errata-2008-07-02.htm#_5.2.4.2

```
<link:presentationArc xlink:type="arc" xlink:arcrole=
"http://www.xbrl.org/2003/arcrole/parent-child" xlink:from=
"ComputationOfStatutoryIncomeLineItems" xlink:to="CapitalAllowanceAbsorbedInCurrentYear"
xlink:title="presentation: ComputationOfStatutoryIncomeLineItems to
CapitalAllowanceAbsorbedInCurrentYear" priority="0" order="7.0" preferredLabel=
"http://www.hasil.gov.my/role/occurance1Label"/>
```

Code example 9: Application of @preferredLabel attribute

For constructs that standard XBRL 2.1 labels does not provide multilingual functionality, a generic linkbase should be applied. Currently the LHDNM XBRL Taxonomy defines English and Bahasa Malay labels for sets of relations (`roleTypes`) defined by a schema file for every extended link of each component; name of this generic linkbase file follows the pattern:

- **gla_{owner_code}_{entry point name}_entry_point-{language code}_{date stamp in format YYYY-MM-DD}.xml** for generic labels of gen:link type

All generic linkbase files are referenced from the entry point schemas. Entry points used for reporting purposes (i.e. referenced from instance documents filed by reporting entities) are defined in in the main folder. They allow classifying submitted forms in terms of reported information (*Entry points* section).

7. Application of dimensions

The LHDNM XBRL taxonomy makes an extensive use of XBRL dimensions[11].

The designated container for dimensional information in instance documents is `scenario` element as indicated on definition arcs with `http://xbrl.org/int/dim/arcrole/all` arcrole. The taxonomy does not contain any arc with `http://xbrl.org/int/dim/arcrole/notAll`. Every hypercube is closed (`@closed="true"`).

7.1. Default members of dimensions

The taxonomy defines a default member for explicit dimension if required. This is important information due to the fact that default members must not be declared in instance documents[12]. In order to facilitate discovery of default members they will be defined in a single extended link with `@roleURI` *http://www.hasil.gov.my/role/defaults*.

Currently the LHDNM XBRL Taxonomy defines a single *dimension-default* relationship for the *Type of fund [axis]*.

[11] http://www.xbrl.org/Specification/XDT-REC-2006-09-18+Corrected-Errata-2009-09-07.htm
[12] http://www.xbrl.org/Specification/XDT-REC-2006-09-18+Corrected-Errata-2009-09-07.htm#_Toc243301768

7.2. Typed dimensions

Typed dimensions are used for allowing disclosing certain information of a predefined type that needs to be further characterized in order to identify its exact meaning.

In particular, they are used to identify:

- businesses,
- line numbers for particular open tables,
- tax jurisdictions,
- other

```
<xsd:element name="BusinessIdentificationAxis" id="lhdnm_BusinessIdentificationAxis" type=
"xbrli:stringItemType" xbrldt:typedDomainRef="#lhdnm_businessIdentifier" substitutionGroup=
"xbrldt:dimensionItem" abstract="true" nillable="true" xbrli:periodType="duration"/>
<xsd:element name="BusinessIdentificationLineItems" id="lhdnm_BusinessIdentificationLineItems" type
="xbrli:stringItemType" substitutionGroup="xbrli:item" abstract="true" nillable="true"
xbrli:periodType="duration"/>
```

Code example 10: Typed dimension example

Typed domains of all typed dimension are always simple constructs which data type is `string` or `integer`. In an instance document typed domain must be instantiated as a unique "key" value linking facts that have something in common.

8. Business Rules

The LHDNM XBRL taxonomy defines business rules with use of Formula Linkbase 1.0 and supportive specifications[13].

The formula linkbase files are referenced from a particular tax working sheet schema. The cross-form validations are referenced by a single schema file from which the compliance check originates.

The assertion IDs are following the pattern below:

- **{form code}_va{validation number}.xml** (e.g. hk-pc1_va001)

Cross-form validation are distinguished by the use of "m" indicator at the end of assertion ID.

The LHDNM XBRL taxonomy contains 923 business rules, of which 775 are form-specific and 148 are checking the compliance between elements listed within more than one form. In general, all checks defined by the LHDNM XBRL taxonomy are characterized by following types:

- Equality of the positions;
- Existence checks;
- Element constrains;

[13] http://specifications.xbrl.org/work-product-index-formula-formula-1.0.html

- Element comparison;
- Standard summations;
- Summations with value restrictions;
- Conditional summations;
- Open table summations;
- Conditional open table summations;
- Element subtractions;
- Subtractions of multiple elements;
- Subtracting dates;
- Subtraction in open tables;
- Conditional subtractions in open tables;
- Simple multiplication;
- Simple division;
- Multiplication and division;
- Conditional multiplication and division;
- Other;

however these are not distinguished anyhow on the level of assertion ID. Examples below present selected types of rules defined in the taxonomy:

```
<va:valueAssertion xlink:type="resource" xlink:label="valueAssertion_6" id="hk-pc10b_va007" test="$D2=$F4" aspectModel=
"dimensional" implicitFiltering="true"/>
<variable:factVariable xlink:type="resource" xlink:label="factVariable_12" id="factVariable_12" bindAsSequence="false"
fallbackValue="0"/>
<variable:variableArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-set" xlink:from="valueAssertion_6"
xlink:to="factVariable_12" order="1.0" name="D2"/>
<cf:conceptName xlink:type="resource" xlink:label="conceptName_7" id="conceptName_7">
  <cf:concept>
    <cf:qname>lhdnm:ExemptionOnStatutoryIncomeClaimed</cf:qname>
  </cf:concept>
</cf:conceptName>
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-filter" xlink:from=
"factVariable_12" xlink:to="conceptName_7" order="1.0" cover="true" complement="false"/>
<variable:factVariable xlink:type="resource" xlink:label="factVariable_13" id="factVariable_13" bindAsSequence="false"
fallbackValue="0"/>
<variable:variableArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-set" xlink:from="valueAssertion_6"
xlink:to="factVariable_13" order="2.0" name="F4"/>
<cf:conceptName xlink:type="resource" xlink:label="conceptName_8" id="conceptName_8">
  <cf:concept>
    <cf:qname>lhdnm:BalanceBroughtForwardAddExemptionOfIncomeOnValueOfIncreasedExportsAddExemptionOnCurrentYearStatutoryIncome
    </cf:qname>
  </cf:concept>
</cf:conceptName>
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-filter" xlink:from=
"factVariable_13" xlink:to="conceptName_8" order="1.0" cover="true" complement="false"/>
<variable:variableSetFilterArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-set-filter" xlink:from=
"valueAssertion_6" xlink:to="explicitDimension" order="1.0" complement="false"/>
```

Code example 11: Equality of the positions formula example

```
<va:valueAssertion xlink:type="resource" xlink:label="valueAssertion" id="hk-pc1_va001" test="$A3 =  $A1 +  $A2 "
aspectModel="dimensional" implicitFiltering="true"/>
<variable:factVariable xlink:type="resource" xlink:label="factVariable" id="factVariable" bindAsSequence="false"
fallbackValue="0"/>
<variable:variableArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-set" xlink:from=
"valueAssertion" xlink:to="factVariable" order="1.0" name="A3"/>
<cf:conceptName xlink:type="resource" xlink:label="conceptName" id="conceptName">
  <cf:concept>
    <cf:qname>lhdnm:AdjustedBusinessIncomeAddBalancingCharge</cf:qname>
  </cf:concept>
</cf:conceptName>
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-filter" xlink:from=
"factVariable" xlink:to="conceptName" order="1.0" cover="true" complement="false"/>
<df:explicitDimension xlink:type="resource" xlink:label="explicitDimension" id="explicitDimension">
  <df:dimension>
    <df:qname>lhdnm:TypeOfBusinessAxis</df:qname>
  </df:dimension>
  <df:member>
    <df:qname>lhdnm:BusinessMember</df:qname>
  </df:member>
</df:explicitDimension>
<variable:variableSetFilterArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-set-filter"
xlink:from="valueAssertion" xlink:to="explicitDimension" order="1.0" complement="false"/>
<variable:factVariable xlink:type="resource" xlink:label="factVariable_11" id="factVariable_11" bindAsSequence="false"
fallbackValue="0"/>
<variable:variableArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-set" xlink:from=
"valueAssertion" xlink:to="factVariable_11" order="2.0" name="A1"/>
<cf:conceptName xlink:type="resource" xlink:label="conceptName_2" id="conceptName_2">
  <cf:concept>
    <cf:qname>lhdnm:AdjustedBusinessIncome</cf:qname>
  </cf:concept>
</cf:conceptName>
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-filter" xlink:from=
"factVariable_11" xlink:to="conceptName_2" order="1.0" cover="true" complement="false"/>
<variable:factVariable xlink:type="resource" xlink:label="factVariable_14" id="factVariable_14" bindAsSequence="false"
fallbackValue="0"/>
<variable:variableArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-set" xlink:from=
"valueAssertion" xlink:to="factVariable_14" order="3.0" name="A2"/>
<cf:conceptName xlink:type="resource" xlink:label="conceptName_3" id="conceptName_3">
  <cf:concept>
    <cf:qname>lhdnm:BalancingCharge</cf:qname>
  </cf:concept>
</cf:conceptName>
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://xbrl.org/arcrole/2008/variable-filter" xlink:from=
"factVariable_14" xlink:to="conceptName_3" order="1.0" cover="true" complement="false"/>
```

Code example 12: Standard summation formula example

Each business rule provides a human readable error message in English and Bahasa Malaysia, providing the reporting entities with a clear information on any inconsistency that occurs in the instance document. These are defined within the separate linkbase files for each tax working sheet schema; naming convention for these files is as follows:

- **frm_lab_{component abbreviation}_{ form code}-{language code}_{date stamp in format YYYY-MM-DD}.xml**; these linkbase files are referenced from the particular tax working sheet schema file.

9. Relation to other taxonomies

The LHDNM XBRL taxonomy framework is independent from any external taxonomies. However at some extent it is following the rules IFRS XBRL Taxonomy Architecture which makes it more implementation-friendly for software vendors (supporting a single interface for single common architecture) providing solutions to the market. Apart from that, LHDNM XBRL Taxonomy is also reflect the architecture of SSM

XBRL Taxonomy and contains a SSMT taxonomy set in the taxonomy package for financial reporting requirements with future possibility of data harmonization between the regulators.

Nevertheless the LHDNM XBRL taxonomy framework contains also a number of departures from the rules set out by the IFRS taxonomy architecture and SSM XBRL Taxonomy architecture. This results from specific requirements not addressed by the IFRS taxonomy (e.g. extensive use of typed dimensions).

10. Versioning

Taxonomy version is indicated using a publication date on file names as well as on the folder name following the root location).

11. Taxonomy Package

LHDNM XBRL Taxonomy is provided as a .zip archive, created accordingly to the Taxonomy Packages 1.0 Specification[14] (Recommendation as published on 2016-04-19). LHDNM XBRL Taxonomy Set contents are defined under the *META-INF* container within the root folder of the taxonomy, which includes the following configuration files:

- *catalog.xml* that provides URL remapping to the taxonomy folder stored locally
- *taxonomyPackage.xml* that provides general information about the taxonomy identification, versioning, publisher and available entry points.

Purpose of the above is to provide the users of the LHDNM XBRL Taxonomy with a convenient way of accessing the taxonomy and browsing through its contents. The LHDNM XBRL Taxonomy Package is available under the official web location of the Lembaga Hasil Dalam Negeri.

```
<tp:identifier>http://www.hasil.gov.my/xbrl/lhdnm_2020-08-31.zip</tp:identifier>
<tp:name>LHDNM XBRL Taxonomy</tp:name>
<tp:version>1.0</tp:version>
<tp:publisher>Lembaga Hasil Dalam Negeri Malaysia</tp:publisher>
<tp:publisherURL>http://www.hasil.gov.my/</tp:publisherURL>
<tp:publicationDate>2020-08-31</tp:publicationDate>
<tp:entryPoints>
    <tp:entryPoint>
        <tp:name>B-BT</tp:name>
        <tp:description>Form B/BT</tp:description>
        <tp:entryPointDocument href="http://www.hasil.gov.my/xbrl/2020-08-31/rep/lhdnm/tax/lhdnm-form_b-bt-full_entry_point_2020-08-31.xsd"/>
    </tp:entryPoint>
    <tp:entryPoint>
        <tp:name>C1</tp:name>
        <tp:description>Form C1</tp:description>
        <tp:entryPointDocument href="http://www.hasil.gov.my/xbrl/2020-08-31/rep/lhdnm/tax/lhdnm-form_c1-full_entry_point_2020-08-31.xsd"/>
    </tp:entryPoint>
    <tp:entryPoint>
        <tp:name>C</tp:name>
        <tp:description>Form C</tp:description>
        <tp:entryPointDocument href="http://www.hasil.gov.my/xbrl/2020-08-31/rep/lhdnm/tax/lhdnm-form_c-full_entry_point_2020-08-31.xsd"/>
    </tp:entryPoint>
```

Code example 13: LHDNM XBRL Taxonomy Package

[14] https://www.xbrl.org/Specification/taxonomy-package/REC-2016-04-19/taxonomy-package-REC-2016-04-19.html